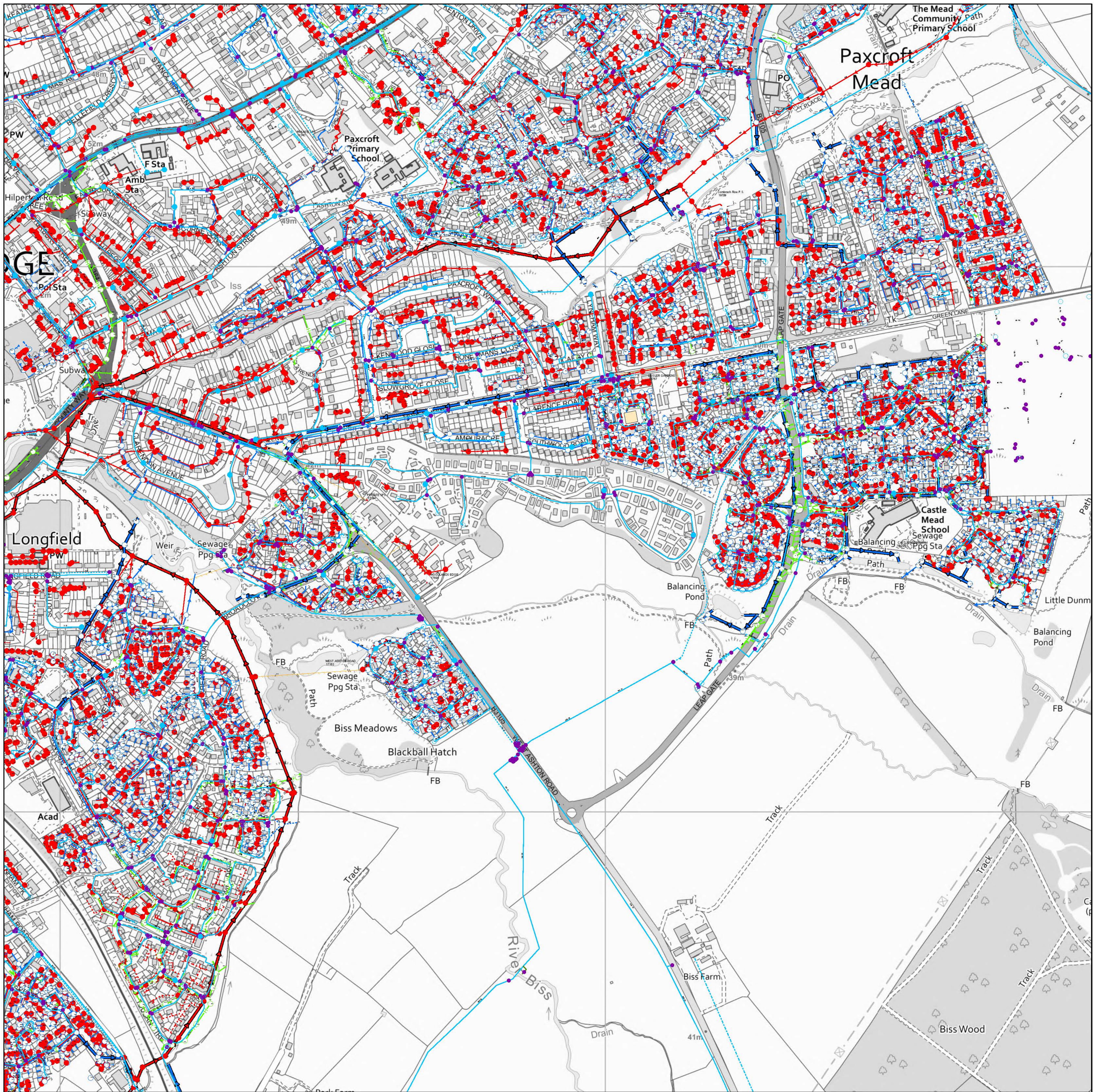


Appendix 3

Wessex Water Web Map



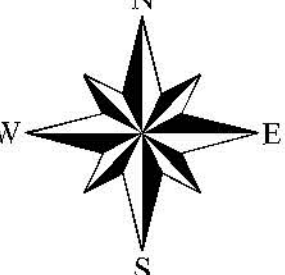
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WATER MAINS	SEWERS	STRATEGIC	PUBLIC	PRIVATE	SECTION 104	OTHER WESSEX PIPES	NON-WESSEX / UNKNOWN
Distribution	Foul					Rising Mains	Private Rising Mains
Washout	Surface					Standby Rising Mains	Culverted Watercourse
Raw Water	Combined					Effluent Disposal	Highway Drain
Abandoned	Abandoned					Overflow	Use Unknown
Private						Syphon	Status Unknown
Colours generally indicate the use of the sewer/drain (i.e Red - Foul, Dark Blue - Surface, Magenta - Combined/Dual Use, Light Green - Highway Drain, Mid Green - Overflow).							
Some styles of line and symbol are shown on the key in sample/typical colours.							
FITTINGS	STRUCTURES						
Hydrant	Manhole - Foul		Pumping Station - Surface				
Other	Manhole - Surface		Pumping Stn - Foul/Combined				
	Manhole - Combined		Gully				
	Inlet	Outfall	Vent Column				
	Lamphole		Rodding Eye				
	Bifurcation - Foul		Catchpit				
	Bifurcation - Surface		Flushing Chamber				
	Bifurcation - Combined		Soakaway				
	Combined Sewage Overflow		Non Return Valve				
			Air Valve	Hatch Box	Washout		
						OTHER STRUCTURES	Chamber
						Attenuation Tank	Tunnel
						Storage Tank	Interceptor

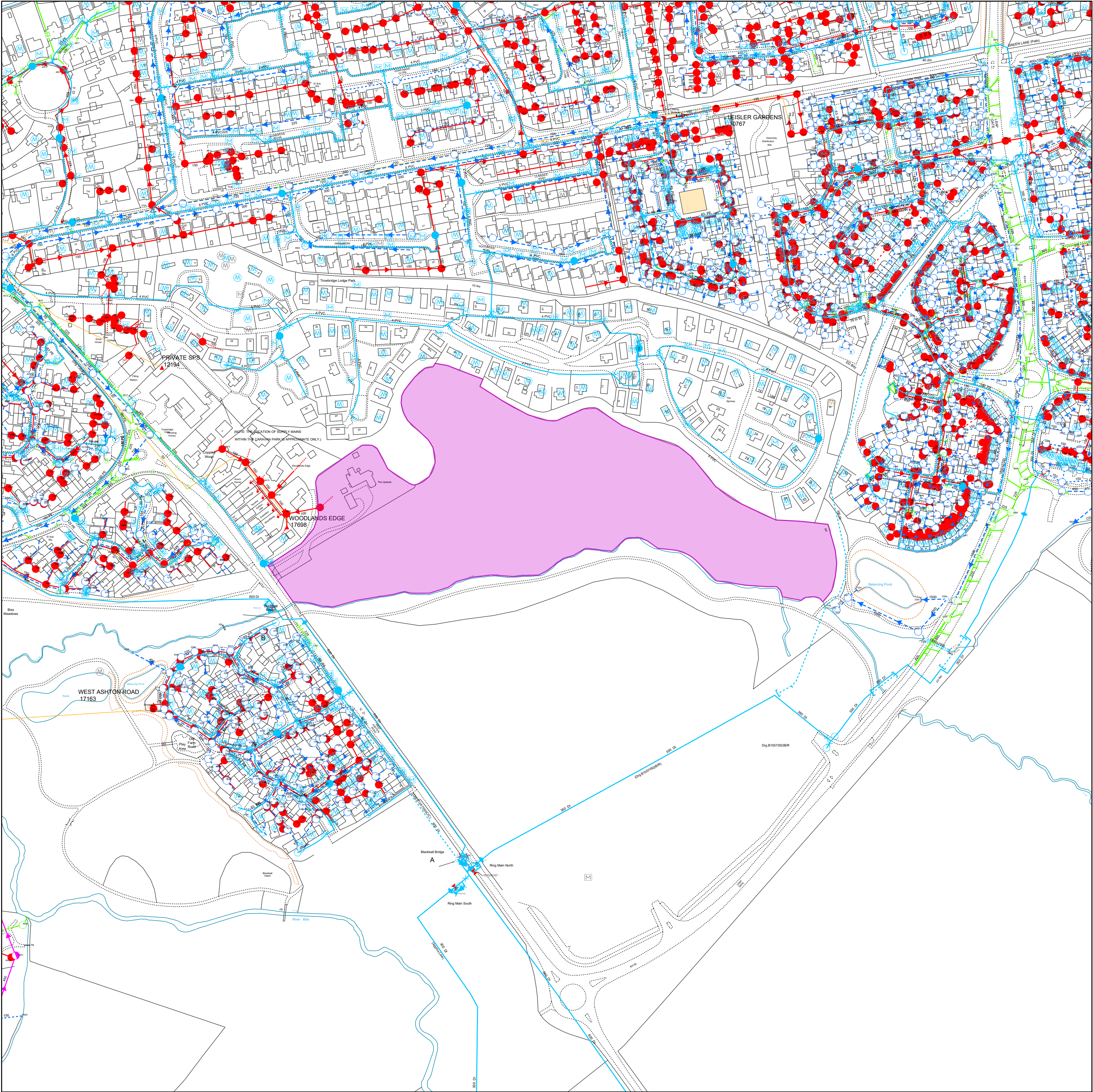
Information in this map is provided for identification purposes only. No warranty as to accuracy is given or implied. The precise route of pipe work may not exactly match that shown. Wessex Water does not accept liability for inaccuracies. Sewers and lateral drains adopted by Wessex Water under the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011 are to be plotted over time and may not yet be shown. In carrying out any works, you accept liability for the cost of any repairs to Wessex Water apparatus damaged as a result of your works. You are advised to commence excavations using hand tools only. Mechanical digging equipment should not be used until pipe work has been precisely located. If you are considering any form of building works and pipe work is shown within the boundary of your property or a property to be purchased (or very close by) a surveyor should plot its exact position prior to commencing works or purchase. If you are proposing to build over or near Wessex Water's apparatus you should contact the Developer Services Team, tel: 01225 526333 or e-mail: developer.enquiries@wessexwater.co.uk to discuss your proposals. Details of assets within Wessex Water's land ownership are unavailable through this service.

Date:
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Scale:

15/08/2024
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ST85NE/ 440 Asset Map



WATER MAINS

- | | | | |
|--|-------------------|--|----------------|
| | Distribution Main | | Abandoned Main |
| | Washout Main | | Private Main |
| | Raw Water Main | | |

SITES

- Collecting Tank
- Source (Header)
- Source (Other)
- Reservoir
- Pump
- Treatment Works

FITTINGS

- Valve - Open
- Valve - Closed
- Fire Hydrant
- Pressure Reducing Valve
- Meter

SEWERS

PUBLIC PRIVATE SECTION 104

- | | | | |
|--|-----------|--|--|
| | Foul | | |
| | Surface | | |
| | Combined | | |
| | Abandoned | | |

OTHER WESSEX PIPES

- Rising Mains
- Standby Rising Mains
- Effluent Disposal
- Overflow
- Syphon

NON-WESSEX / UNKNOWN

- Private Rising Mains
- Culverted Watercourse
- Highway Drain
- Use Unknown
- Status Unknown

Colours generally indicate the use of the sewer/drain (i.e Red - Foul, Dark Blue - Surface, Magenta - Combined/Dual Use, Light Green - Highway Drain, Mid Green - Overflow) styles of line are shown on the key in sample/typical colours.

STRUCTURES

- | | | | |
|--|--------------------------|--|-----------------------------|
| | Manhole - Foul | | Pumping Station - Surface |
| | Manhole - Surface | | Pumping Stn - Foul/Combined |
| | Manhole - Combined | | Gully |
| | Outfall | | Vent Column |
| | Inlet | | Rodding Eye |
| | Lamphole | | Catchpit |
| | Bifurcation - Foul | | Flushing Chamber |
| | Bifurcation - Surface | | Soakaway |
| | Bifurcation - Combined | | Non Return Valve |
| | Combined Sewage Overflow | | Washout |
| | | | Air Valve |
| | | | Hatch Box |

OTHER STRUCTURES

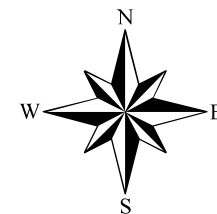
- | | | | |
|--|------------------|--|-------------|
| | Attenuation Tank | | Chamber |
| | Storage Tank | | Tunnel |
| | | | Interceptor |

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Wessex Water
YTL GROUP



Date: 27/04/2026
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Response to: jpockett@coleedasdon.com			
Planning Ref:	N/A	Email:	Planning.liaison@wessexwater.co.uk
Proposal:	Development Comprises of 40 detached houses.	Our Ref:	ST85NE/ 440 Project ref: 0040130
Location:	Uplands Trowbridge, Wiltshire, BA14 6DW	Date:	28/04/2026

Existing Services

100mm diameter public foul sewer to the West of the Uplands

Standoff Requirements

Wessex Water requires access to undertake our statutory duties as set out in the Water Industry Act 1991 to maintain and repair our assets. Therefore, there must be no buildings within a minimum of 3m either side of the outer edge of the 150mm diameter public foul sewer and no tree planting within a minimum of 6m. This includes no surface water attenuation features and associated earthworks in the standoff strip, changes in ground levels resulting in additional loading or excavation can lead to instability in the pipe.

The foul sewer must not run through enclosed private rear gardens, or any enclosed areas, it must be within a 6m (3m either side of the outer edge) open access strip or roads. Wessex Water require unrestricted access to maintain and repair our apparatus.

Protection Measures

The applicant will need to agree protection arrangements for the existing 150mm public foul sewer which crosses the site (standoff details as given above). Any damage to our apparatus by third parties will result in a compensation claim.

All existing apparatus must be accurately located on site and marked on deposited drawings.

A map showing all known Wessex Water assets within the area of the proposed site is attached at the bottom of this response. Additional maps can be obtained from our website [Mapping enquiries \(wessexwater.co.uk\)](https://www.wessexwater.co.uk/mapping-enquiries)

Note: Information in this map is provided for identification purposes only. No warranty as to accuracy is given or implied. The precise route of pipe work may not exactly match that shown. Wessex Water does not accept liability for inaccuracies. Sewers and lateral drains adopted by Wessex Water under the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011 are to be plotted over time and may not yet be shown. In carrying out any works, you accept liability for the cost of any repairs to Wessex Water apparatus damaged as a result of your works. You are advised to commence excavations using hand tools only. Mechanical digging equipment should not be used until pipe work has been precisely located.

Foul Drainage

Wessex Water will accommodate domestic type foul flows in the public foul sewer with connections made on a size for size basis, Developers fund the cost of connecting to the nearest 'size for size' sewer. The minimum diameter receiving sewer to meet size for size principles for a development of this magnitude is 150mm.

Your proposed connection point is not of suitable diameter. The nearest (known) public foul sewer of suitable dimension or greater is the 150mm upstream of FWMH ST86576410. However, site investigation of the downstream

pipe of FWMH ST86576410 to prove it is a 150mm diameter may allow for connection into the manhole. This would be your chargeable point of discharge.

The point of connection to the public network is by application and agreement with Wessex Water.

Capacity Appraisal

An assumed foul discharge rate for 40 residential properties would be circa 1.85l/s.

Capacity in the local network is limited and prone to surcharge in a 1 in 5yr event. Therefore, it will be necessary to undertake a full capacity appraisal to identify, what, if any network reinforcement will be required to accommodate the proposed foul flows from this development. The discharge of 40 plots into the Woodlands Edge SPS also represents a greater than 10% increase, so a more detailed appraisal to identify, what, if any reinforcement will be required.

You should be aware, that Wessex Water don't have capacity appraisal and improvement schemes readily prepared for sites that do not have current planning permission. Upon any grant of planning permission for this site, it will be necessary to undertake a modelling assessment and, if deemed necessary, plan, design and construct a scheme of works to accommodate Capacity the proposed foul flows. It would be beneficial if you could keep us updated with the progress of any planning application you submit in relation to this development.

Surface Water Drainage (rainwater falling onto, and running off, impermeable surfaces)

Surface water must be disposed of via the SuDS Hierarchy which is subject to Building Regulations and NPPF.

No surface water runoff, land drainage or ground water will be accepted into a public sewer that carries sewerage, either directly or indirectly.

The National Planning Policy Framework (NPPF) mandates that Sustainable Drainage Systems (SuDS) must be incorporated into new developments to manage surface water runoff, mitigate flood risks, and provide additional benefits, including enhanced water quality and green spaces.

In line with the drainage hierarchy outlined in Approved Document H of the Building Regulations, Planning Practice Guidance, and the necessity to address water scarcity, all surface water runoff should aim to be discharged as high up the surface water discharge hierarchy as feasible.

The national surface water hierarchy has been updated and runoff from the development shall be discharged to the following final destinations, to the maximum extent practicable, in accordance with the below hierarchy:

- Collected for non-potable use (water re-use)
- Infiltrated to ground
- Discharged to an above ground surface water body
- Discharged to a surface water sewer, or another piped surface water drainage system

Note: To utilise a lesser priority final-destination, appropriate evidence shall be provided that demonstrates all higher priority final destinations have been utilised to the maximum extent practicable. Higher cost alone shall not be a reason to utilise lower priority final destinations.

Wessex Water statement on surface water discharge can be accessed via the following link: [wwds-dev063p-rainwater-drainage-policy.pdf](#)

Adoption

Wessex Water can adopt SuDS features as part of a surface water sewer network, SuDS schemes will be required to have full S104 technical approval and full planning approval before construction work begins. All drainage design requirements for the site (discharge rates, attenuation, climate change etc.) must be agreed, in consultation with the Local Planning Authority / Lead Local Flood Authority, prior to the submission of a formal S104 application. Adoption is by agreement with Wessex Water. More detailed information and guidance for adoptable standards can be found on our Developer Services Web Pages [Sector guidance on sewerage and water adoption agreements \(wessexwater.co.uk\)](https://www.wessexwater.co.uk/sector-guidance-on-sewerage-and-water-adoption-agreements)

Please Note: Wessex Water will not accept any surface water runoff, land drainage or ground water discharge to the public foul sewer network, either directly or indirectly.

Water Infrastructure

Wessex Water will provide a point of connection for new water mains to be laid into the development site, either through a Section 41 agreement or a self-lay arrangement.

Developers may connect to our water network on a size for size basis at their cost and Wessex Water will undertake any network reinforcement that may be required to accommodate granted development, this is funded through our infrastructure charging arrangements. Upon grant of planning Wessex Water will undertake a modelling exercise to determine the impact on our network and manage any necessary improvements.

The minimum diameter supply main at point of connection, to meet size for size principles, for a development of this magnitude is 90 mm.

The nearest public water main of suitable dimension or greater is the 100mm located on The Spinney. This would be your chargeable point of discharge.

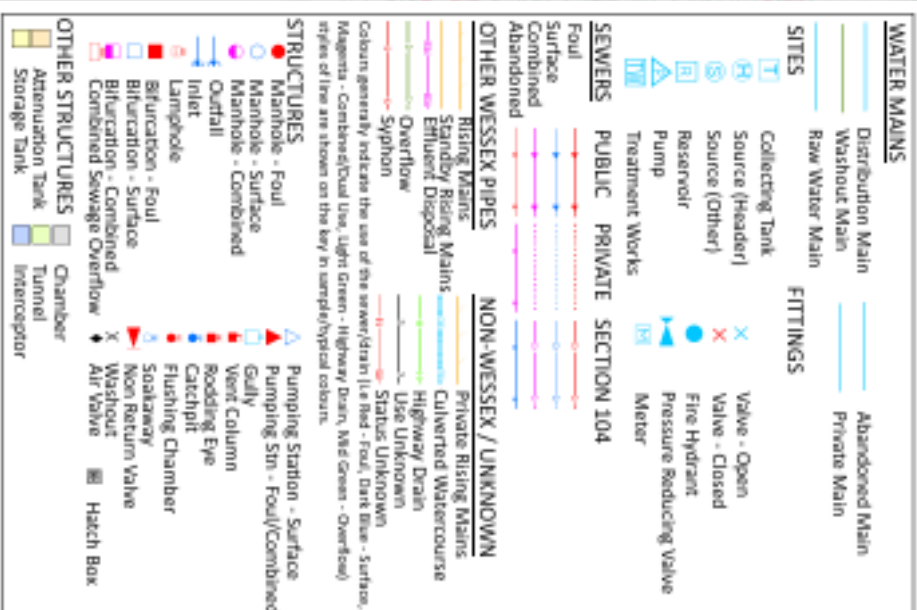
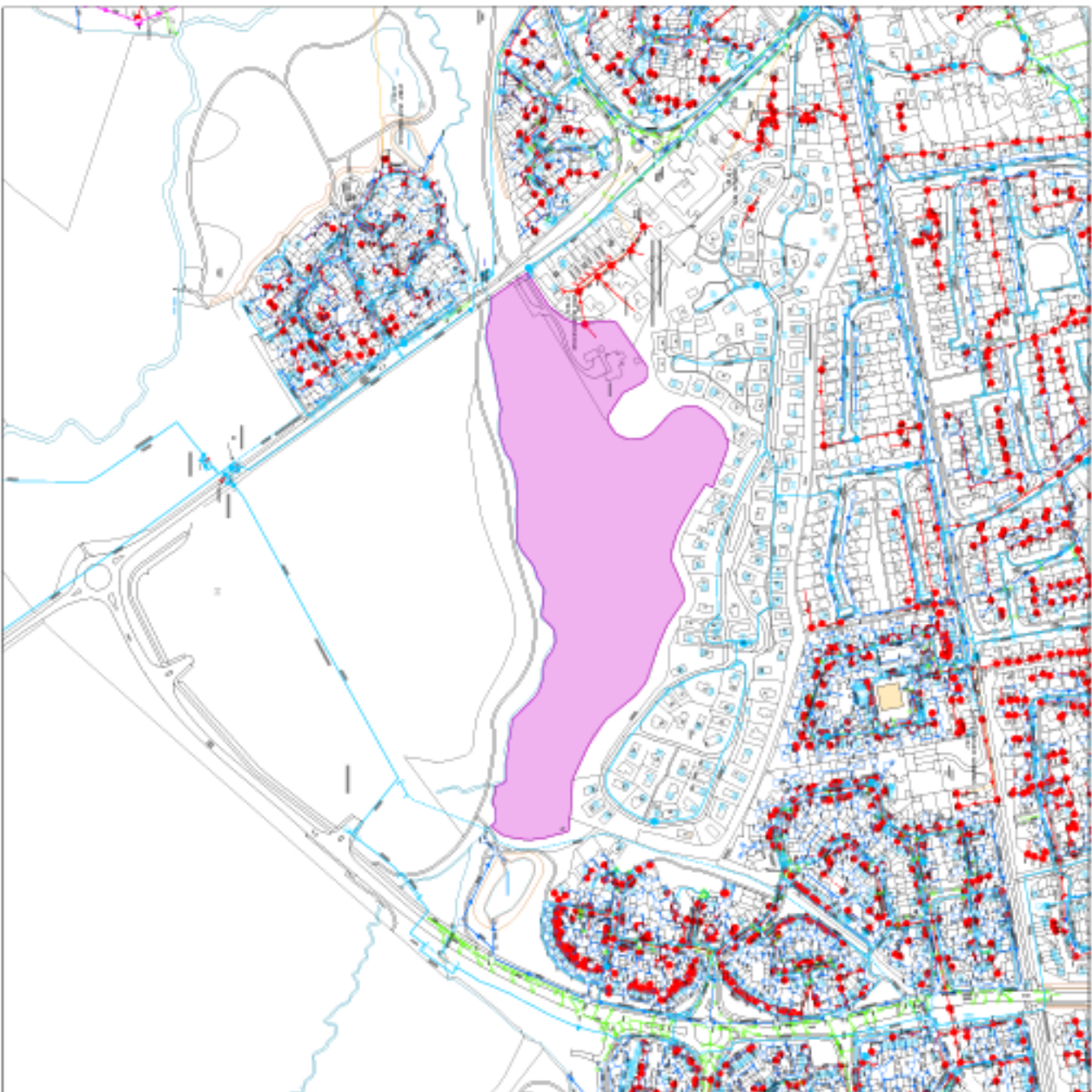
Please note: On site private storage and pump systems will be required for buildings greater than 2 storeys high. No guarantee can be given on a specific pressure or to maintaining that pressure. Normally it will be no less than 10m head of water. (1 bar pressure at 9 litres a minute) on the property boundary.

New Appointments and Variations (NAVs)

The NAV Market enables developers to choose their water and sewerage undertaker for a specific geographic area.

For developers wishing to consider an alternative supplier or seeking further information, a full list of appointees and further guidance can be found on the [Wessex Water](https://www.wessexwater.co.uk) and [Ofwat website](https://www.ofwat.gov.uk).

NOTE: These comments are based upon known circumstances prevailing at the time of writing. A review of the contents of this document is required where 18 months or more have elapsed since issue or in the light of significant changes likely to impact upon the response (e.g., changes in development numbers or phasing). Please email review requests to planning.liaison@wessexwater.co.uk

[illegible]

Date: 27/04/2026
Centre: 386914E, 15740
Scale: 1:2,500
(papers printed at A2 size)



Appendix 4



Land West of Bliss Farm, Trowbridge, BA14 6DS

Ground Investigation



Hills Homes Developments Ltd

November 2024

P24-286gi

Milton Keynes: The Log Cabin, Manor Farm, Whaddon Road, Newton Longville, Milton Keynes, MK17 0AU

Swindon/Oxford: 21 Tyrell Close, Stanford in the Vale, Oxon, SN7 8EY

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 - Site Location Plan
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 - Aerial Photographs
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 - Hazwaste Online Classification Report
 - Chemical Analysis Reports (Waste Acceptance Criteria Testing)
- F Ground Gas Monitoring Data**
 - Monitoring Data

ISSUE	DATE	Written By	Comments
1	16/11/2024	Martin Gill BSc MSc FGS	-
		Checked by	
		Matthew Paddock MSc FGS	

1.0 INTRODUCTION

Paddock Geo Engineering Limited (PGE) were instructed by Hill Homes Developments Ltd; the Client, to undertake a Ground Investigation including a geotechnical appraisal and Generic Site Contamination Assessment as Stage 2 Tier 2 (formerly referred to as Phase 2) of a Site Contamination Assessment of the subject site, referred to as Land West of Bliss Farm, Trowbridge, BA14 6DS.

1.1 Terms of Reference

- Land Contamination Risk Management (LCRM) 2023, Environment Agency
- British Standards BS 10175:2011 Investigation of Potentially Contaminated Sites – Code of Practice.
- BS 5930:2015 Site Investigation Code of Practice
- PPG23 (PPS23) Planning and pollution control (contaminated land aspects), 2002 (withdrawn)
- GPLC1 Guiding Principles for Land Contamination, 2010, Environment Agency
- Environmental Protection Act: 1990 – Contaminated Land Statutory Guidance, April 2012, DEFRA
- BS EN 1997-2, Eurocode 7. Geotechnical design. Ground investigation and Testing
- BS EN ISO 22475 Series (1-3), Geotechnical investigation and testing. Sampling methods and groundwater measurements.
- NHBC Standards Chapter 4.2 2006, Building Near Trees
- TRL Laboratory Report 1132:1984 – The Structure of Bituminous Road, Appendix C Table C1
- BS EN ISO 22475 Series (1-3), Geotechnical investigation and testing. Sampling methods and groundwater measurements.
- BRE412 1996 Desiccation in Clay Soils
- BRE240 1993 Low Rise Buildings on Shrinkable Clay Soils: Part 1
- BRE241 1990 Low Rise Buildings on Shrinkable Clay Soils: Part 2
- BS 8485:2015 Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings
- CIRIA C665 Assessing risks posed by hazardous ground gases to buildings. CIRIA 2007
- NHBC report No 10627-R01(04) Guidance on development proposals on sites where methane and carbon dioxide are present (March 2007)
- CL:AIRE Research Bulletin RB17 A pragmatic approach to ground gas risk assessment (November 2012)
- CIRIA C735 Good practice and verification of protection systems for buildings against hazardous ground gases.

1.2 Objectives

The objective of the Ground Investigation for the site comprised the following elements:

- An Intrusive Investigation;
- A Site Contamination Assessment including a Generic Human Health Risk Assessment; and Ground Gas Risk Assessment;
- A Geotechnical Appraisal;
- A Waste Classification Assessment.

The scope of work was discussed and agreed with the Client prior to commencement. The investigation was carried out in order to provide data on the sub-soil characteristics of the site, the groundwater regime and also to recover samples for geotechnical laboratory testing and chemical analysis. This data was employed to derive a ground model for the site, foundation design criteria and a generic human health contamination risk assessment including ground gas risk assessment.

2.0 THE SITE

2.1 Site Description

The site comprises an irregular shaped plot of land, accessible off the public road West Ashton Road, adjoining to the west site boundary through controlled electronic gates.

The site is situated some 1.25km southeast of Trowbridge town centre subject site covers an area of approximately 5.74 hectares, with the centre of the site at approximate national grid reference 386920, 157430.

Site Location Plans and an Aerial Photograph are presented in Appendix A.

2.2 Proposed Development

The proposed development scheme is still in the planning stage with the exact site layout to be confirmed.

It is anticipated the proposed development will include a mix of flats, detached, semi-detached and terraced dwellings with private garden areas. Therefore, the soil contamination exposure characteristics for the proposed development will be comparable to residential with plant uptake.

A proposed development plan is presented within Appendix A.

3.0 PRELIMINARY CONTAMINATION RISK ASSESSMENT SUMMARY

An associated Preliminary Contamination Risk Assessment (PRA) has been carried out for the site by PGE reference P24-286pra, with which reference should be made. Salient data from the PRA report has been summarised and extracted and presented in the following sections for reference.

3.1 Historic Land Use on the Site and Surrounding Area

The earliest available map is dated 1887 and shows the site to comprise a parcel of undeveloped land presumably utilised for agricultural purposes and remains unchanged up to 1938 when a building is shown in the northwest corner of the site. The site itself essentially remains unchanged up to the present.

The site surrounds are shown to be a mix of agricultural fields and wooded areas in 1887 up to the 1969 map editions where progressive residential development is shown passing from west to east over agricultural land and the vegetated areas to the north. From the year 2000 to 2024 additional housing is shown the west and northeast of the site.

3.2 PRA Walkover Description

A site walkover survey was conducted on 3rd October 2024 for the associated PRA by a representative of Paddock Geo Engineering Limited.

The site is represented by a single enclosed field with an adjoining property to the northwest. At the time of PGE's attendance, the site was an unoccupied well-kept grass field which had been developed as an extension to the existing properties gardens. The general topography of the site was flat, with a very gradual trend falling away to the south towards an unnamed water course bordering the south of the site, flowing west ultimately joining the River Bliss, some c.280m west of the site. The site was entirely surfaced with grass.

The site boundaries were marked by a mix of post-and-rail fencing to the northwest and hedges, which marked the rest of the site edges. The site was accessed via a gate to the northwest, via the private residence vehicle access off West Ashton Road. In the east portion of the site was an overhead power cable, trending north-south, which will likely require an easement for working plant.

No evidence of any above ground or below ground fuel tanks was noted during our survey. The current owner confirmed they have no knowledge of any fuel or oil tanks being situated within the area of investigation.

The site in general appears to be low risk in terms of potential sources of on-site contamination. The most likely sources of on-site contamination are associated with the sites historical use as a private residence with the potential for limited and isolated fuel spillages from machinery and potentially unrecorded Made Ground associated with possible landscaping activities.

3.3 Surrounding Area

The site is situated on the southeastern extent of the town of Trowbridge.

The site, as described above, is bounded by residential properties to the north, east and west and adjoins the West Ashton Road to the west. An unnamed water course adjoins the south of the site, flowing west with an open plot of land extending further to the south beyond.

The surrounding land uses follow the above site walkover description. The following trade directories are recorded on the Envirocheck:

The Envirocheck Report identifies 50no. contemporary trade directories within 1km of the site. The nearest active record relates to 'Dentpopper', located at 5, Old Farm Road, West Ashton, Trowbridge, Wiltshire, BA14 6FP, some 126m southwest of the site, classified as 'Car Breakdown & Recovery Services'. The nearest inactive record relates to 'Freedom Electricals', located at 4, Wheat Close, West Ashton, Trowbridge, Wiltshire, BA14 6FH, some 165m southwest of the site, classified as 'Electrical goods - servicing & repairs'.

There is a single active fuel station entry within 500m of the site, situated 198m west of the site, located at 'Trowbridge Lodge Service Station, West Ashton Road, Trowbridge, Wiltshire, BA14 6DW'.

Within 500m, the Envirocheck Report identifies no entries for, Integrated Pollution Control; Integrated Pollution Prevention and Control; Local Authority Integrated Pollution Prevention and Control.

The Envirocheck Report identifies 1no. Local Authority Integrated Pollution Prevention and Control entries recorded within 1km of the site. The entry is recorded as 'permitted' and relates to 'PG1/14 Petrol filling station'.

3.4 Geology, Hydrogeology and Hydrology

3.4.1 Geology

Information on the underlying geology at the site has been obtained from the British Geological Survey (BGS) Geological Map Viewer and Geological Mapping provided by Landmark within the Envirocheck Report)

The geological maps indicate that the site is underlain by superficial deposits comprising intermixed coarse-grained and fine-grained Alluvium soils, with Head deposits mapped within the general vicinity.

The geological mapping indicates the bedrock underlying the superficial deposits to be the Oxford Clay Formation.

Geological mapping by the BGS shows the surface expression of local geology, typically within the top 1.2m of the surface. As such the soils encountered at depth may vary from those shown on the mapping.

No artificial ground/Made Ground deposits were recorded on site in the geological maps provided within the Envirocheck Report

3.4.2 Borehole Records

A search was made of the online BGS database for published borehole records within the area. The nearest representative borehole to the subject site is mapped 320m west of the site and is situated within the Alluvium and Oxford Clay Formation. The borehole, reference ST85NE112, was drilled to 7.20m bgl and identified brown sandy CLAY with shells down to a depth of 2.80m bgl, likely alluvium overlying grey CLAY soils likely associated with the Oxford Clay Formation. Groundwater was encountered at 2.00m as a seepage which was cased out during the drilling.

3.4.3 Hydrogeology

The groundwater vulnerability maps for the site and the surrounding areas indicates that the underlying superficial deposits represent a Secondary A Aquifer (Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers).

The underlying bedrock strata is designated as an Unproductive Strata. Unproductive strata are largely unable to provide usable water supplies and are unlikely to have surface water and wetland ecosystems dependent on them.

Soluble Rock Risk is noted to have a recorded 'Significant Risk – Problems Unlikely' classification.

The combined groundwater vulnerability on site is considered by Envirocheck to be 'High'.

The site is not situated within a Groundwater Source Protection Zone (SPZ) and none are mapped within 1km of the site.

There are no groundwater abstractions recorded within 1km of the subject site.

3.4.4 Hydrology

Envirocheck reports the nearest surface water feature, considered to be a controlled water receptor, is an unnamed stream, which flows west, situated along the southern site boundary.

A single pollution incident to controlled waters are recorded by Envirocheck within 1km of the site. The incident is recorded 261m to the west of the site and is listed as 'general biodegradable household domestic waste', dated June 1999.

The Envirocheck report lists 2no. surface abstractions within 1km of the site. both listed 474m west of the site and are for 'Retail Lake & Pond throughflow'.

There is a single discharge consents recorded within 500m of the subject site. The surrendered entry is located 402m to the northeast and related to the discharge of trade effluent discharge-site drainage to into a freshwater stream.

The site falls within an area at risk of flooding and/or at risk of extreme flooding from Rivers but is not listed as falling into an area benefitting from flood defences. This information does not constitute a groundwater flood risk assessment. A specialist should be consulted for a flood risk assessment of this site.

3.4.5 Radon

The subject site is indicated within the Envirocheck Report to be in a lower probability radon area where <1% of homes estimated to be at or above the Action Level (200Bq/m³). The Envirocheck report records, 'No radon protection measures are necessary in the construction of any new dwellings, buildings or extensions' on site.

3.4.6 Waste Management and Landfill

There are no recorded local authority landfills; BGS landfills; historical landfills within 500m of the site.

There is one recorded Licensed Waste Management Facility listed 373m to the east of the site, which is recorded as surrendered in 1994.

There are two recorded entries for waste transfer, situated 358m northeast of the subject site. Both are recorded at 'Scrapmetal Yard Off Green Lane, Trowbridge, Wiltshire' and receive waste including 'Dry Non-Haz. Com./Ind. W Consisting Of Empty Used Containers Except Bonded Asbestos; Metal; Paper/Cardboard/Other Packaging; Plastics'.

3.4.7 Potential Contaminant Sources

The potential contamination sources identified as part of this Preliminary Contamination Risk Assessment are summarised in the table below. The potential contaminants are based on the data within CL8, Department of the Environment (DoE) Industry Profiles, the current and historic site uses.

Table 1: Potential Contamination Sources

Current Potential On-Site Contaminant Sources	Potential Contaminants
Residential Land Use	Inorganics (heavy metals and metaloids), Organics, hydrocarbons (PAH and TPH), and asbestos.
Made Ground	Inorganics (heavy metals and metaloids), Organics, hydrocarbons (PAH and TPH), and asbestos.
Deep Alluvial Deposits	Ground Gases.
Historic Potential On-Site Contaminant Sources	Potential Contaminants
Previously open rural land	None Significant.
Current Potential Off-Site Contaminant Sources	Potential Contaminants
Use of agrichemicals in the local area	Agrichemicals.
Deep Alluvial Deposits	Ground Gases.
Historical Potential Off-Site Contaminant Sources	Potential Contaminants
Agricultural Land-use	Agrichemicals.

3.4.8 Conceptual Source-Pathway-Receptor Model

Table 2: Source-Pathway-Receptor Model for on-site sources

Potential Site Contaminant Sources	Potential Pathways	Potential Receptors	Pathway Complete	Risk Level Classification
Current Residential Land Use Made Ground Deep Alluvial Deposits Historical Previously open rural land	Dermal / direct contact	Current site users (Existing residence)	Yes	Low
	Direct ingestion		No	
	Direct inhalation		No	
	Inhalation of Radon		No	
	Inhalation of wind-blown dust		No	
	Vapour migration		No	
	Ground gas migration		Yes	Low
	Dermal / direct contact	Future site users (residential with home grown produce)	Yes	Low
	Direct ingestion		Yes	Low
	Direct inhalation		No	
	Inhalation of Radon gas		No	
	Inhalation of wind-blown dust		Yes	Low
	Vapour Migration onto the site		No	
	Ground gas migration		Yes	Low to moderate
	Direct contact	Services (following redevelopment)	Yes	Low
	Migration of contaminants: non-aqueous phase		Yes	Low
	Migration of contaminants: aqueous phase		Yes	Low
	Migration of contaminants off-site: non-aqueous phase	Adjacent Properties	Yes	Low
	Migration of contaminants off site: aqueous phase		Yes	Low
	Vapour migration		No	
	Inhalation of wind-blown dust	Ecological Impacts	No	
	Migration of contaminants: non-aqueous phase		No	
	Migration of contaminants: aqueous phase		No	
	Migration of contaminants from site: non-aqueous phase	Controlled groundwater	No	
	Migration of contaminants from site: aqueous phase		No	
	Migration of Contaminants: non-aqueous phase	Surface Waters	Yes	Low
	Migration of contaminants: aqueous phase		Yes	Low

Table 3: Source-Pathway-Receptor Model for off-site sources

Potential Site Contaminant Sources	Potential Pathways	Potential Receptors	Pathway Complete	Risk Level Classification
Current	Dermal / direct contact	Current site users (Existing residence)	No	
	Direct ingestion		No	
	Direct inhalation		No	
	Inhalation of Radon		No	
	Inhalation of wind-blown dust		Yes	Low
	Vapour migration		No	
	Ground gas migration		Yes	Low
	Dermal / direct contact	Future site users (residential with home grown produce)	No	
	Direct ingestion		No	
	Direct inhalation		No	
	Inhalation of Radon gas		No	
	Inhalation of wind-blown dust		Yes	Low
	Vapour Migration onto the site		No	
	Ground gas migration		Yes	Low to Moderate
Historical	Direct contact	Services (following redevelopment)	No	
	Migration of contaminants: non-aqueous phase		No	
	Migration of contaminants: aqueous phase		No	
	Inhalation of wind-blown dust	Ecological Impacts	No	
	Migration of contaminants: non-aqueous phase		No	
	Migration of contaminants: aqueous phase		No	
	Migration of contaminants from site: non-aqueous phase	Controlled groundwater	No	
	Migration of contaminants from site: aqueous phase		No	
	Migration of Contaminants: non-aqueous phase	Surface Waters	No	
	Migration of contaminants: aqueous phase		No	

3.4.9 Potential Contamination Risk Summary

The preliminary contamination risk assessment has identified complete Source-Pathway-Receptor (SPR) linkages with a worst-case Low to Moderate risk level from the potential contamination sources and risk drivers identified on the site and surrounding area.

It is considered unlikely that significant deposits Made Ground are present, however the potential of putrescible organic material within the underlying Alluvium is of a greater risk, although the presence, nature and extent of any such deposits are currently unknown. Further to this there are no landfills or infilled land indicated within 500m of the site, therefore, the risk from ground gases on the site is considered lower bound. However, the highest risk from the S-P-R linkages is attributed to the potential for organic soils within the underlying Alluvial soils which could putrefy and generate ground gases to impact the proposed development.

There is also the potential for the presence of Inorganics, Organics, hydrocarbons (PAH and TPH), and asbestos within any Made Ground associated with the site's previous development. There is also a risk considered from agrichemical use on the site such as pesticides. In addition, there is a low risk associated with the use of potential asbestos on the site. The risk with such features are likely to be localised hotspots.

Given these factors there is considered to be a complete S-P-R linkage between any priority contaminant impacted soils on the site through ground gas migration and accumulation, direct contact, ingestion and windblown dust pathways with the proposed highly sensitive end site user and new buried services. These potential contamination features are also deemed to pose a potential hazard to ecology and controlled waters, albeit with a very low risk level.

Given the discussion above, to assess if a 'Significant Possibility of Significant Harm' is present from potential contamination sources to the proposed future residential site users, it is recommended that an intrusive soil investigation be undertaken focusing on the highlighted potential contaminative features.

Further to this, should any unexpected contamination be identified during the future development groundworks, then a suitably qualified and experienced Geo-Environmental Engineer should be consulted and if necessary further assessment should be undertaken.

3.4.10 Potential Geotechnical Risk Summary

A maximum "Moderate" geotechnical risk was identified on-site within the Envirocheck Report associated with the anticipated underlying natural geology in relation to the volume change of fine-grained soils and low consolidation of the Alluvium superficial strata.

It is recommended that a geotechnical appraisal of the site be carried out to determine the geology and groundwater beneath the site and to derive foundation design criteria for the structures on the site.

4.0 PREVIOUS GROUND INVESTIGATIONS

PGE are not aware of any intrusive ground investigation or contamination risk assessment being carried out on the subject site previously.

5.0 INTRUSIVE INVESTIGATION FIELDWORKS

Following the recommendations and conclusions from the associated PRA, an intrusive investigation was designed to establish the ground conditions beneath the site in relation to the development of a Ground Model for the proposed development and to assess the contamination status of the near surface soils.

The works were also employed to gather geotechnical data to derive geotechnical foundation design parameters, gather infiltration data, to assess the contamination status of the near surface soils and potential for gaseous / volatile contamination on site.

The main fieldworks were carried out over the course of a two days, commencing on 3rd October 2024 and comprised the forming of 9no. percussion liner sampler boreholes (WS01 to WS09) and a total of 15no. trial pits, 4no. for observation (TP01 to TP04), 6no. for LWD CBR testing (TP05 to TP10) and 5no. (SA01 to SA05) for infiltration testing to BRE365.

Soil strength testing was undertaken in the field employing Standard Penetration Tests (SPT) carried out in general accordance with BS EN ISO 22476-1:2012 and 22476-3:2005+A1:2011. The SPTs were undertaken generally at 1.0m intervals within the percussion liner sampler boreholes.

Hand Vane shear tests were undertaken on regular intervals on suitable fine-grained arisings as excavations progressed with the result provided in the trial pit and borehole logs.

The exploratory points were positioned in open accessible areas and to clear buried services following the principals of PAS 128:2014 and HSG47:2014, a Cable Avoidance Tool (CAT) survey and consultation of buried services plans where available. Service inspection chamber covers were lifted to determine the exact runs of buried services.

The exploratory points were formed to assess the geological succession beneath the site, near surface contamination, to gather geotechnical and groundwater data to derive geotechnical design parameters, to undertake infiltration testing and to add data to the Ground Model for the site. The details and rationale of the exploratory point placement is summarised below.

Table 4: Exploratory Location Details and Rationale

Exploratory Location (Depth)	Location Details
WS01(5.00m)	North of the site, to target the area near the existing dwelling and.
WS02(5.00m)	Northeast of the site, to target potential alluvium gas source.
WS03(5.00m)	East of the site of the site, to target potential alluvium gas source.
WS04(5.00m)	South portion of the site, to target potential alluvium gas source.
WS05(5.00m)	Centre of the site, to target the area near the existing dwelling and.
WS06(5.00m)	Southwest of the site, to target potential alluvium gas source.
WS07(5.00m)	South of the site, to target the alluvium.
WS08(5.00m)	North of the site, to target the bedrock strata.
WS09(4.00m)	southeast of the site, to target the alluvium.
SA01(2.15m)	Southeast of the site, to target the alluvium.
SA02(1.00m)	North of the site, to target the bedrock strata.
SA03(1.45m)	South of the site, to target the alluvium.
SA04(1.20m)	North of the site, to target the bedrock strata.
SA05(1.10m)	Southwest of the site, to target the alluvium.
TP01(0.80m)	Southeast of the site, to target the alluvium.
TP02(2.10m)	Southeast of the site, to target the bedrock strata.
TP03(0.90m)	North of the site, to target the bedrock strata.
TP04(1.80m)	South of the site, to target the alluvium.
TP05(0.60m)	North of the site, to target the bedrock strata.
TP06(1.90m)	Centre of the site, to target the bedrock strata.
TP07(0.80m)	North of the site, to target the bedrock strata.

Exploratory Location (Depth)	Location Details
TP08(0.80m)	South of the site, to target the alluvium.
TP09(2.00m)	Southwest of the site, to target the alluvium.
TP10(1.00m)	Southwest of the site, to target the alluvium.

The percussion liner boreholes, as listed in the table above were typically drilled to depths of between 5.00m in order to determine the shallow ground conditions across the site. The trial pits were excavated to depths of c. 2m, however, in several locations the trial pits refused on competent bedrock strata.

Soil samples were recovered from the exploratory positions for subsequent laboratory testing.

Boreholes WS01 to WS06 were utilised for the installation of monitoring wells to depths of 5.00m bgl, comprising c.4.00m of perforated 43mm internal diameter pipe with a screened 3-6mm gravel pack, with c.1.00m of solid pipe at the surface and a wetted bentonite pellet seal. The wells were sealed with a bung and gas taps and completed at surface with a blue coloured solid well pipe upstand for ease of identification during the monitoring period.

The depths of the exploratory positions, sample details, strata descriptions and comments on the groundwater conditions are detailed on the logs, which are presented in Appendix B along with an Exploratory Point Location Plan.

On site assessment of the arisings on site using a PID with a 10.6eV bulb calibrated on 100ppm Isobutylene did not indicate any detectable VOCs. Olfactory assessment of the samples recovered indicated no identifiable contamination.

A series of photographs taken during the fieldworks are presented in Appendix B.

5.1 Encountered Strata

The exploratory point arisings were logged by a suitably qualified Geo-Environmental Engineer generally in accordance with BS 5930:2015 and associated guidance BS EN ISO 14688-1:2002 and BS EN ISO 14689-1:2003. The mapped geology beneath the site indicated that the subject site was positioned on Alluvium overlying the bedrock geology of the Oxford Clay formation, which extend to depth.

The investigation achieved target depths of up to 5.00m bgl and confirmed a veneer of Topsoil Like Made Ground and Made Ground to depths of 0.20m and 0.60m. Underlying the Topsoil Like Made Ground was a unit of fine-grained Alluvium soils underlying the southern portion of the site, at a thickness of around 0.30m (TP07) – 3.90m (WS08). Underlying the Alluvium, where present, was the Weathered Oxford Clay Formation extending to depths of 3.00m (WS05) and 4.50m (WS03) although locally the weathered Oxford Clay Formation extended beyond 5.00m depth. At the base of numerous locations the Oxford Clay Formation bedrock was encountered, the full thickness of which was not proven in any location.

TOPSOIL LIKE MADE GROUND SURFACING

The Topsoil Like Made Ground [Referred to as Topsoil from here for brevity] was encountered in all locations from surface to depths of 0.20m to 0.30m with an average thickness of 0.25m. The Topsoil



was represented by grass onto, a firm dark brown slightly sandy gravelly organic CLAY, the gravel was composed of fine to medium flint and in several locations, brick was noted to be present.

The Topsoil was identified with stratigraphic markers of surface location and organic content.

MADE GROUND

The Made Ground was encountered in locations WS03, from depths of 0.30m to 0.60m. The Made Ground was represented by a stiff dark grey brown slightly sandy gravelly CLAY with the gravel comprising fine to coarse subangular to subrounded flint brick and quartzite.

The Made Ground was distinguished with stratigraphic markers of brick gravel and under-consolidation relative to the below Oxford Clay Formation strata.

ALLUVIUM

The Alluvium was encountered in all locations, extending to depths of 0.50m (SA04) to 4.20m (WS08). The Alluvium was represented by a firm dark brown mottled orange slightly sandy slightly gravelly CLAY with the gravel constituent composed of fine to medium subangular to subrounded flint.

The Alluvium was identified with stratigraphic markers of orange colour, higher bound sand content and under-consolidation relative to the below (weathered) Oxford Clay Strata.

Although no trial pits suffered significant notable collapse, the Alluvium should be considered an unstable medium, given its low consolidation and saturated nature.

Groundwater strikes within the Alluvium are considered to be representative of the underlying aquifer and are likely in communication with the nearby surface water course adjoining the south site boundary.

WEATHERED OXFORD CLAY FORMATION

The Weathered Oxford Clay Formation was encountered in locations WS01 to WS09; SA01, SA02, SA04, SA05; TP02, TP06, TP07 and TP09. The Weathered Oxford Clay Formation was noted to extend to depths of 1.00m and 4.50m where the base was proven. In location WS08 the base of the weathered unit was not proven. The weathered oxford clay was described as stiff light blue mottled orange and brown slightly sandy CLAY with abundant pockets of selenite crystals present.

The weathered unit was distinguished by the presence of orange discolouration. However, there was minimal apparent reducing in consolidation or strength compared to the underlying bedrock strata.

OXFORD CLAY FORMATION

The Oxford Clay Formation was encountered in locations WS01 to WS07, WS09 SA01 to SA03 and SA04. The base of the Oxford Clay Formation bedrock strata was not proven in any location. The bedrock strata was described as stiff, light blue grey slightly sandy CLAY, notably abundant pockets of selenite crystals were present in the recovered samples.

The Oxford Clay Formation was distinguished with stratigraphic markers of depth, colour and relative consolidation.

5.2 ROOTS

No obvious tree roots were encountered in the majority of locations across the site. The majority of positions were situated away from field boundaries, simply for coverage and in some cases, targeting soil strata. Significant roots and rootlets were not observed within any exploratory locations and it is considered likely that there may be significant impact from mature trees around the field boundaries.

The site is bordered by semi-mature and mature hedges and trees.

Referring to NHBC (2024) Chapter 4.2, Table 3 and Table 3a. The mature height should be assumed all tree species not considered immature. NHBC (2024) Chapter 4.2, Table 3b indicates lateral extent of the mature height should be assumed. Exact influence distances should be calculated by the design engineer with foundation depths following relevant recommendations in NHBC, CIRIA and BSI literature.

5.3 Visual Contamination

Evidence of visual and/or olfactory contamination observed within the exploratory positions is summarised below.

Table 5: Summary of visual / olfactory evidence of contamination

Exploratory Location (Depth)	Evidence of Contamination
WS01(5.00m)	Topsoil to 0.30m depth, containing no obvious anthropogenic contaminants noted.
WS02(5.00m)	Topsoil to 0.20m depth, containing no obvious anthropogenic contaminants noted.
WS03(5.00m)	Made Ground to 0.60m depth, containing brick.
WS04(5.00m)	Topsoil to 0.30m depth, containing no obvious anthropogenic contaminants noted.
WS05(5.00m)	Topsoil to 0.20m depth, containing no obvious anthropogenic contaminants noted.
WS06(5.00m)	Topsoil to 0.20m depth, containing no obvious anthropogenic contaminants noted.
WS07(5.00m)	Topsoil to 0.20m depth, containing brick.
WS08(5.00m)	Topsoil to 0.30m depth, containing brick.
WS09(4.00m)	Topsoil to 0.30m depth, containing no obvious anthropogenic contaminants noted.
SA01(2.15m)	Topsoil to 0.40m depth, containing no obvious anthropogenic contaminants noted.
SA02(1.00m)	Topsoil to 0.20m depth, containing no obvious anthropogenic contaminants noted.
SA03(1.45m)	Topsoil to 0.30m depth, containing no obvious anthropogenic contaminants noted.
SA04(1.20m)	Topsoil to 0.30m depth, containing no obvious anthropogenic contaminants noted.
SA05(1.10m)	Topsoil to 0.20m depth, containing no obvious anthropogenic contaminants noted.

Exploratory Location (Depth)	Evidence of Contamination
TP01(0.80m)	Topsoil to 0.30m depth, containing no obvious anthropogenic contaminants noted.
TP02(2.10m)	Topsoil to 0.30m depth, containing no obvious anthropogenic contaminants noted.
TP03(0.90m)	Topsoil to 0.20m depth, containing no obvious anthropogenic contaminants noted.
TP04(1.80m)	Topsoil to 0.20m depth, containing no obvious anthropogenic contaminants noted.
TP05(0.60m)	Topsoil to 0.20m depth, containing no obvious anthropogenic contaminants noted.
TP06(1.90m)	Topsoil to 0.20m depth, containing brick.
TP07(0.80m)	Topsoil to 0.20m depth, containing brick.
TP08(0.80m)	Topsoil to 0.30m depth, containing no obvious anthropogenic contaminants noted.
TP09(2.00m)	Topsoil to 0.30m depth, containing brick.
TP10(1.00m)	Topsoil to 0.20m depth, containing no obvious anthropogenic contaminants noted.

5.4 Groundwater Conditions

The following table summarises the depth of groundwater strikes across the site during the drilling and associated standing water levels on completion of the borehole.

Table 6: Water Strike Details

Exploratory Location (Depth)	Water Strike Details
WS01(5.00m)	No groundwater encountered during drilling.
WS02(5.00m)	Groundwater strike at 3.42mbgl standing at 3.42mbgl over 20 minutes.
WS03(5.00m)	Groundwater strike at 3.1mbgl rising to 2.50mbgl over 20 minutes.
WS04(5.00m)	No groundwater encountered during drilling.
WS05(5.00m)	No groundwater encountered during drilling.
WS06(5.00m)	Groundwater strike at 1.90mbgl rising to 1.10mbgl over 20 minutes.
WS07(5.00m)	No groundwater encountered during drilling.
WS08(5.00m)	No groundwater encountered during drilling.
WS09(4.00m)	Seepage at 1.30m.
SA01(2.15m)	Groundwater strike at 2.00mbgl rising to 2.00mbgl over 20 minutes.
SA02(1.00m)	No groundwater encountered during excavation.
SA03(1.45m)	
SA04(1.20m)	
SA05(1.10m)	
TP01(0.80m)	
TP02(2.10m)	
TP03(0.90m)	
TP04(1.80m)	
TP05(0.60m)	
TP06(1.90m)	
TP07(0.80m)	

Exploratory Location (Depth)	Water Strike Details
TP08(0.80m)	
TP09(2.00m)	
TP10(1.00m)	

The groundwater encountered is considered to be associated with the underlying Secondary Aquifer, situated within the Alluvium. It should be noted that groundwater levels may vary seasonally and with other factors. The reviewer should satisfy themselves with the groundwater levels at the time of any construction works.

Subsequent groundwater monitoring indicated the following:

Table 7: Water Monitoring Details

Groundwater Level (m bgl) and Monitoring Date	Exploratory Point (Basal Depth)					
	WS01 (5.00m)	WS02 (5.00m)	WS03 (5.00m)	WS04 (5.00m)	WS05 (5.00m)	WS06 (5.00m)
12-Oct-2024	1.10m	1.10m	1.00m	0.70m	0.70m	0.40m
30-Oct-2024	1.13m	1.14m	1.30m	0.86m	0.90m	0.50m
06-Nov-2024	1.17m	0.17m	1.37m	1.24m	1.00m	0.60m

5.5 Ground Gas Conditions

The above mentioned PRA concluded a low to moderate ground gas risk was posed to the proposed development.

Therefore, monitoring standpipes were installed to allow basic ground gas monitoring to be carried out to confirm the risk posed.

A total of 6no. of the boreholes, WS01 to WS06 were installed with monitoring wells during the siteworks to allow site coverage and monitoring of the groundwater and ground gas levels.

To date, ground gas monitoring comprising 3no. visits have been carried out on the site during October and November 2024. Results of the monitoring are discussed in section 7.3 below.

5.6 Soil Sampling Strategy

Samples were recovered from each of the exploratory points and from each stratum encountered in suitable containers for contamination analysis. All recovered samples not subjected to testing will be retained for three months from recovery or one month following issue of the final report whichever is longer.

On site assessment of the arisings was undertaken using a PID with a 10.6eV bulb calibrated on 100ppm isobutylene did not indicate any detectable VOCs. Olfactory assessment of the samples recovered indicated no identifiable contamination.

6.0 CONTAMINATION ASSESSMENT

6.1 Chemical Analysis

A total of 12 No. soil samples (7no. Topsoil Like Made Ground; 1no. Made Ground; 4no. Natural) were sent to an external UKAS/MCERTS accredited laboratory to obtain total soil concentrations for a range of priority contaminants.

The suite of analysis was decided based on consultation of the Contaminated Land Exposure Assessment (CLEA) supporting documents and consideration for the site specific criteria as set out above.

The suite of testing included:

- Asbestos screen, for near surface samples
- Metals and Inorganic compounds
- Polycyclic Aromatic Hydrocarbons (PAH) USPEA Priority 16 Compounds
- Total Petroleum Hydrocarbons (TPH) EC10-EC40 screen

Results of the chemical analysis are presented in Appendix C.

6.2 Human Health Assessment Criteria

The assessment has been carried out in accordance with the Contaminated Land Exposure Assessment (CLEA) methodology as detailed within LCRM 2023. The assessment criteria employed are based on the proposed residential land use of the site. For this site, a worst-case proposed land use of 'Residential with Home Grown Produce' will be employed for all areas of the site.

In March 2014 DEFRA published new guidance detailing the Category 4 Screening Levels (C4SL) system for the classification of contaminated land. The C4SL system was published to assist with revised statutory guidance published in 2012 for Part 2a of the Environmental Protection Act.

It introduces a new four category system for the classification of land under Part 2a where a Significant Possibility of Significant Harm to human health has been concluded. The categories correspond to Category 1 – land where the level of risk is clearly unacceptable, to Category 4 – where the level of risk posed is acceptably low. In short, land that passes the category 4 test “should not be capable of being determined as contaminated land under Part 2a”.

Currently no statutory chemical guidance levels for land contamination exist in the UK. Therefore, the reported soil total contaminants concentrations will be compared to In-House Generic Assessment Criteria (GAC) used as C4SLs.

These In-House GACs are presented in Appendix C and are generally based on the LQM/CIEH S4UL values.

The S4UL values employed are based on a Soil Organic Material (SOM) concentration of 2.5% for the initial screening.

A S4UL has not been published for lead. The GAC value employed has been derived using the DEFRA C4SL1 toxicological data and exposure parameters and the CLEA Software V1.071:2015.

The C4SL value employed for the lead GAC, for a residential with plant uptake land use scenario, is based on a blood lead level of 3.5ug/dl for the lower level of toxicological concern employing the Integrated Exposure Uptake Biokinetic model (IEBUK) estimated blood lead concentrations in children and employs the exposure parameters within the DEFRA C4SL report.

A minimal risk approach was employed to derive the S4UL values, whereas the C4SL model uses a lower level for risk model, which is deemed generally less conservative than the minimal risk approach. However, the use of a lower level for risk model screening criteria is considered strongly precautionary and is generally considered appropriate for use within the planning regime.

However, with consideration of the C4SL and S4UL values there still remains some gaps in the available chemical and/or toxicological data for non-priority contaminants and therefore a limited number of previously used CLEA SGVs and ICRCL guideline values have been retained and include those for pH, sulphide, sulphur and water-soluble boron.

Should an exceedance be noted when site priority contaminant concentrations are compared to the employed GACs, site specific assessment criteria can be derived using CLEA software or similar human health risk assessment software. This can also include consideration of bio-availability of the contaminants if required.

Further to the above, samples of Made Ground are generally screened for asbestos presence. Generic assessment criteria do not exist currently for asbestos presence in soil within the UK. Therefore, where asbestos is identified in soil it is recommended that further risk assessment be carried out by suitably qualified and registered persons.

6.3 Groundwater Assessment Criteria

The UK Drinking Water Standards (UKDWS), accessed via the UK government website (gov.uk) details specific thresholds of contaminants which can be present within drinking water. DEFRA have published controlled waters thresholds, referred to as Environmental Quality Standards (EQS), again accessed via the UK government website. The Water Framework Directive (WFD) provides thresholds and guidance for management of controlled surface waters within the UK. The World Health Organization (WHO) routinely updates and published guidance on drinking water thresholds, these can be freely accessed via the WHO website.

The EQS, WFD, WHO and UKDWS guidance values are largely based on each other, and so are interchangeable. However, in some cases it is preferable to use one standard over another, i.e. where one does not specify a threshold for a specific determinand and another does.

- For the purposes of this assessment PGE have utilised the DEFRA published controlled waters thresholds, referred to as Environmental Quality Standards (EQS). The EQS do not provide a comprehensive list of determinands for comparison.
- Where there are gaps in the EQS, PGE have therefore utilised the UK Drinking Water Standards (UKDWS), accessed via the UK government website details specific thresholds of contaminants which can be present within drinking water.

¹ DEFRA SP1010 – Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Final Project Report (Revision 2) 2014
Report on behalf of Hills Homes Developments Ltd
P24-286pra – Land West of Bliss Farm, Trowbridge, BA14 6DS

- The Water Framework Directive (WFD) provides thresholds and guidance for management of controlled surface waters within the UK, which again does not provide a comprehensive list of determinands. The WFD indicates it is appropriate to refer to other guidance if needed.
- The World Health Organization (WHO) routinely updates and published guidance on drinking water thresholds, these can be freely accessed via the WHO website.

7.0 GENERIC HUMAN HEALTH SITE CONTAMINATION RISK ASSESSMENT

Statistical analysis of the data set is carried out employing the statistical method detailed in CL:AIRE Document 'Guidance on Comparing Soil Contamination Data with a Critical Concentration', if exceedances are noted on individual comparison of the contaminant concentrations to the employed assessment criteria, which allows a derivation of a true mean concentration (7).

The statistical analysis also assesses if the data is normally distributed and considers high levels to determine if they are part of the underlying data set due to 'site wide contamination' or due to contamination 'outliers'.

The statistical analysis derives a 95th percentile upper confidence limit of (7) for each determinands for comparison to the suitable employed guidance level (GAC) or 'Critical Concentration (Cc)'.

The reported soil sample total contaminant concentrations data set was placed into a single averaging area for assessment. Further to the statistical analysis the chemical results were compared individually to the relevant GACs.

7.1 Total Soil Concentrations – Shallow Soils <1.0m Depth

The priority contaminant concentrations from the 12no. samples of shallow soils analysed, and a summary of the results are presented in Appendix C and are detailed in the following section.

7.2 Heavy Metals

The reported heavy metal concentrations within the shallow soil samples analysed were compared to the adopted in-house GACs for residential with home grown produce land use and are summarised below. This did not indicate any exceedances against the employed GACs.

As the development is likely to have peripheral soft landscaping the reported determined data set was also compared to phytotoxicity guidance values for copper and zinc. This also did not indicate any exceedances against the employed GACs.

7.3 Hydrocarbons

The reported hydrocarbon concentrations within the shallow soil samples analysed were compared to the adopted in-house GACs for residential with home grown produce land use and are summarised below. This did not indicate any exceedances against the employed GACs.

The results of the chemical analysis are presented in Appendix C.

Assessment of the arisings on site using a PID using a 10.6 eV bulb calibrated with 100ppm isobutylene did not indicate any detectable VOCs. Olfactory assessment of the samples recovered, and soil arisings did not indicate any detectable hydrocarbon or agrichemical odours.

7.4 Asbestos

A total of 9no. samples were screened for the presence of asbestos fibres with no samples returning a positive result. Additionally, no soil samples contained obvious ACM materials.

As always on site with historical developments a careful watching brief should be put in place during groundworks for any potential unforeseen pockets of contamination.

The laboratory testing results are included within Appendix C.

8.0 QUALITATIVE AND GENERIC CONTROLLED WATERS RISK ASSESSMENT

A detailed controlled water risk assessment was outside the scope of this report. However, significant contamination was not encountered in the shallow soils which suggest that a very low risk is posed to any surface water receptors near the site or controlled aquifer beneath the site.

9.0 GROUND GAS RISK ASSESSMENT

The PRA report concluded that there was a low to moderate risk of contamination of the site from ground gases. To apply a precautionary approach, monitoring standpipes were installed in boreholes WS01 to WS06 during the fieldworks for the purpose of monitoring ground gas and groundwater levels in order to confirm the risk of ground gases present at the subject site.

9.1.1 Sources

No significant deposits of putrescible organic material or significant Made Ground were encountered in the soils assessed from beneath the site, however, the extensive nature of the underlying Alluvium was deemed to be a potential on site source of ground gases.

It is considered good practice to assesses the potential risk posed from ground gases migration to the site and accumulating within any enclosed spaces and impact the proposed development and the end users of the site.

Based upon the above discussion, a low to moderate Environmental Risk classification for the generation of carbon dioxide and methane gases and volatiles on site has been concluded for the site in accordance with CIRIA C665 and BS 8576:2013.

9.1.2 Pathways

The predominating pathway concluded in the CGM is for the migration of ground gases from any on and off-site potential sources through the shallow superficial geology.

Groundwater was identified with strikes between of 1.30m and 3.50 rising to between 1.10m and 3.42m in locations WS02 WS03, WS06, WS08, WS09, SA01. Subsequent monitoring returned water level results of between 0.17m and 1.37m.

On this basis some retardation of ground gas flow beneath the site is likely to occur due to groundwater. However, there are considered to be feasible potential pathways for gases to migrate onto and around the site.

9.1.3 Receptors

The main receptors of concern are the future site users of the proposed residential development on the site through inhalation of asphyxiant gases (CO_2) and explosion from flammable gases (CH_4) within any new structures.

9.2 Ground Gas Monitoring

Boreholes WS01 to WS06 were utilised for the installation of monitoring wells to depths of 5.00m bgl, comprising c.4.00m of perforated 43mm internal diameter pipe with a screened 3-6mm gravel pack, with c.1.00m of solid pipe at the surface and a wetted bentonite pellet seal. The wells were sealed with a bung and gas taps and completed at surface with a blue coloured solid well pipe upstand for ease of identification during the monitoring period.

An Exploratory Point Location Plan showing the monitoring well locations are presented in Appendix B.

The wells were positioned to give general site coverage for subsequent ground gas and groundwater monitoring. The monitoring was carried out by PGE using a Gas Data GFM436 Gas Analyser and MiniRae PID.

Following BS 8576:2013 Section 8.7 and Section 9.4, an initial 3no. ground gas monitoring visits have been carried out on site during October to November 2024. The results of the monitoring are summarised in the table below, with the highest gas level highlighted. The monitoring data is presented in Appendix F.

Table 8: Ground Gas Monitoring Summary

Borehole	Date	GW Level (mbgl)	Atmos. Press. (Mb)	Maximum Methane (% v/v)	Maximum Carbon Dioxide (% v/v)	Lowest Oxygen (% v/v)	Max sustained Flow (l/hr)	VOC
WS01	12/10/24 – 06/11/24	1.1 to 1.17	999 - 1025	0.0	0.3	20.4	0.00	0.00
WS02		0.17 to 1.14		0.0	0.3	20.3	0.00	0.00
WS03		1 to 1.37		0.0	2.5	16.1	0.00	0.00
WS04		0.7 to 1.24		0.0	2.7	16.9	0.00	0.00
WS05		0.7 to 1.04		0.0	0.3	20.2	0.00	0.00
WS06		0.4 to 0.6		0.0	1.6	18.6	0.00	0.00
Worst case results				0.10	2.7	16.1	0.10	0.00
GSV score				0.0001	0.0027l/hr	-	-	-
CS Score				CS1	CS1	-	-	-

The ground gas monitoring on the site indicated low concentrations of methane at a maximum level of 0.00% v/v was identified during a single monitoring visit in WS01 to WS06. Following Section 6.3.4 of BS 8485:2015+A1:2019, and Section 9.3.3 of BS 8576:2015, 0.1% v/v will be adopted for calculations.

Carbon dioxide concentrations were also recorded at relatively low concentrations with a maximum level of 2.7% v/v in WS04.

A PID was also employed as a basic screening tool to identify potential hydrocarbon / vapour within the boreholes. This did not indicate any significant VOC concentrations.

Sustained gas flows were recorded during the monitoring with a maximum value of 0.0 l/hr identified during the 3no. monitoring visits. Following Section 6.3.4 of BS8485:2015+A1:2019, and Section 9.3.3 of BS8576:2015, 0.1 l/hr will be adopted for calculations.

9.3 Ground Gas Risk Assessment

The proposed development is likely to comprise residential dwellings and thus based upon BS 8485:2015+A1:2019, Table 3, the proposed development would likely be classified as;

Type A building: private ownership with no building management controls on alterations to the internal structure, the use of rooms, the ventilation of rooms or the structural fabric of the building. Some small rooms present. Probably conventional building construction (rather than civil engineering). Examples include private housing and some retail premises.

The NHBC guidance assumes these Type A categorised buildings utilised beam and block floor construction with clear void ventilation.

Where this is the case, the development may be categorised, per Figure 8.1 CIRIA C665 2007, as falling under CIRIA Situation B;

Situation B – Low rise building with minimum ventilated under floor void (min 150 mm)

Where the development fulfils these criteria the gas risk for the site may be assessed utilising either the NHBC “Traffic Light System” as outline in NHBC report No 10627-R01(04) / CIRIA C665 or the Characteristic Situation based upon the modified Wilson and Card classification, again as outlined within CIRIA C665.

For the proposed development, the site may be classified as Type A Building and Situation B as the proposed development is indicated to comprise low-rise housing.

Therefore, the results of all the monitoring were assessed in accordance with CIRIA C665 2007 / BS8485:2015+A1:2019 and BS8576:2013.

A maximum adopted methane concentration of 0.10% v/v and a carbon dioxide concentration of 2.70% v/v were identified during the monitoring with a maximum adopted gas flow rate of 0.1 l/hr adopted.

The gas monitoring results gave a maximum Gas Screening value of 0.0001l/hr for methane and 0.0027l/hr carbon dioxide.

Based upon the calculated GSVs recorded for the monitoring so far, the site falls into Characteristic Situation 1 (CS1) as per Table 2 within BS 8485:2015+A1:2019.

9.3.1 Ground Gas Protection Measures

For sites classifying as CS1 no gas protection measures are required. It is recommended that further gas monitoring is undertaken to determine the true gas rating for this site.

As no significant volatile hydrocarbon impacted soils were observed during the site works and no significant VOCs were recorded during the monitoring, volatile contamination protection measures are also deemed to not be required.

Given the risks identified on site and the results of the previous and additional monitoring to date, and that limited standpipe headspace was measured due to shallow perched water, it is recommended that further monitoring is undertaken at a worst case <1000mb atmospheric condition and a further assessment be carried out to determine if the ground gas regime can be reduced.

9.4 Radon

The Envirocheck Report identifies the subject site is located within a lower probability radon area, with <1% of homes estimated to be at or above the action level (200Bq/m³). The Envirocheck report records, no radon protection measures are necessary in the construction of any new dwellings, buildings or extensions on site. The current requirements of the local authority building control should be confirmed prior to final design and before starting development.

9.5 Ground Gas Risk Assessment Conclusions

Ground gas contaminant monitoring comprising 3no. visits has been carried out on the site during October and November 2024.

The calculated gas screening values are less than 0.07 l/hr for methane and carbon dioxide, which allows a Characteristic Situation 1 as per the modified Wilson and Card classification as outlined in CIRIA C665 2007 / BS 8485:2015 or Green as per NHBC traffic light system outlined in NHBC report No 10627-R01(04).

The gas monitoring results gave a worst-case gas screening value of 0.0001l/hr for CH₄ and 0.0027l/hr CO₂. The calculated gas screening values are below the relevant threshold for both methane and carbon dioxide, therefore the site falls within Characteristic Situation 1 (CS1) as per Table 2 within BS 8485:2015+A1:2019.

Given the risks identified on site and the results of the monitoring to date, it is recommended that further monitoring is undertaken given the identified ground gas sources, low flows and low gas concentrations identified with monitored carried out at a worst case <1000mb atmospheric condition.

10.0 SOIL WASTE ASSESSMENT

For the soil waste assessment 4no. composite samples were produced and correspond with the following sources:

- WAC1 – shallow soils from across the west portion of the site;
- WAC2 – shallow soils from the mid-west portion of the site;
- WAC3 – shallow soils from mid-east portion of the site;
- WAC4 – shallow soils from across the east portion of the site

Reference should be made to plan in Appendix B for composite sample source location.

The HazWaste online classification system was employed to assess the waste classification employing the total determinand concentrations within samples of the near surface soils, in relation to groundworks arising disposal. This indicated all of the natural soils subjected to testing have a Non-Hazardous classification with EWC code **17 05 04**.

Waste Acceptance Criteria (WAC) testing was also carried out on the composite samples of Made Ground and natural soils to determine if the soils tested could be disposed of into an inert facility. The samples 'WAC1 – shallow soils from across the west portion of the site' and 'WAC3 – shallow soils from mid-east portion of the site' had leachable determinands concentrations below the related guidance levels for disposal into an inert facility.

The samples 'WAC2 – shallow soils from the mid-west portion of the site' and 'WAC4 – shallow soils from across the east portion of the site' generally had leachable determinands concentrations below the related guidance levels for disposal into an inert facility, however, elevated organic compounds were noted within the results, likely sourced from the natural alluvium and topsoil.

It is considered likely that all of these soils will be accepted at a **non-hazardous facility** with deeper soils accepted at an **inert facility**.

Asbestos was not identified in any of the samples analysed.

Report on behalf of Hills Homes Developments Ltd

P24-286pra – Land West of Bliss Farm, Trowbridge, BA14 6DS

The results of the soil waste classification testing are presented in Appendix D.

All waste classification should be confirmed with the waste receiving facility prior to disposal. The waste receiving facility, especially if not specifically an inert landfill, may also require the total soil priority contaminant concentrations which are also presented in Appendix C.

11.0 POTABLE WATER SUPPLY PIPE

Guidance on the type of potable water supply pipe to be employed on residential development sites is given by the UKWIR published guidance document *10/WM/03/21* for the type of potable water supply pipework to be employed for new structures on reused land.

Samples were recovered from shallow depth and suspected pipe burial depths (c. 0.70m – 1.00m depth) on the site. These samples were analysed for a suite of contaminants which are considered to be generally in accordance with the UKWIR *10/WM/03/21* requirements. The analysis results indicated low or below detection level concentrations of hydrocarbons within the samples of shallow natural soil analysed.

Therefore, conventional PE pipe may be suitable for the potable water supply pipework on the site where services are laid within clean natural soils. Where services are laid within or penetrate through Made Ground soils conventional PE pipe may not be suitable and consideration should be given to the use of barrier pipe in these areas.

The classification will be decided by the local water company and their advice should be sought prior to the laying of any potable water supply pipework. The local water company may require further, more detailed sampling, testing and assessment prior to pipe selection.

All pipework should be laid in corridors of clean soil as best practice.

12.0 SITE CONTAMINATION ASSESSMENT DISCUSSION

Within the 12no. soil samples comprising 12no. samples for full suite of testing, 7no. Topsoil; 1no. Made Ground; 4no. Natural soils tested from across the subject site, no priority contaminant concentration exceedances were recorded within the shallow soils when compared to the employed guidance criteria (GACs) for human health in a Residential with home grown produce land use scenario.

Gas screening values, based on the 3no. rounds of ground gas monitoring carried out on the site, indicate that the site is classified as Characteristic Situation 1 (CS1) as per Table 2 within BS 8485:2015 or classifies as Green based upon NHBC traffic light system outlined in NHBC report No 10627-R01(04). Therefore, it is considered that no special gas protection measures are required for methane and carbon dioxide for any new developments at the site.

No asbestos was identified in any samples subjected to laboratory screening.

Given the above, although active SPR linkages were included in the associated PRA, there are no elevated determinand results in shallow soils sources of contamination. As such there is considered a minimal risk posed to identified end site users.

Notwithstanding the above assessment, if any unexpected or previously unidentified contamination is discovered during the site development works, a suitably qualified and experienced person should be contacted so any further assessment required can be carried out.

12.1 Updated Conceptual Site Model

An assessment of the risk posed by the identified contaminant concentrations has been carried out employing the Source-Pathway-Receptor (S-P-R) methodology detailed within the CLEA methodology.

The updated conceptual model set out below reflects the results of the work carried out to date.

Table 9: Updated SPR Flowchart

Potential On-Site Contaminant Sources	Potential Pathways	Potential Receptors	Pathway Complete
ONSITE No elevated PAHs or TPHs. No significant deposits of Putrescible Made Ground. No elevated Zinc or Copper compared to phytotoxic thresholds. No positive asbestos id in samples of shallow soil. Ground Gas Risk CS1. Additional monitoring recommended. Low Radon Risk (<1% of homes above action levels).	Dermal/Direct Contact	Current site users (residential without uptake)	No
	Direct Ingestion		No
	Direct Inhalation		No
	Inhalation of Radon Gas		No
	Inhalation of Wind Blown Dust		No
	Vapour Migration		No
	Gas Migration		No
	Dermal/Direct Contact	Future site users (equivalent to residential use with plant uptake)	No
	Direct Ingestion		No
	Direct Inhalation		No
	Inhalation of Radon Gas		No
	Inhalation of Wind Blown Dust		No
	Vapour Migration		No
	Ground Gas Migration	Services (following redevelopment)	No
	Direct Contact		No
	Migration of Contaminants – Non-Aqueous Phased		No
	Migration of Contaminants – Aqueous Phased	Adjacent Properties	No
	Dermal/Direct Contact		No
	Direct Ingestion		No
	Direct Inhalation		No
	Inhalation of Radon Gas		No
	Inhalation of Wind Blown Dust		No
	Vapour Migration		No
	Gas Migration		No
	Inhalation of Wind Blown Dust	Ecological Impacts	No
	Migration of Contaminants – Non-Aqueous Phased		No
	Migration of Contaminants – Aqueous Phased		No
	Migration of Contaminants from site – Non-Aqueous Phased	Controlled groundwater	No

Potential On-Site Contaminant Sources	Potential Pathways	Potential Receptors	Pathway Complete
	Migration of Contaminants from site – Aqueous Phased		No
	Migration of Contaminants – Non-Aqueous Phased	Surface Waters (Unnamed water course)	No
	Migration of Contaminants – Aqueous Phased		No

The risk to construction workers has not been assessed as generally any risks posed to site construction workers from identified contamination can be mitigated through good site practices and robust sitework risk assessment following guidance stated in CIRIA Report 132: 'A Guide for Safe Working on Contaminated Sites' and CIRIA Report C741: 'Environmental Good Practice on Site' during development works. Adequate standard personal protective equipment should be available, and the implementation of basic hygiene measures should be ensured.

Works carried out on sites where asbestos fibres have been identified **must** be carried out by a suitable contractor and a site specific Health and Safety Plan for site construction workers must be produced in line with CAR 2012².

13.0 REMEDIAL RECOMMENDATIONS

As stated in the assessment above there is minimal contamination associated with this site. The following works are provided to address possible risks associated which maybe encountered between PGEs exploratory positions. These recommendations do not constitute a formal Remedial Method Statement (RMS) and are provided as guidance only at this stage.

1. Careful watching brief during groundworks for any unforeseen pockets of contamination.

14.0 FOUNDATION DESIGN CRITERIA

14.1 Geotechnical Laboratory Testing

Representative samples were sent to an external UKAS accredited laboratory following visual assessment and logging of the soil arisings. The testing programme was designed to classify the properties of the encountered soils and to determine the chemistry of the soil in relation to the design of buried concrete.

14.1.1 Atterberg Limits

The results of 14no. Atterberg Limit determinations carried out on samples of the encountered fine grained soils are presented in Appendix D.

The soils tested have been assessed for their volume change potential (VCP) in accordance with NHBC Standards Chapter 4.2 and are detailed in the table below.

² Control of Asbestos Regulations 2012

Table 10: Atterberg Limits Testing

Exploratory Point and Strata	Depth (m)	Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	% Passing 0.425mm	NHBC Modified Plasticity	NHBC Volume Change Potential
SA01	1.00	50.6	113	38	75	100	75	High
SA02	0.80	25.0	63	22	41	100	41	High
SA03	0.50	22.1	69	24	45	100	45	High
SA04	1.10	25.4	61	22	39	100	39	Medium
SA05	1.00	27.9	36	16	20	100	20	Medium
WS01	1.00	26.6	64	24	40	100	40	High
WS02	1.20	22.7	48	19	29	100	29	Medium
WS03	2.00	21.3	41	16	25	84	21	Medium
WS04	2.80	24.0	55	22	33	100	33	Medium
WS05	2.30	23.8	57	23	34	100	34	Medium
WS06	1.50	29.5	72	24	48	100	48	High
WS07	1.30	15.9	38	15	23	54	12	Low
WS08	1.80	22.6	59	23	36	100	36	Medium
WS09	2.70	25.1	59	24	35	100	35	Medium

Note: AL – Alluvium; OX - Oxford Clay Formation

The samples of fine-grained Alluvium and Oxford Clay Formation have Modified Plasticity Indices of 20% to 75% (with one result at 12%) and therefore can be classified as being worst-case **High** Volume Change Potential employing the NHBC classification scheme.

14.1.2 Natural Moisture Content

Testing was performed to determine the natural moisture content (NMC) of the samples subjected to Atterberg Limit testing. These results are presented in the Laboratory Test Result Summaries in Appendix D.

14.1.3 Particle Size Distribution

No Particle Size Distribution tests were undertaken as no suitable soils were recovered from the recovered bedrock and matrix samples.

14.1.4 pH and SO_x

The level of pH, sulphate and other determinands within the BRE SD1 Suite have been determined for selected samples of soils from above and at the likely shallow foundation invert level to assess the appropriate Design Sulphate Class for buried concrete in accordance with BRE Special Digest 1 Table 2. Calculations followed the steps outlined in BRE SD1 Part C (i.e. using the mean of the highest 20% values as there are over 10 samples). The results of the analysis are presented in Appendix C.

The table below summarises the reported pH values, Total Sulphate and 2:1 Water Soluble Sulphate concentrations.

Table 11: Design Sulphate Class

(Strata)	Alluvium	Oxford Clay Formation
(Characteristic)		
pH	7.3	7.4
Total Sulphate (%)	0.14	0.174*
Water Soluble Sulphate	413	1480
Appropriate Design Sulphate Class	DS-1 / AC-1	DS-2 / AC-2

Note: *average value from 80th percentile of results, per BRE SD1.

The Design Sulphate Class was relatively consistent beneath the site and with a worst-case Design Sulphate Class of **DS-2** for the soils encountered.

A worst case Aggressive Chemical Environment for Concrete (ACEC) site classification is **AC-2** for the soils, assuming mobile groundwater.

The assessment assumes that all of the Total Sulphate (%) is in a suitable form that following ground disturbance could oxidise. It should be noted that arisings generated from the Oxford Clay Formation bedrock will have limited potential to release sulphates with works planned accordingly.

It should be noted that there was no consistent depth at which sulphate classification could be separated into an upper and lower bound. Essentially the DS-2 /AC-2 classification should be adopted regardless of founding depth.

Calculations for the Oxford Clay Formation based on individual samples gives a worst case DS-5 /AC-5 concrete class based on mobile ground water. This clarification is provided to inform a cautious design approach.

14.2 In-Situ Testing

Soil strength testing was undertaken in the field employing Standard Penetration Tests (SPT) carried out in general accordance with BS 22476-1:2012 and BS 22476-3:2005+A1:2011. The SPTs were undertaken generally at 1.0m intervals within the percussion liner sampler boreholes.

The SPT 'N' values obtained for the natural Alluvium soils ranged between 6 to 17 with a general depth trend of increasing with depth.

The SPT 'N' values obtained for the Oxford Clay Formation bedrock (including the weathered unit) ranged between 5 to 21 with a general depth trend of increasing with depth. Oxford Clay Formation was not fully penetrated in any location.

The SPT results for the Alluvium indicate corresponding soil strengths of between 27kPa and 76kPa employing the correction by Stroud and Butler, 1975 for soils with a PI<40%.

SPT results for the Oxford Clay Formation bedrock indicate corresponding soil strengths of between 23kPa and 94kPa employing the correction by Stroud and Butler, 1975 for soils with a PI<40%.

Soil strength testing was undertaken in the field employing Hand Shear Vane testing on intact, arisings from various depths within the trial pits.



Shear strength values within the Alluvium ranged between 40kPa and 110kPa indicating soils of low to high strength.

Shear strength values within the Oxford Clay Formation deposits ranged between 46kPa and 140kPa indicating soils of medium to high strength.

15.0 ENGINEERING EVALUATION

15.1 Introduction

The proposed development scheme is still in the planning stage with the exact site layout to be confirmed. It is anticipated the proposed development will include private garden areas, the soil contamination exposure characteristics for the proposed development will be comparable to residential with plant uptake.

A proposed development plan is presented within Appendix A.

From a geotechnical viewpoint this is deemed to be a Ground Investigation Report (GIR) as set out in BS EN 1997:2. This report does not constitute a Geotechnical Design Report as defined in section 2.8 of BS EN 1997-1:2004+A1:2013 'Eurocode 7 – Geotechnical Design – Part 1: General Rules' and in particular will exclude assessment of lifetime actions to buildings from geotechnical influences.

15.2 Foundation Design Considerations

The geology beneath the site generally indicated a veneer of Topsoil/Made Ground overlying Alluvium onto bedrock strata of Oxford Clay Formation.

Based on the soils encountered, as detailed in section 5.1 above, our ground model for the site is:

Topsoil and Made Ground to an average depth of **0.25m (Max 0.60m)**

Alluvium to an average depth of **1.20m (Max >5.0m)**

Weathered Oxford Clay Formation to a proven depth of **3.65m (Max >5.0m)**

Oxford Clay Formation to a proven depth of **5.00m**

Groundwater monitoring indicated water levels of **0.17m** and **1.37m** depth.

The investigation achieved target depths of up to 5.00m bgl and confirmed a veneer of Topsoil Like Made Ground and Made Ground to depths of 0.20m and 0.60m. Underlying the Topsoil Like Made Ground was a unit of fine-grained Alluvium soils underlying the southern portion of the site, at a thickness of around 0.30m (TP07) – 3.90m (WS08). Underlying the Alluvium, where present, was the Weathered Oxford Clay Formation extending to depths of 3.00m (WS05) and 4.50m (WS03) although locally the weathered Oxford Clay Formation extended beyond 5.00m depth. At the base of numerous locations the Oxford Clay Formation bedrock was encountered, the full thickness of which was not proven in any location.

The Alluvium was encountered in all locations, extending to depths of 0.50m (SA04) to 4.20m (WS08) with an average proven thickness of 1.07m. The Alluvium was represented by a firm dark brown mottled orange slightly sandy slightly gravelly CLAY with the gravel constituent composed of fine to medium subangular to subrounded flint. The Alluvium was identified with stratigraphic markers of orange colour, higher bound sand content and under-consolidation relative to the below (weathered) Oxford Clay Strata.

Although no trial pits suffered significant notable collapse, the Alluvium should be considered an unstable medium, given its low consolidation and saturated nature.

Groundwater strikes within the Alluvium are considered to be representative of the underlying aquifer and are likely in communication with the nearby surface water course adjoining the south site boundary.

The Weathered Oxford Clay Formation was encountered in locations WS01 to WS09; SA01, SA02, SA04, SA05; TP02, TP06, TP07 and TP09. The Weathered Oxford Clay Formation was noted to extend to depths of 1.00m and 4.50m where the base was proven. In location WS08 the base of the weathered unit was not proven. The weathered Oxford Clay Formation soils were described as stiff light blue mottled orange and brown slightly sandy CLAY with abundant pockets of selenite crystals present. The weathered unit was distinguished by the presence of orange discolouration. However, there was minimal apparent reducing in consolidation or strength compared to the underlying bedrock strata.

The Oxford Clay Formation was encountered in locations WS01 to WS07, WS09 SA01 to SA03 and SA04. The base of the Oxford Clay Formation bedrock strata was not proven in any location. The bedrock strata was described as stiff, light blue grey slightly sandy CLAY, notably abundant pockets of selenite crystals were present in the recovered samples. The Oxford Clay Formation was distinguished with stratigraphic markers of depth, colour and relative consolidation

The site is bordered by semi-mature and mature hedges and trees.

Referring to NHBC (2024) Chapter 4.2, Table 3 and Table 3a. The mature height should be assumed all tree species not considered immature. NHBC (2024) Chapter 4.2, Table 3b indicates lateral extent of the mature height should be assumed. Exact influence distances should be calculated by the design engineer with foundation depths following relevant recommendations in NHBC, CIRIA and BSI literature.

Groundwater was identified with a strikes between of 1.30m and 3.50 rising to between 1.10m and 3.42m in locations WS02 WS03, WS06, WS08, WS09, SA01. Subsequent monitoring returned water level results of between 0.17m and 1.37m.

The samples of fine-grained Alluvium and Oxford Clay Formation have Modified Plasticity Indices of 20% to 75% (with one result at 12%) and therefore can be classified as being worst-case **High** Volume Change Potential employing the NHBC classification scheme.

The SPT 'N' values obtained for the natural Alluvium soils ranged between 6 to 17 with a general depth trend of increasing with depth.

The SPT 'N' values obtained for the Oxford Clay Formation bedrock (including the weathered unit) ranged between 5 to 21 with a general depth trend of increasing with depth. Oxford Clay Formation was not fully penetrated in any location.

The SPT results for the Alluvium indicate corresponding soil strengths of between 27kPa and 76kPa employing the correction by Stroud and Butler, 1975 for soils with a PI<40%.

SPT results for the Oxford Clay Formation bedrock indicate corresponding soil strengths of between 23kPa and 94kPa employing the correction by Stroud and Butler, 1975 for soils with a PI<40%.



Soil strength testing was undertaken in the field employing Hand Shear Vane testing on intact, arisings from various depths within the trial pits.

Shear strength values within the Alluvium ranged between 40kPa and 110kPa indicating soils of low to high strength.

Shear strength values within the Oxford Clay Formation deposits ranged between 46kPa and 140kPa indicating soils of medium to high strength.

15.3 New Structure Foundation Design Criteria

15.3.1 Soil Volume Change Assessment

No arboricultural reports or plans have been provided for the site at the time of writing this report to determine the species and height of trees on site that are potentially within influencing distance of the proposed structures.

Given the worst case High VCP for the underlying soils and the presence of a significant number of trees possibly within influencing distance of new foundations, a detailed assessment should be carried out using the data within this report using the dedicated tree survey and a final development plan by the scheme foundation design Engineer. This will allow a detailed reassessment of the required minimum foundation depths for the proposed development.

Where foundations lay outside the zone of influence of any trees the minimum foundation depth of 1.50m bgl is recommended to be considerate of restrictive new planting given the worst case High VCP soils encountered beneath the site.

15.3.2 Excavations

Excavations should be readily achieved within the near surface soils using conventional plant. The majority of boreholes remained stable during drilling. However, it is anticipated that excavations within the Alluvium will be stable only on a short-term basis and therefore, shoring should be considered for all excavations. There remains a possibility that inflows of shallow groundwater will cause over break of excavations.

Groundwater monitoring indicated water levels of 0.17m and 1.37m depth, as such consideration should be given to dewatering of deep excavations and timing of excavations so that they take place during the drier summer months. Long term groundwater monitoring will allow for better planning of works.

Given the above, provision for dewatering and groundwater control of excavations should be considered, especially during inclement weather and the provision of shoring to support the excavations may be required if some overbreak cannot be accommodated for any excavations deeper than c.1.00m.

It should be noted that groundwater tables can fluctuate both seasonally and rapidly during inclement weather. The reviewer should satisfy themselves with the groundwater levels at the time of any construction works.



At no time should any excavations be entered by personnel without correct shoring and only after an assessment of whether the task can be completed without entry to the excavation has been completed.

It is understood that there are a number of land drains underlying the site which likely draw groundwater towards the nearby river. It is conjectured that an easement or immediate replacement if damaged will be required to assist in maintaining the land in a suitable state.

15.3.3 Ground Floor Slabs

Where fine-grained material is present below proposed floor slabs, then the use of ground bearing floors is not recommended for movement sensitive structures as detailed in Section 5.1 of the NHBC Standards.

15.4 Foundation Options Discussion

Conventional foundations, such as spread and isolated pads, placed into soft and/or variable soils are generally subjected to increased risk of settlement, especially differential settlement. Therefore, it is not recommended that foundations be placed into the shallow Made Ground or Topsoil.

We understand the proposed structures are likely to be low-rise residential properties. Given the above mentioned High VCP of the soil underlying the site, foundations should be extended to 1.50m depth with restricted new planting taken into consideration.

If shallow foundations are not considered suitable then a piled solution should be assessed.

It is anticipated that foundations bearing across the superficial Alluvium and bedrock Oxford Clay Formation will suffer significant differential settlement. This is owing to the differing consolidation properties within each strata, with a surcharge applied or when loaded. Adequate reinforcement should be considered for such cases.

If, during excavations, there is any ambiguity of material type a representative of PGE should attend site to inspect the foundations and advise on deepening the foundations or if the founding material is suitable for foundations to be laid.

Therefore, given the above assessment it is considered that conventional foundations may be suitable in specific locations where the influence of trees is minimal. The foundations should be placed to bear into the bedrock strata as a preference. In all cases a greater depth of footing should be used. It is possible that a piled solution will be required for the proposed units near the boundaries of the site where significant trees are likely to influence the proposed footings.

The above foundation options and design approaches are subject to detailed Structural Engineer design and regulator agreement. It is recommended that the above conclusions are agreed with relevant parties before excavation for foundation takes place.

15.5 Bearing Capacity

Should a conventional spread foundation option be considered viable at a width of 0.60m, then at a minimum depth of 1.50m below reduced or proposed site levels should be adopted whichever gives

the deeper foundation. All foundations should be seated as a preference into the fine-grained soils of the Oxford Clay Formation. A conservative allowable bearing capacity in the order of **100kPa** could be utilised for conventional foundations, such as pads and strip footings foundation. If this is insufficient, foundations may be deepened to 2.50m, with an allowable bearing capacity in the order of 145kPa.

This value is limited to allow for the shallow groundwater level noted in some areas of the site.

For a raft foundation for the proposed dwellings bearing on the fine-grained Alluvium soils, at a depth below 1.00m bgl and below Made Ground / Topsoil, the allowable bearing capacity would be in the order of **45kPa**.

These estimates further include a factor of safety of 3 against general shear failure and should keep settlements within tolerable limits.

Any excavations for the footings should be inspected by a suitably qualified person to assess the variability of the soils and groundwater conditions. If, following inspection, the soil conditions differ from those identified within this geotechnical appraisal the recommendations may require reassessment. Any roots, organic matter, and in particular any 'soft/loose' or otherwise unsuitable material encountered at the founding depth should be removed prior to pouring of any concrete.

15.6 Piled Foundations

In the event that assessed minimum foundation depths be too deep for conventional foundations or the bearing capacities derived above not be sufficient for the proposed development then consideration of alternative foundation solutions such as piles may provide the required improvement in bearing capacities.

Piled foundations are likely to provide a satisfactory foundation option for the proposed development with piles extending deeper into the Oxford Clay Formation.

Where trees are removed, depending upon pile types and design, piles should be sleeved within the zone of potential desiccation to prevent uplift forces whilst the ground recovers soil water deficits to stable moisture contents.

A deep borehole with attendant sampling, testing and supplementary ground investigation report will be required to provide a further range of geotechnical parameters and to assist structural engineer and piling contractor with the piled foundation design. The advice of a specialist piling contractor should be sought who can provide an assessment of the suitability of their piles.

15.7 Sub-Surface Concrete

The Design Sulphate Class was highly variable beneath the site and with a worst-case Design Sulphate Class of **DS-2** for all soils.

A worst case Aggressive Chemical Environment for Concrete (ACEC) site classification is **AC-2** assuming mobile groundwater.

Calculations for the Oxford Clay Formation based on individual samples gives a worst case DS-5 /AC-5 concrete class based on mobile ground water. This clarification is provided to inform a cautious design approach.

15.8 Surface Water Soakaways and Soil Permeability

Infiltration testing was carried out within 5no. of the trial pits (SA01 to SA05) to BRE365 methodology to allow an estimated infiltration factor.

The trial pits were formed to depths ranging between 1.00m and 2.30m bgl and filled with between c. 0.43m and 1.03m of water at the base to limit the water used and potential trial pit instability.

No trial pit tests completed a first test run due to lack of water infiltration over the duration of the siteworks.

The results are presented in Appendix D and are summarised in the table below.

Table 12: Infiltration Factors

Trial Pit	Soil Tested	Test Depth (m)	Infiltration Factor (ms ⁻¹)		
			Cycle 1	Cycle 2	Cycle 3
SA01	Alluvium	1.76-2.30	Test Failed	-	-
SA02	Alluvium	0.50-1.00	Test Failed	-	-
SA03	Alluvium	0.81-1.30	Test Failed	-	-
SA04	Alluvium	0.87-1.30	Test Failed	-	-
SA05	Alluvium	0.42-1.45	Test Failed	-	-

Given the results, and the groundwater levels recorded during monitoring, it is considered that conventional soakaways will not be effective across the site, particularly towards the south and east of the site.

15.9 Access Roadways and Parking Areas

The proposed development is likely to include areas destined for use as access roads and parking.

In-situ CBR determinations were carried out at 10no. locations across the site in areas to provide general coverage at anticipated formation levels (c.0.50m bgl) utilising a Light Weight Deflectometer (LWD). The LWD influences a stress bulb beneath the test plate/soil interface area giving a determination of the underlying 600mm of soil. The LWD utilises an internal GPS system and associated application to determine all CBR parameters.

The below table summarises the CBR values produced by the LWD. A plan produced by the LWD software is provided in Appendix F.

Table 13: Light Weight Deflectometer Result Summary

Location	Corrected Surface Modulus (MN/m ²)	Calculated CBR Value (%)
CBR01	31	2.4
CBR02	28	2.1
CBR03	22	1.4
CBR04	27	2.0
CBR05	44	4.2
CBR06	22	1.4
CBR07	47	4.7
CBR08	19	1.1
CBR09	24	1.6
CBR10	20	1.3
Min.	19	1.1

The locations of the LWD tests are detailed on the Exploratory Point Location Plan presented in Appendix D.

The TRL Laboratory Report 1132 – The Structure of Bituminous Road, Appendix C Table C1 allows an estimate of CBR value based on soil equilibrium suction index. Where a pavement foundation will bear onto the encountered fine grained superficial deposits encountered at shallow depth and beneath any Topsoil encountered a CBR value of 1.0-1.5% can be employed.

A further method of estimating CBR value is by using fine grained soil shear strength divided by 23, which would allow a CBR of around 1.0-2.0% for the same soils.

CERTIFICATION

This report is produced for the sole use of the Client, and no responsibility of any kind, whether for negligence or otherwise, can be accepted for any Third Party who may rely upon it.

The conclusions and recommendations given in this report are based on our understanding of the future plans for the site and based on a scope of works agreed by the Client and afforded by the agreed budget. No responsibility is accepted for conditions not encountered, which are between exploratory points or outside of the agreed scope of work or if construction is commenced before regulatory approval of designs.

If the future plans for the site are changed, such as the site is developed for a more or less sensitive use, then a different interpretation might be appropriate.

The report has been prepared generally following the guidelines and principles established in the British Standards, BS5930:1999+A2:2010, BS 10175:2011, entitled 'Investigation of Potentially Contaminated Sites – Code of Practice' and the DEFRA/EA Contaminated Land Reports CLR7 and CLR8.

It necessarily relies on the co-operation of other organisations and the free availability of information and total access. No responsibility can, therefore, be accepted for conditions arising from information that was not available to the investigating team as a result of information being withheld or access being denied.

This report may suggest an opinion on a suspected configuration of strata or conditions between exploratory points and below the maximum depth of investigation. However, this is for guidance only and no liability can be accepted for its accuracy. Comments on the groundwater conditions are based on observations made at the time of the investigation unless otherwise stated. It should be noted, however, that groundwater levels might vary due to seasonal or other effects.

It should be noted that this report is based solely on the samples collected in the borehole locations investigated. During the works and following general site clearance, should the sub-soil conditions in other areas of the site appear to be inconsistent with those found in the areas sampled then this geotechnical appraisal and site contamination assessment may need to be reviewed.

This report is prepared and written in the context of the proposals stated in the introduction to this report and it should not be used in a differing context. Furthermore, new information, improved practices and changes in legislation may require an alteration to the report in whole or in part after its submission. Therefore, with any changes in circumstances, or after one year from the date of the report, the report should be referred back to Paddock Geo Engineering Limited for re-assessment (and, if necessary, for an estimate for the cost of such).

The copyright of this report and any associated plans and documents prepared by Paddock Geo Engineering Limited is owned by them and should not be reproduced, published or adapted, in whole or part, without their written consent.

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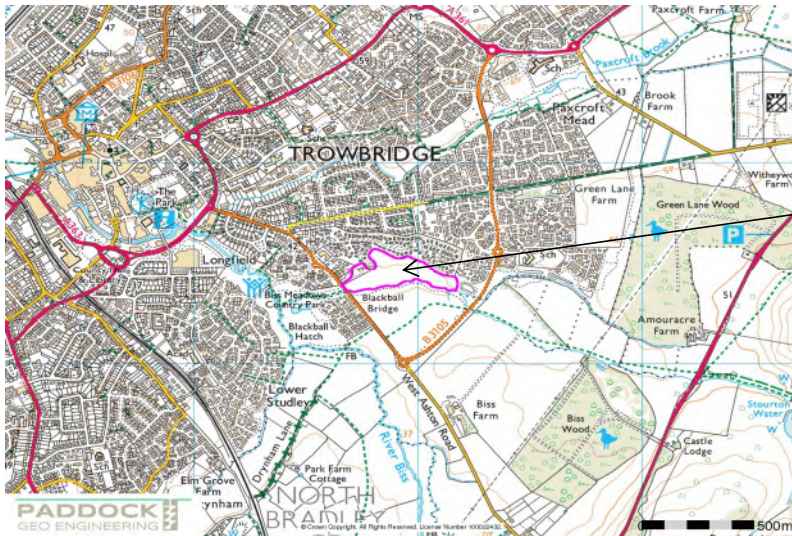
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APPENDIX A

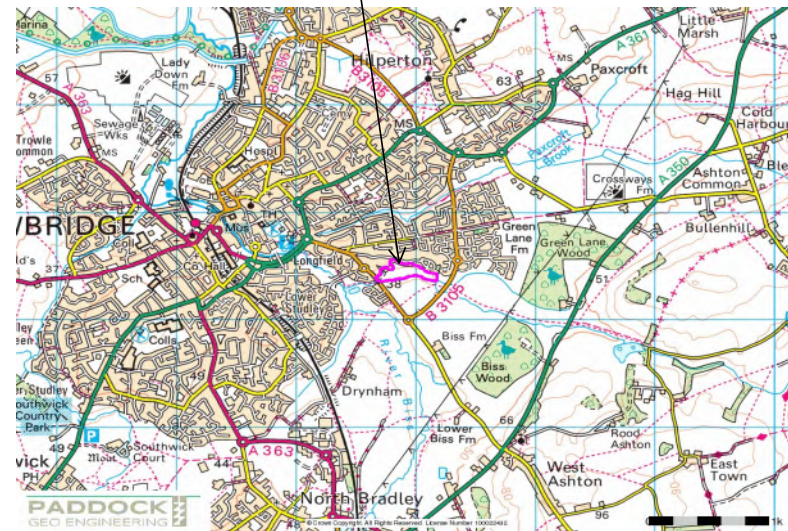
Maps Plans and Figures

Site Location Plan
Existing Site Location Plan
Proposed Development Plan

SITE LOCATION PLAN



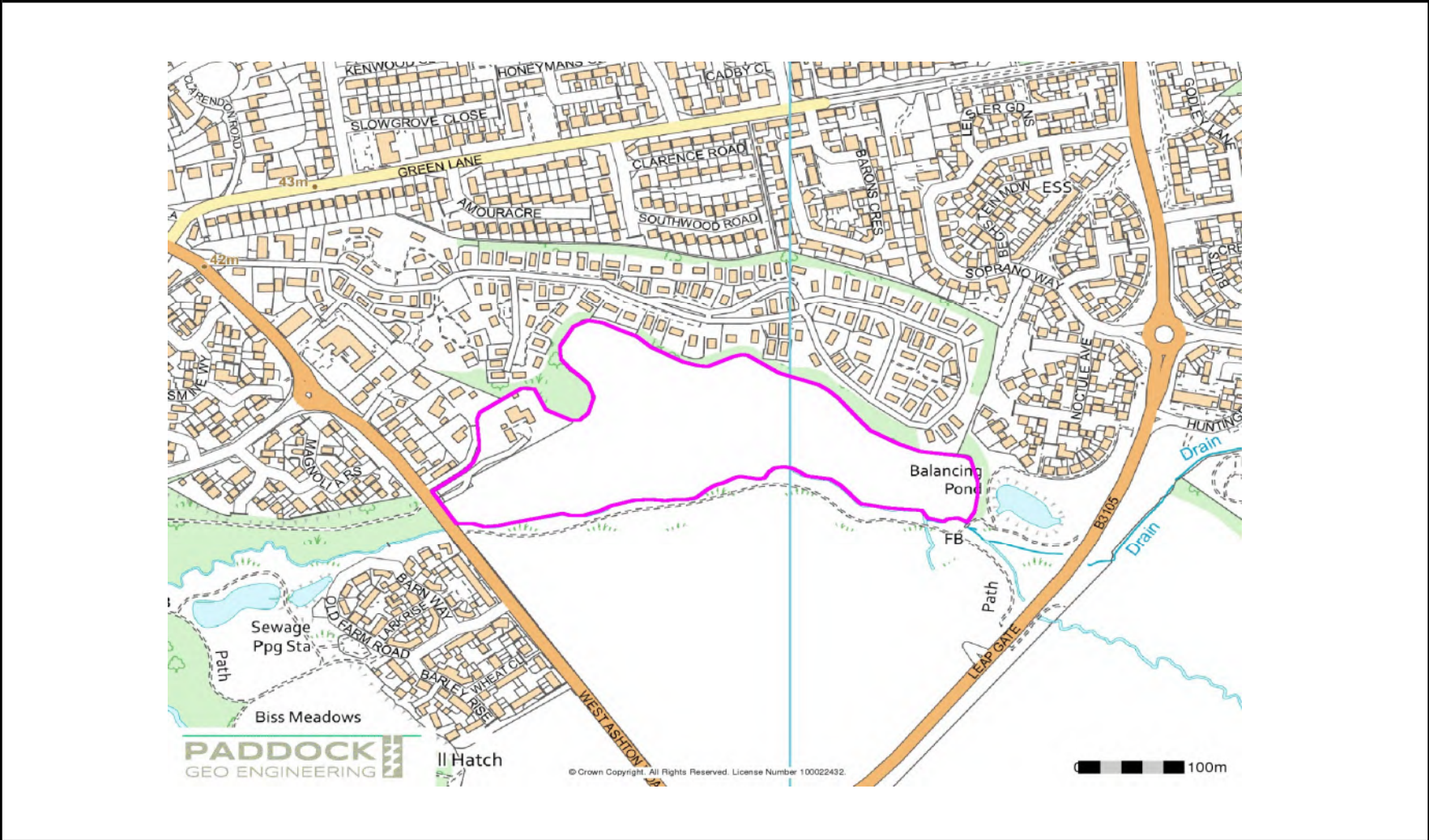
Site Location



PADDOCK
GEO ENGINEERING

CLIENT: Hills Group
PROJECT No: P24-286
PROJECT TITLE: Land West of Bliss Farm, Trowbridge, BA14 6DS

SITE PLAN



PADDOCK
GEO ENGINEERING

CLIENT:	Hills Group
PROJECT No:	P24-286
PROJECT TITLE:	Land West of Bliss Farm, Trowbridge, BA14 6DS

AERIAL PHOTOGRAPH



PADDOCK
GEO ENGINEERING

CLIENT:	Hills Group
PROJECT No:	P24-286
PROJECT TITLE:	Land West of Bliss Farm, Trowbridge, BA14 6DS

APPENDIX B

Site Details

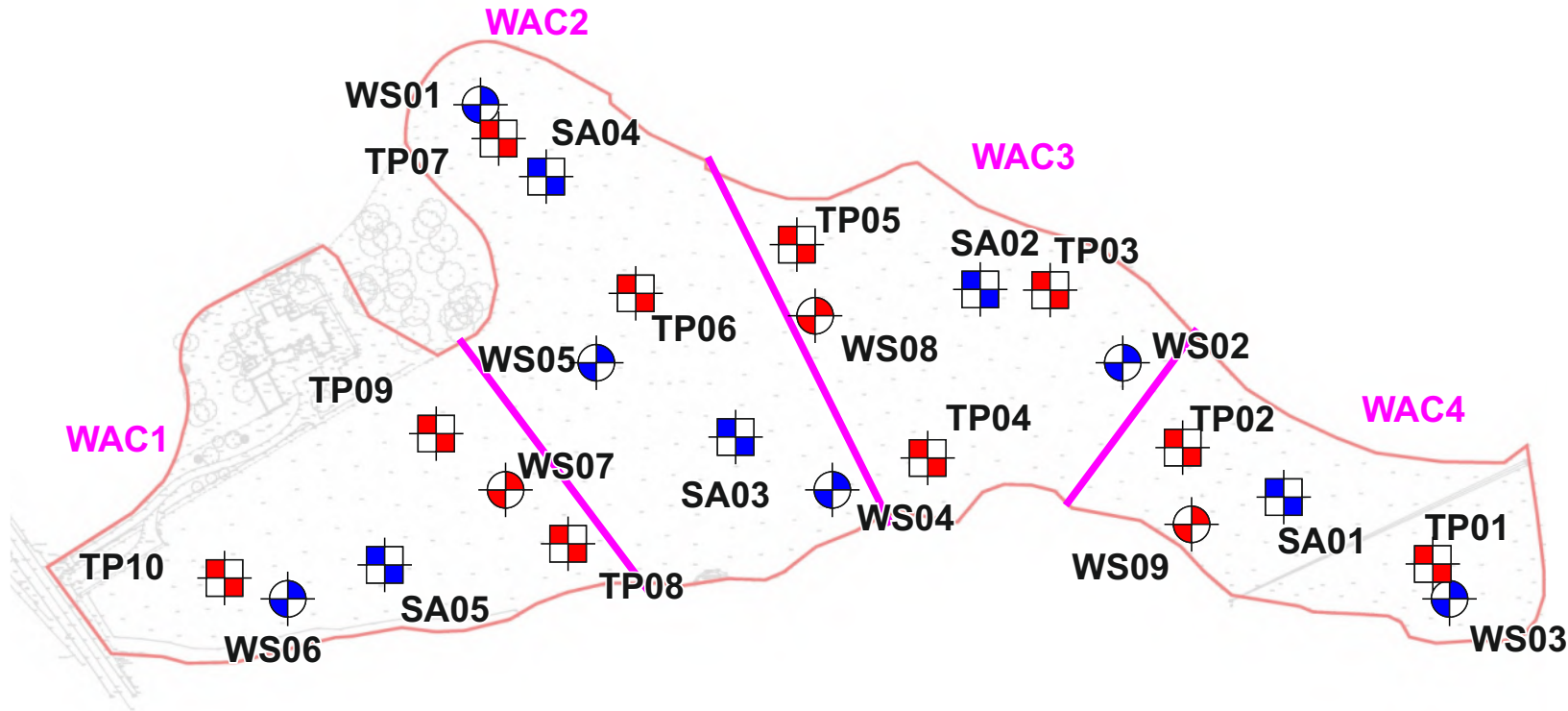
Exploratory Point Location Plan
Borehole Logs
Sitework Photographs

Exploratory Point Location Plan

Land West of Bliss Farm,
Trowbridge,
BA14 6DS

Hills Group

November 2024



Legend:

-  Percussion Liner Sampling Borehole Locations
-  Percussion Liner Sampling Borehole Locations (Install)
-  Machine Trial Pit & LWD Location
-  Infiltration testing Locations
-  WAC Zonation

Notes:

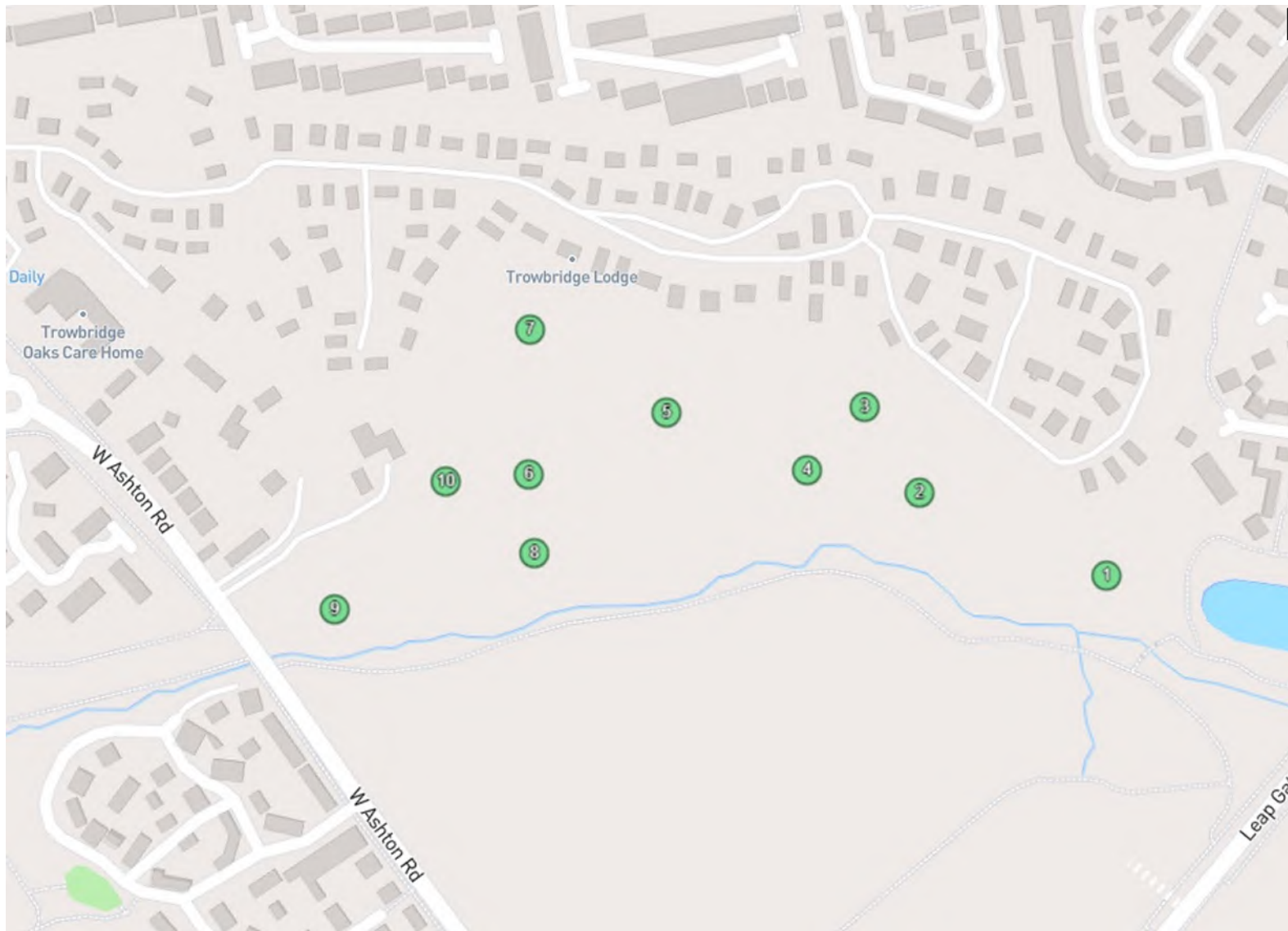
- 1) Not to scale
- 2) Dimensions as shown
- 3) All positions are approximate
- 4) Drawing to be viewed in colour
- 5) Drawing to be viewed digitally
- 6) Not for construction detail
- 7) Based on plans provided the Client

Deflectometer Location Plan

**Land West of Bliss Farm,
Trowbridge,
BA14 6DS**

Hills Group

November 2024



Legend:



**LWD Testing
Location**

Notes:

- 1) Not to scale
- 2) Dimensions as shown
- 3) All positions are approximate
- 4) Drawing to be viewed in colour
- 5) Drawing to be viewed digitally
- 6) Not for construction detail
- 7) Based on plans provided the Client

Excavation Method Trial Pit	Dimensions 0.35m W x 1.70m L	Ground Level (mOD)	Client Hills Homes Development Ltd	Job Number P24-286
	Location	Dates 03/10/2024- 04/10/2024	Engineer PGE	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10 0.20 0.20 0.50	C 50kPa D C				(0.40) 0.40	Grass onto, dark brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium flint. (TOPSOIL LIKE MADE GROUND)		
1.00	D				(1.20)	Firm dark brown slightly sandy slightly gravelly CLAY. Gravel is composed of fine to medium subangular to subrounded flint. (ALLUVIUM)		
1.70 1.90 2.00 2.00 2.15	55kPa 50kPa 80kPa D D				1.60 (0.20) 1.80 (0.35) 2.15	Stiff light blue mottled orange and brown slightly sandy CLAY. Abundant pockets of selenite crystals present. (WEATHERED OXFORD CLAY FORMATION)		
						Stiff light blue grey slightly sandy CLAY. Abundant pockets of selenite crystals present. (WEATHERED OXFORD CLAY FORMATION)		
						Complete at 2.30m		



Remarks Infiltration testing performed. Trial pit sides remained stable upon completion. No obvious roots observed. No groundwater encountered during excavation. Trial pit backfilled with arisings. No obvious signs of contamination noted. Logged in accordance BS5930:2015		
Scale (approx) 1:50	Logged By AA	Figure No. P24-286.SA01

PADDOCK GEO ENGINEERING						Site Land West of Bliss Farm, Trowbridge, BA14 6DS		Trial Pit Number SA02	
Excavation Method Trial Pit		Dimensions 0.30m W x 1.00m L		Ground Level (mOD)		Client Hills Homes Development Ltd		Job Number P24-286	
		Location		Dates 03/10/2024-04/10/2024		Engineer PGE		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.10 0.30 0.30 0.40 0.50 0.60 0.80 0.90	C C D 80kPa D C D 130kPa				(0.20) (0.20) (0.25) (0.45) (0.55) 1.00	Grass onto, dark brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium flint. (TOPSOIL LIKE MADE GROUND) Firm dark brown slightly sandy slightly gravelly CLAY. Gravel is composed of fine to medium subangular to subrounded flint. (ALLUVIUM) Stiff light blue mottled orange and brown slightly sandy CLAY. Abundant pockets of selenite crystals present. (WEATHERED OXFORD CLAY FORMATION) Complete at 1.00m			
						Remarks Infiltration testing performed. Trial pit sides remained stable upon completion. No obvious roots observed. No groundwater encountered during excavation. Trial pit backfilled with arisings. No obvious signs of contamination noted.			
						Logged in accordance BS5930:2015			
						Scale (approx) 1:50		Logged By AA	

PADDOCK GEO ENGINEERING						Site Land West of Bliss Farm, Trowbridge, BA14 6DS		Trial Pit Number SA03	
Excavation Method Trial Pit		Dimensions 0.35m W x 1.20m L		Ground Level (mOD)		Client Hills Homes Development Ltd		Job Number P24-286	
		Location		Dates 03/10/2024-04/10/2024		Engineer PGE		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.10	C				(0.30)	Grass onto, dark brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium flint. (TOPSOIL LIKE MADE GROUND)			
0.50	50kPa				0.30				
0.50	D					Firm dark brown slightly sandy slightly gravelly CLAY. Gravel is composed of fine to medium subangular to subrounded flint. (ALLUVIUM)			
0.60	C				(1.10)				
1.00	D								
1.35	55kPa				1.40				
1.40	D					Complete at 1.40m			
						Remarks			
						Infiltration testing performed. Trial pit sides remained stable upon completion. No obvious roots observed. No groundwater encountered during excavation. Trial pit backfilled with arisings. No obvious signs of contamination noted.			
						Logged in accordance BS5930:2015			
Scale (approx)						Logged By		Figure No.	
1:50						AA		P24-286.SA03	

PADDOCK GEO ENGINEERING						Site Land West of Bliss Farm, Trowbridge, BA14 6DS		Trial Pit Number SA04	
Excavation Method Trial Pit		Dimensions 0.35m W x 1.20m L		Ground Level (mOD)		Client Hills Homes Development Ltd		Job Number P24-286	
		Location		Dates 03/10/2024-04/10/2024		Engineer PGE		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.10	C				(0.30)	Grass onto, dark brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium flint. (TOPSOIL LIKE MADE GROUND)			
0.50	50kPa				0.30				
0.50	D					Firm dark brown slightly sandy slightly gravelly CLAY. Gravel is composed of fine to medium subangular to subrounded flint. (ALLUVIUM)			
0.60	C				(1.10)				
1.00	D								
1.35	55kPa				1.40	Complete at 1.40m			
1.40	D								

Remarks

Infiltration testing performed.
Trial pit sides remained stable upon completion.
No obvious roots observed.
No groundwater encountered during excavation.
Trial pit backfilled with arisings.
No obvious signs of contamination noted.

Logged in accordance BS5930:2015

Scale (approx)

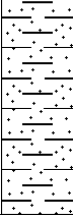
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Figure No.

P24-286.SA04

PADDOCK GEO ENGINEERING						Site Land West of Bliss Farm, Trowbridge, BA14 6DS		Trial Pit Number SA05	
Excavation Method Trial Pit		Dimensions 0.40m W x 1.20m L		Ground Level (mOD)		Client Hills Homes Development Ltd		Job Number P24-286	
		Location		Dates 03/10/2024-04/10/2024		Engineer PGE		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.10 0.15 0.40 0.40	C D C D				0.20 0.20 (0.60) 0.80	Grass onto, dark brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium flint. (TOPSOIL LIKE MADE GROUND) Firm dark brown slightly sandy slightly gravelly CLAY. Gravel is composed of fine to medium subangular to subrounded flint. (ALLUVIUM)	 		
1.00 1.06 1.50 1.50	D 10kPa 5kPa D				(1.50)	Stiff light blue mottled orange and brown slightly sandy CLAY. Abundant pockets of selenite crystals present. (WEATHERED OXFORD CLAY FORMATION)			
2.00 2.00 2.30 2.30	5kPa D 10kPa D				2.30	Complete at 2.30m			
						Remarks No obvious signs of contamination noted. Trial pit backfilled with arisings. No groundwater encountered during excavation. No obvious roots observed. Trial pit sides remained stable upon completion. Infiltration testing performed.			
						Logged in accordance BS5930:2015			
						Scale (approx) 1:50		Logged By AA	

PADDOCK GEO ENGINEERING						Site Land West of Bliss Farm, Trowbridge, BA14 6DS		Trial Pit Number TP01	
Excavation Method Trial Pit		Dimensions		Ground Level (mOD)		Client Hills Homes Development Ltd		Job Number P24-286	
		Location		Dates 04/10/2024		Engineer PGE		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.10	C				(0.30)	Grass onto, firm dark brown slightly sandy gravelly organic CLAY. Gravel is composed of fine to medium flint. (TOPSOIL LIKE MADE GROUND) Firm dark brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is composed of fine to medium subangular to subrounded flint. (ALLUVIUM) Soft yellow brown very sandy slightly gravelly CLAY. Gravel composed of fine to coarse subangular to subrounded flint. (ALLUVIUM) Complete at 2.30m			
0.40	C				0.30 (0.30)				
0.70	D				0.60 (0.20)				
					0.80				



Remarks

LWD testing performed at c.0.50m depth.
Trial pit sides remained stable upon completion.
No obvious roots observed.
No groundwater encountered during excavation.
Trial pit backfilled with arisings.
No obvious signs of contamination noted.

Logged in accordance BS5930:2015

Scale (approx)

1:50

Logged By

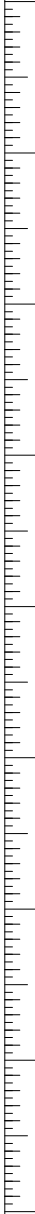
AA

Figure No.

P24-286.TP01

Produced by the GEOTECHNICAL DATABASE SYSTEM (GEODASY) © all rights reserved

PADDOCK GEO ENGINEERING					Site Land West of Bliss Farm, Trowbridge, BA14 6DS		Trial Pit Number TP02			
Excavation Method Trial Pit		Dimensions		Ground Level (mOD)		Client Hills Homes Development Ltd		Job Number P24-286		
		Location		Dates 04/10/2024		Engineer PGE		Sheet 1/1		
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water		
0.40 0.50	C D				(0.30) 0.30 (0.20) 0.50	Grass onto, firm dark brown slightly sandy gravelly organic CLAY. Gravel is composed of fine to medium flint. (TOPSOIL LIKE MADE GROUND)				
					(0.60)	Firm dark brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is composed of fine to medium subangular to subrounded flint. (ALLUVIUM)				
1.00	D				1.10	Soft yellow brown very sandy slightly gravelly CLAY. Gravel composed of fine to coarse subangular to subrounded flint. (ALLUVIUM)				
					(1.00)	Stiff light blue mottled orange and brown slightly sandy CLAY. Abundant pockets of selenite crystals present. (WEATHERED OXFORD CLAY FORMATION)				
					2.10	Complete at 2.30m				
					Remarks					
					LWD testing performed at c.0.50m depth. Trial pit sides remained stable upon completion. No obvious roots observed. No groundwater encountered during excavation. Trial pit backfilled with arisings. No obvious signs of contamination noted.					
					Logged in accordance BS5930:2015					
					Scale (approx) 1:50		Logged By AA		Figure No. P24-286.TP02	

Site Land West of Bliss Farm, Trowbridge, BA14 6DS Trial Pit Number TP03									
Excavation Method Trial Pit		Dimensions		Ground Level (mOD)		Client Hills Homes Development Ltd		Job Number P24-286	
		Location		Dates 04/10/2024		Engineer PGE		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water
0.30	D				(0.20) 0.20 (0.30) 0.50 (0.40) 0.90	Grass onto, firm dark brown slightly sandy gravelly organic CLAY. Gravel is composed of fine to medium flint. (TOPSOIL LIKE MADE GROUND) Firm dark brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is composed of fine to medium subangular to subrounded flint. (ALLUVIUM) Soft yellow brown very sandy slightly gravelly CLAY. Gravel composed of fine to coarse subangular to subrounded flint. (ALLUVIUM) Complete at 0.90m		 	
0.80 0.90	D C								
						Remarks LWD testing performed at c.0.50m depth. Trial pit sides remained stable upon completion. No obvious roots observed. No groundwater encountered during excavation. Trial pit backfilled with arisings. No obvious signs of contamination noted. Logged in accordance BS5930:2015 Scale (approx) 1:50 Logged By AA Figure No. P24-286.TP02			

PADDOCK GEO ENGINEERING						Site Land West of Bliss Farm, Trowbridge, BA14 6DS		Trial Pit Number TP04			
Excavation Method Trial Pit		Dimensions		Ground Level (mOD)		Client Hills Homes Development Ltd		Job Number P24-286			
		Location		Dates 04/10/2024		Engineer PGE		Sheet 1/1			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water			
0.10	C				(0.20)	Grass onto, firm dark brown slightly sandy gravelly organic CLAY. Gravel is composed of fine to medium flint. (TOPSOIL LIKE MADE GROUND)					
0.30					(0.20)						
					(0.20)						
	D				(0.40)	Firm dark brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is composed of fine to medium subangular to subrounded flint. (ALLUVIUM)					
					(0.70)						
					1.10						
1.40	D				(1.00)	Soft yellow brown very sandy slightly gravelly CLAY. Gravel composed of fine to coarse subangular to subrounded flint. (ALLUVIUM)					
1.90	D				(2.10)	Stiff light blue mottled orange and brown slightly sandy CLAY. Abundant pockets of selenite crystals present. (WEATHERED OXFORD CLAY FORMATION)					
						Complete at 2.10m					
						Remarks LWD testing performed at c.0.50m depth. Trial pit sides remained stable upon completion. No obvious roots observed. No groundwater encountered during excavation. Trial pit backfilled with arisings. No obvious signs of contamination noted.					
						Logged in accordance BS5930:2015					
						Scale (approx) 1:50		Logged By AA		Figure No. P24-286.TP04	

Excavation Method Trial Pit	Dimensions	Ground Level (mOD)	Client Hills Homes Development Ltd	Job Number P24-286
	Location	Dates 04/10/2024	Engineer PGE	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.25	D				(0.20)	Grass onto, firm dark brown slightly sandy gravelly organic CLAY. Gravel is composed of fine to medium flint. (TOPSOIL LIKE MADE GROUND) Firm dark brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is composed of fine to medium subangular to subrounded flint. (ALLUVIUM) Soft yellow brown very sandy slightly gravelly CLAY. Gravel composed of fine to coarse subangular to subrounded flint. (ALLUVIUM) Complete at 2.10m	  	
0.50	C				0.20			
0.50	D				0.30 (0.30)			
					0.60			

	Remarks LWD testing performed at c.0.50m depth. Trial pit sides remained stable upon completion. No obvious roots observed. No groundwater encountered during excavation. Trial pit backfilled with arisings. No obvious signs of contamination noted.		
	Logged in accordance BS5930:2015		
	Scale (approx) 1:50	Logged By AA	Figure No. P24-286.TP05

PADDOCK GEO ENGINEERING					Site Land West of Bliss Farm, Trowbridge, BA14 6DS		Trial Pit Number TP06		
Excavation Method Trial Pit		Dimensions		Ground Level (mOD)		Client Hills Homes Development Ltd		Job Number P24-286	
		Location		Dates 04/10/2024		Engineer PGE		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.80	C				(0.20)	Grass onto, firm dark brown slightly sandy gravelly organic CLAY. Gravel is composed of fine to medium flint. (TOPSOIL LIKE MADE GROUND)			
1.00	D				0.20 (0.50)		Firm dark brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is composed of fine to medium subangular to subrounded flint. (ALLUVIUM)		
					0.70 (0.30)	Soft yellow brown very sandy slightly gravelly CLAY. Gravel composed of fine to coarse subangular to subrounded flint. (ALLUVIUM)			
					1.00		Stiff light blue mottled orange and brown slightly sandy CLAY. Abundant pockets of selenite crystals present. (WEATHERED OXFORD CLAY FORMATION)		
1.90	D				(0.90)	Complete at 1.90m			
 Remarks LWD testing performed at c.0.50m depth. Trial pit sides remained stable upon completion. No obvious roots observed. No groundwater encountered during excavation. Trial pit backfilled with arisings. No obvious signs of contamination noted. Logged in accordance BS5930:2015									
Scale (approx) 1:50						Logged By AA		Figure No. P24-286.TP06	

PADDOCK GEO ENGINEERING						Site Land West of Bliss Farm, Trowbridge, BA14 6DS		Trial Pit Number TP07	
Excavation Method Trial Pit		Dimensions		Ground Level (mOD)		Client Hills Homes Development Ltd		Job Number P24-286	
		Location		Dates 04/10/2024		Engineer PGE		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.10 0.25 0.50	C D D				(0.20) (0.20) (0.30) (0.50) (0.30) (0.80)	Grass onto, firm dark brown slightly sandy gravelly organic CLAY. Gravel is composed of fine to medium flint. (TOPSOIL LIKE MADE GROUND) Firm dark brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is composed of fine to medium subangular to subrounded flint. (ALLUVIUM) Stiff light blue mottled orange and brown slightly sandy CLAY. Abundant pockets of selenite crystals present. (WEATHERED OXFORD CLAY FORMATION) Complete at 0.80m			
						Remarks LWD testing performed at c.0.50m depth. Trial pit sides remained stable upon completion. No obvious roots observed. No groundwater encountered during excavation. Trial pit backfilled with arisings. No obvious signs of contamination noted.			
						Scale (approx) 1:50		Logged By	

Excavation Method		Dimensions		Ground Level (mOD)		Client Hills Homes Development Ltd		Job Number P24-286	
		Location		Dates 04/10/2024		Engineer PGE		Sheet 1/1	

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.40	D				(0.30)	Grass onto, firm dark brown slightly sandy gravelly organic CLAY. Gravel is composed of fine to medium flint. (TOPSOIL LIKE MADE GROUND)		
0.60	C				(0.30)	Firm dark brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is composed of fine to medium subangular to subrounded flint. (ALLUVIUM)		
0.70	D				(0.60)	Soft yellow brown very sandy slightly gravelly CLAY. Gravel composed of fine to coarse subangular to subrounded flint. (ALLUVIUM)		
					(0.20)			
					0.80	Complete at 0.80m		



Remarks LWD testing performed at c.0.50m depth. Trial pit sides remained stable upon completion. No obvious roots observed. No groundwater encountered during excavation. Trial pit backfilled with arisings. No obvious signs of contamination noted.		
Logged in accordance BS5930:2015		
Scale (approx) 1:50	Logged By AA.	Figure No. P24-286.TP08

Excavation Method	Dimensions	Ground Level (mOD)	Client Hills Homes Development Ltd	Job Number P24-286
	Location	Dates 04/10/2024	Engineer PGE	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.20	D				(0.30)	Grass onto, firm dark brown slightly sandy gravelly organic CLAY. Gravel is composed of fine to medium flint. (TOPSOIL LIKE MADE GROUND)		
0.50	D				(0.70)	Firm dark brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is composed of fine to medium subangular to subrounded flint. (ALLUVIUM)		
0.90	C				1.00	Stiff light blue mottled orange and brown slightly sandy CLAY. Abundant pockets of selenite crystals present. (WEATHERED OXFORD CLAY FORMATION)		
1.50	D				(1.00)			
					2.00	Complete at 2.00m		

	Remarks LWD testing performed at c.0.50m depth. Trial pit sides remained stable upon completion. No obvious roots observed. No groundwater encountered during excavation. Trial pit backfilled with arisings. No obvious signs of contamination noted.		
	Logged in accordance BS5930:2015		
	Scale (approx) 1:50	Logged By AA.	Figure No. P24-286.TP08

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.15	D				(0.20) 0.20	Grass onto, firm dark brown slightly sandy gravelly organic CLAY. Gravel is composed of fine to medium flint. (TOPSOIL LIKE MADE GROUND)		
0.50	C				(0.80)	Firm dark brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is composed of fine to medium subangular to subrounded flint. (ALLUVIUM)		
0.70	D				1.00	Complete at 1.00m		



LWD testing performed at c.0.50m depth.
Trial pit sides remained stable upon completion.
No obvious roots observed.
No groundwater encountered during excavation.
Trial pit backfilled with arisings.
No obvious signs of contamination noted.

Logged in accordance BS5930:2015

Scale (approx)	Logged By	Figure No.
1:50	AA.	P24-286.TP10

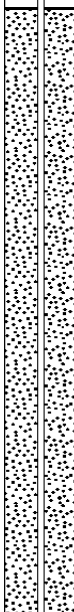
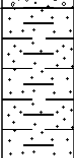
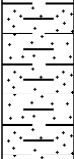
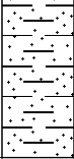
						Site Land West of Bliss Farm, Trowbridge, BA14 6DS		Number WS01	
Excavation Method Drive-in Windowless Sampler		Dimensions 87mm to 2.00m 77mm to 4.00m 67mm to 5.00m		Ground Level (mOD)		Client Hills Homes Development Ltd		Job Number P24-286	
		Location		Dates 03/10/2024		Engineer PGE		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.50 0.50 0.70	C D 50kPa		1,2/2,2,2,3		(0.30) 0.30 (0.70)	Grass onto, firm dark brown slightly sandy gravelly organic CLAY. Gravel is composed of fine to medium flint. (TOPSOIL LIKE MADE GROUND)			
1.00-1.45 1.00 1.10	SPT(C) N=9 D C		2,2/2,3,3,3		1.00	Firm dark brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is composed of fine to medium subangular to subrounded flint. (ALLUVIUM)			
1.50 1.70	D 80kPa					Stiff light blue mottled orange and brown slightly sandy CLAY. Abundant pockets of selenite crystals present. (WEATHERED OXFORD CLAY FORMATION)			
2.00-2.45 2.00	SPT(C) N=11 D		2,2/2,3,3,3		(2.80)				
2.50 2.70	D 130kPa								
3.00-3.45 3.00	SPT(C) N=18 D		4,3/3,5,5,5						
3.50 3.70	D 140kPa								
4.00-4.45 4.00	SPT(C) N=21 D		4,4/5,4,6,6		3.80	Stiff blue grey sandy slightly gravelly CLAY. Gravel is fine rounded calcareous nodules and pockets of selenite crystals present. (OXFORD CLAY FORMATION)			
4.80	D				(1.20)				
					5.00	Complete at 5.00m			
Remarks No obvious roots observed. No groundwater encountered during drilling. Monitoring well installed. No obvious signs of contamination noted. Borehole Sides remained stable upon completion.							Scale (approx) 1:50	Logged By MG	Figure No. P24-286.WS01

PADDOCK GEO ENGINEERING						Site Land West of Bliss Farm, Trowbridge, BA14 6DS		Number WS02	
Excavation Method Drive-in Windowless Sampler		Dimensions 87mm to 2.00m 77mm to 4.00m 67mm to 5.00m		Ground Level (mOD)		Client Hills Homes Development Ltd		Job Number P24-286	
		Location				Dates 03/10/2024		Engineer PGE	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.10	C				(0.20) 0.20	Grass onto, firm dark brown slightly sandy gravelly organic CLAY. Gravel is composed of fine to medium Flint. (TOPSOIL LIKE MADE GROUND)			
0.50	C					Firm dark brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is composed of fine to medium subangular to subrounded flint. (ALLUVIUM)			
0.70	50kPa								
0.70	D								
1.00-1.45	SPT(C) N=9		1,2/2,2,3,2		(1.80)				
1.20	D								
1.70	70kPa								
1.70	D								
2.00-2.45	SPT(C) N=17		1,2/2,3,4,8		2.00	Stiff light blue mottled orange and brown slightly sandy CLAY. (WEATHERED OXFORD CLAY FORMATION)			
2.20	D				(0.50)				
2.70	110kPa				2.50	Stiff light blue mottled orange and brown slightly sandy CLAY. Abundant pockets of selenite crystals present. (WEATHERED OXFORD CLAY FORMATION)			
2.70	D				(0.50)				
3.00-3.45	SPT(C) N=18		3,3/5,4,4,5		3.00	Stiff blue grey sandy slightly gravelly CLAY. Gravel is fine rounded calcareous nodules and pockets of selenite crystals present. (OXFORD CLAY FORMATION)			
3.20	D		fast(1) at 3.42m, no rise after 20 mins.						
3.70	130kPa								
3.70	D								
4.00-4.45	SPT(C) N=18		3,4/3,5,5,5		(2.00)				
									
									
									
									
									
									
									
									
					5.00	Complete at 5.00m			
Remarks No obvious roots observed. Groundwater encountered at and standing at 3.42m. Monitoring well installed. No obvious signs of contamination noted. Borehole Sides remained stable upon completion. Logged in accordance BS5930:2015							Scale (approx)	Logged By	
							1:50	MG	
							Figure No. P24-286.WS02		

						Site Land West of Bliss Farm, Trowbridge, BA14 6DS		Number WS03	
Excavation Method Drive-in Windowless Sampler		Dimensions 87mm to 2.00m 77mm to 4.00m 67mm to 5.00m		Ground Level (mOD)		Client Hills Homes Development Ltd		Job Number P24-286	
		Location		Dates 03/10/2024		Engineer PGE		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.10	C				(0.30)	Grass onto, firm dark brown slightly sandy gravelly organic CLAY. Gravel is composed of fine to medium brick and flint. (TOPSOIL LIKE MADE GROUND)			
0.50	C				0.30				
0.50	D				(0.30)				
0.80	C				0.60	Stiff dark grey brown slightly sandy gravelly CLAY. Gravel of fine to coarse subangular to subrounded flint, brick and quartzite. (MADE GROUND)			
1.00-1.45	SPT(C) N=6		1,1/1,1,2,2						
1.00	D					Firm dark brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is composed of fine to medium subangular to subrounded flint. (ALLUVIUM)			
1.50	D				(1.90)				
1.70	100kPa								
2.00-2.45	SPT(C) N=11		2,2/2,2,3,4						
2.00	D								
2.50	D				2.50	Stiff light blue mottled orange and brown slightly sandy CLAY. Abundant pockets of selenite crystals present. (WEATHERED OXFORD CLAY FORMATION)		▼1	
2.70	80kPa								
3.00-3.45	SPT(C) N=16		3,3/3,4,4,5		(0.90)				
3.20	D		fast(1) at 3.10m, rose to 2.50m in 20 mins.		3.40	Stiff light blue grey slightly sandy CLAY. Abundant pockets of selenite crystals present. (WEATHERED OXFORD CLAY FORMATION)		▽1	
3.70	110kPa								
3.70	D				(1.10)				
4.00-4.45	SPT(C) N=21		4,4/4,5,6,6		4.50	Stiff blue grey sandy slightly gravelly CLAY. Gravel is fine rounded calcareous nodules and pockets of selenite crystals present. (OXFORD CLAY FORMATION)			
4.20	D								
4.80	D				(0.50)				
					5.00	Complete at 5.00m			
Remarks Borehole Sides remained stable upon completion. No obvious signs of contamination noted. Monitoring well installed. Groundwater encountered during drilling at 3.10m rising to 2.50m over 20 minutes. No obvious roots observed.							Scale (approx) 1:50	Logged By MG	Figure No. P24-286.WS03
Logged in accordance BS5930:2015									

PADDOCK GEO ENGINEERING						Site Land West of Bliss Farm, Trowbridge, BA14 6DS		Number WS04	
Excavation Method Drive-in Windowless Sampler		Dimensions 87mm to 2.00m 77mm to 4.00m 67mm to 5.00m		Ground Level (mOD)		Client Hills Homes Development Ltd		Job Number P24-286	
		Location							
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.10	C				(0.30) 0.30	Grass onto, firm dark brown slightly sandy gravelly organic CLAY. Gravel is composed of fine to medium flint. (TOPSOIL LIKE MADE GROUND)			
0.50 0.60 0.80 0.90 1.00-1.45 1.10	C D 55kPa C SPT(C) N=7 D		1,0/2,1,2,2		(1.80)	Firm dark brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is composed of fine to medium subangular to subrounded flint. (ALLUVIUM)			
1.60 1.80	D 45kPa								
2.00-2.45 2.10	SPT(C) N=9 D		1,2/1,2,3,3		2.10	Stiff light blue mottled orange and brown slightly sandy CLAY. Abundant pockets of selenite crystals present. (WEATHERED OXFORD CLAY FORMATION)			
2.60 2.80	D 100kPa				(0.90)				
3.00-3.45 3.10	SPT(C) N=13 D		3,2/3,3,3,4		3.00	Stiff light blue grey slightly sandy CLAY. Abundant pockets of selenite crystals present. (OXFORD CLAY FORMATION)			
3.60	D								
4.00-4.45 4.10	SPT(C) N=17 D		3,3/3,4,5,5		(2.00)				
4.90	D				5.00	Complete at 5.00m			
Remarks No obvious roots observed. No groundwater encountered during drilling. Monitoring well installed. No obvious signs of contamination noted. Borehole Sides remained stable upon completion.							Scale (approx) 1:50	Logged By MG	Figure No. P24-286.WS04
Logged in accordance BS5930:2015									

PADDOCK GEO ENGINEERING						Site Land West of Bliss Farm, Trowbridge, BA14 6DS		Number WS05	
Excavation Method Drive-in Windowless Sampler		Dimensions 87mm to 2.00m 77mm to 4.00m 67mm to 5.00m		Ground Level (mOD)		Client Hills Homes Development Ltd		Job Number P24-286	
		Location							
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.10	C		1,2/2,3,4,4		(0.20)	Grass onto, firm dark brown slightly sandy gravelly organic CLAY. Gravel is composed of fine to medium flint. (TOPSOIL LIKE MADE GROUND)			
0.40	C				0.20				
0.50	D				(0.70)	Firm dark brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is composed of fine to medium subangular to subrounded flint. (ALLUVIUM)			
0.80	78kPa				0.90				
1.00-1.45	SPT(C) N=13		2,3/2,4,3,3		(2.10)	Stiff light blue mottled orange and brown slightly sandy CLAY. Abundant pockets of selenite crystals present. (WEATHERED OXFORD CLAY FORMATION)			
1.10	C								
1.30	D								
1.80	86kPa								
1.80	D		4,3/4,4,4,5		3.00	Stiff light blue grey slightly sandy CLAY. Abundant pockets of selenite crystals present. (OXFORD CLAY FORMATION)			
2.00-2.45	SPT(C) N=12								
2.30	D								
2.80	110kPa								
2.80	D		3,3/3,3,5,4		(2.00)				
3.00-3.45	SPT(C) N=17								
3.30	D								
3.80	110kPa								
3.80	D				5.00	Complete at 5.00m			
4.00-4.45	SPT(C) N=15								
4.30	D								
4.80	110kPa								
4.80	D								
Remarks No obvious roots observed. No groundwater encountered during drilling. Monitoring well installed. No obvious signs of contamination noted. Borehole Sides remained stable upon completion.								Scale (approx) 1:50	Logged By MG
Logged in accordance BS5930:2015								Figure No. P24-286.WS05	

PADDOCK GEO ENGINEERING						Site Land West of Bliss Farm, Trowbridge, BA14 6DS		Number WS06			
Excavation Method Drive-in Windowless Sampler		Dimensions 87mm to 2.00m 77mm to 4.00m 67mm to 5.00m		Ground Level (mOD)		Client Hills Homes Development Ltd		Job Number P24-286			
		Location								Dates 04/10/2024	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr		
0.10	C		1,1/1,1,2,1		(0.20) 0.20	Grass onto, firm dark brown slightly sandy gravelly organic CLAY. Gravel is composed of fine to medium Flint. (TOPSOIL LIKE MADE GROUND)		▽1			
0.40	C				(0.70)	Firm dark brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is composed of fine to medium subangular to subrounded flint. (ALLUVIUM)					
0.50	D				0.90	Stiff light blue mottled orange and brown slightly sandy CLAY. Abundant pockets of selenite crystals present. (WEATHERED OXFORD CLAY FORMATION)					
0.80	78kPa										
0.80	C										
1.00-1.45	SPT(C) N=5				Slow(1) at 1.90m, rose to 1.10m in 20 mins. 2,2/2,3,3,3		(2.10)				
1.30	D										
1.80	86kPa										
1.80	D										
2.00-2.45	SPT(C) N=11				2,2/3,3,3,3					3.00	
2.30	D										
2.80	110kPa										
2.80	D										
3.00-3.45	SPT(C) N=12	4,4/4,4,4,5			(2.00)						
3.30	D										
3.80	110kPa										
3.80	D										
4.00-4.45	SPT(C) N=17				5.00						
4.30	D										
4.80	110kPa										
4.80	D										
Complete at 5.00m											
Remarks No obvious roots observed. Borehole Sides remained stable upon completion. No obvious signs of contamination noted. Monitoring well installed. Groundwater strike at 1.90m rising to 1.10m over 20 minutes. Logged in accordance BS5930:2015								Scale (approx)	Logged By		
								1:50	MG		
								Figure No. P24-286.WS06			

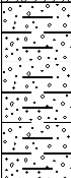
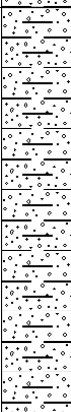
Site Land West of Bliss Farm, Trowbridge, BA14 6DS		Number WS07
Client Hills Homes Development Ltd		Job Number P24-286
Engineer PGE		Sheet 1/1

Excavation Method Drive-in Windowless Sampler	Dimensions 87mm to 2.00m 77mm to 4.00m 67mm to 5.00m	Ground Level (mOD)
	Location	Dates 04/10/2024

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10 0.40 0.40 0.50	C 56kPa D C				(0.20) 0.20	Grass onto, firm dark brown slightly sandy gravelly organic CLAY. Gravel is composed of fine to medium brick and flint. (TOPSOIL LIKE MADE GROUND)		
					(0.90)	Firm dark brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is composed of fine to medium subangular to subrounded flint. (ALLUVIUM)		
0.90 1.00-1.45	C SPT(C) N=11		1,3/3,2,3,3		1.10	Soft yellow brown very sandy slightly gravelly CLAY. Gravel composed of fine to coarse subangular to subrounded flint. (ALLUVIUM)		V1
1.30	D		Seepage(1) at 1.30m.		(0.40) 1.50	Stiff light blue mottled orange and brown slightly sandy CLAY. Abundant pockets of selenite crystals present. (WEATHERED OXFORD CLAY FORMATION)		
1.70 1.80	100kPa D							
2.00-2.45	SPT(C) N=14		2,2/3,3,4,4					
2.30	D							
2.80 2.80	120kPa D				(2.40)			
3.30	D							
3.80 3.80	70kPa D							
4.00-4.45	SPT(C) N=19		4,4/3,5,6,5		3.90	Stiff light blue grey slightly sandy CLAY. Abundant pockets of selenite crystals present. (OXFORD CLAY FORMATION)		
4.30	D				(1.10)			
4.80	D				5.00	Complete at 5.00m		

Remarks Groundwater seepage at 1.30m. Borehole backfilled with arisings. No obvious signs of contamination noted. Borehole Sides remained stable upon completion. No obvious roots observed. Logged in accordance BS5930:2015	Scale (approx)	Logged By
	1:50	MG
	Figure No. P24-286.WS06	

Client Hills Homes Development Ltd	Job Number P24-286
Engineer PGE	Sheet 1/1

Description	Legend	Notes
Grass onto, firm dark brown slightly sandy gravelly organic CLAY. Gravel is composed of fine to medium brick and flint. (TOPSOIL LIKE MADE GROUND)		
Firm dark brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is composed of fine to medium subangular to subrounded flint. (ALLUVIUM)		
Soft yellow brown very sandy slightly gravelly CLAY. Gravel composed of fine to coarse subangular to subrounded flint. (ALLUVIUM)		
Stiff light blue mottled orange and brown slightly sandy CLAY. Abundant pockets of selenite crystals present. (WEATHERED OXFORD CLAY FORMATION)		
Complete at 5.00m		

Scale (approx)	Logged By
1:50	MG

Figure No.
P24-286.WS06

PADDOCK GEO ENGINEERING						Site Land West of Bliss Farm, Trowbridge, BA14 6DS		Number WS09	
Excavation Method Drive-in Windowless Sampler		Dimensions 87mm to 2.00m 77mm to 4.00m 67mm to 5.00m		Ground Level (mOD)		Client Hills Homes Development Ltd		Job Number P24-286	
		Location				Dates 04/10/2024		Engineer PGE	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.10	C				(0.30) 0.30	Grass onto, firm dark brown slightly sandy gravelly organic CLAY. Gravel is composed of fine to medium flint. (TOPSOIL LIKE MADE GROUND)			
0.60 0.70 0.70 0.80 1.00-1.45	C 54kPa D C SPT(C) N=5		1,2/1,1,1,2		(0.60) 0.90	Firm dark brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is composed of fine to medium subangular to subrounded flint. (ALLUVIUM)			
1.70 1.70	86kPa D				(2.10)	Stiff light blue mottled orange and brown slightly sandy CLAY. Abundant pockets of selenite crystals present. (WEATHERED OXFORD CLAY FORMATION)			
2.00-2.45	SPT(C) N=7		Fast(1) at 2.00m, no rise after 20 mins. 0,0/1,2,2,2						
2.70 2.70	110kPa D								
3.00-3.45	SPT(C) N=10		2,2/2,2,3,3		3.00	Stiff light blue grey slightly sandy CLAY. Abundant pockets of selenite crystals present. (OXFORD CLAY FORMATION)			
3.70 3.70	110kPa D				(1.00)				
4.00-4.45	SPT(C) N=13		2,3/3,3,3,4		4.00	Complete at 4.00m			
Remarks Groundwater strike at 2.00m standing at 2.00m after 20 minutes. Borehole backfilled with arisings. No obvious signs of contamination noted. Borehole sides remained stable upon completion. No obvious roots observed.							Scale (approx) 1:50	Logged By MG	
Figure No. P24-286.WS09									