Surface Water Strategy

To address a planning condition in relation to Approval 260751 for

Land to the North East side of Headley Road, Woodley, Reading RG5 4JG

Prepared by

Dr Robin Saunders CEng

Innervision Design Ltd

October 2026

INNERVISION
design

All rights reserved. No part of this report may be reproduced, stored in a retrieval system or transmitted in any form or by any means – electronic, mechanical, photocopying, recording or otherwise – without the prior written permission of Innervision Design.

Contents

Contents . . . . . **i**

List of Figures . . . . . **iii**

List of Tables . . . . . **iii**

1 Executive Summary **1**

2 Introduction **2**
2.1 Site location 2
2.2 Development description 2
2.2.1 Planning Condition 5 2
2.3 Geology 3
2.4 Infiltration rates 3
2.4.1 Water table 3
2.5 Existing surface water drainage 3
2.6 Greenfield estimation of peak rate of run-off 4
2.6.1 Methodology 4
2.6.2 Formula 4
2.6.3 Variables 4
2.6.4 Calculations 4
2.6.5 Peak green field run-off rates 5

3 SuDS Principles **6**
3.1 SuDS design philosophy 6
3.2 Source control 6
3.3 "End of pipe" solutions 6

4 Appraisal of SuDS options **8**
4.1 Site constraints impacting on SuDS 8
4.2 Infiltration devices 8
4.3 Expansive planting 8
4.4 Permeable hard standing 9
4.4.1 Permeable paving 9
4.5 Rainwater harvesting 9
4.5.1 For external use 10
4.6 Sedum/green roofs. 11
4.7 "End of pipe" solutions 11

5 Proposed surface water disposal strategy . . . **12**
5.1 Soakaway . . . 12
5.1.1 Sedimentation risk . . . 13
5.1.2 Minimising sedimentation risk . . . 13
5.1.3 Soakaway detail . . . 13
5.1.4 Drainage run capacity check . . . 14
5.2 Rainwater Harvesting . . . 15
5.3 Hard standing . . . 15
5.3.1 Access drive . . . 15
5.3.2 Around the dwelling . . . 16
5.4 Landscaped areas . . . 16
5.5 Drainage layout . . . 16
5.6 Timetable for implementation . . . 16
5.6.1 Demolition phase . . . 16
5.6.2 Construction phase . . . 16
5.6.3 Post construction phase . . . 16

6 Maintenance of SuDS . . . **17**
6.1 Soakaways (and pre treatment sediment sumps) . . . 17
6.2 Permeable pavements . . . 17
6.3 Water butts . . . 17
6.4 Vegetation expansion . . . 18

7 Summary . . . **19**

References . . . **19**

Appendix

A Geo-Insight report . . . **20**

B Site Investigation . . . **65**

C Pervious surface options . . . **71**
C.1 Geo grid around the dwelling . . . 71
C.2 Porous Asphalt to access drive . . . 72

D Proposed drainage layout . . . **78**

List of Figures

1 Site location plan 2
2 Use for water butts 10
3 Standard rainwater diverter 11
4 Critical storm duration and soakaway length 13
5 Typical soakaway details 14
6 Part H drainage design chart 15
7 Maintenance operations for soakaway 17

List of Tables

1 BRE 365 Calculation results 12

Disclaimer

This document has been prepared solely as a surface water drainage report on behalf of the client in the context of the scope as defined in this document. Innervision Design Ltd maintains that all reasonable care and skill have been used in the compilation of this report. However, Innervision Design Ltd shall not be under any liability for loss or damage (including consequential loss) whatsoever or howsoever arising as a result of the use of this report by the client or his agents. If any un-authorised third party comes into possession of this report they rely on it at their own risk and Innervision Design Ltd owes them no duty, care or skill whatsoever.

Scope

Note: this report can only be assessed under the scope it is intended for as set out below:

Town and Country Planning Act 1990

The scope of this report includes the provision of supplementary information in relation to a planning application set under the provision of this Act and is intended to meet the requirements for "particulars" under Section 62; (3) & (4 A) of same.

The Town and Country Planning (Development Management Procedure) (England) Order 2015

The scope of this report includes the provision of supplementary information in relation to any related planning Condition set under the provision of this Order and is intended to meet the requirements for "particulars" under Section 27(b) of same.

Building Act 1984

Building Regulations 2010 and Statute control

This report **is not** provided in support of any application made under the Building Act 1984 or related Regulations.

Statement of conformity

While this report cannot therefore be lawfully assessed by any persons, in any capacity, for compliance with the above Building Regulations all drainage on this private site, both foul and SW will be subject to full compliance with Part H of the Building Regulations 2010 (as amended 2013).

Hence all construction details, SW runs, pipe diameters etc. as detailed in this report are designed to comply in full with the "Adequate provision" Requirement of Part H and are to be checked, inspected, tested and approved by the Building Control Body of the clients choice at the time of detailed design and construction.

SuDS design additional standards

All SuDS (Sustainable drainage system) on site will also be designed and installed in accordance with CIRIA 753 & CIRIA 768, para 182 of the NPPF, its supporting

technical guidance and the DEFRA Non-Statutory Technical standards for sustainable drainage systems (2025).

1 Executive Summary

A All surface water arising can be managed on site.

B All surface water arising from the new dwelling is controlled by direct infiltration through a soakaway.

C A water butt will reduce potable water demand provide additional SuDS on site.

D Significant areas of existing impermeable surfaces will be removed entirely and revert to landscape planting.

E All remaining areas of hard standing on the site will be reconstructed using a permeable medium.

F There is no design exceedance outfall away from the site.

G All SuDS on site will be installed with full consideration to long term maintenance.

H The use of SuDS techniques on site will mitigate and treat the run-off volumes.

2 Introduction

2.1 Site location

The approved development is on a site know as "Land and garages to the North East side of Headley Road, Woodley, Reading, RG5 4JG" (see Figure 1).



Figure 1: Site location, is indicated

2.2 Development description

The Approval (260751) is for the "erection of 1no. 2 bedroom dwelling to include 3no. dormers, with garden and parking following demolition of existing garages.".

All plans as per those approved.

2.2.1 Planning Condition 5

"No development shall take place until a detailed surface water drainage scheme, based on the use of infiltration SuDS, has been submitted to and approved in writing by the Local Planning Authority. The scheme shall include:

1. BRE 365 soakaway/infiltration test results, demonstrating that infiltration is feasible on site and that the ground conditions are suitable;
2. A drainage strategy plan, including the location, design and sizing of all Sustainable Drainage Systems (SuDS) features, demonstrating that the base of any infiltration feature would be

located at least 1 metre above the seasonally high groundwater table;

3. Details of the long-term management and maintenance of the drainage system, including arrangements for its implementation for the lifetime of the development and confirmation of the party responsible for its ongoing maintenance.

The approved drainage scheme shall be implemented in full prior to the first occupation of the development and thereafter retained and maintained in accordance with the approved details."

2.3 Geology

Refer to Geo-insight report at Appendix A.

Geology confirmed on site as a mixture of sand and gravels; "ballast"(per comms from site).

2.4 Infiltration rates

Infiltration rates for the site based on infiltration testing undertaken on site by the client, is found to be 3.9 x10^{-5} ms^{-1} in the worst case.

Refer to data at Appendix B.

2.4.1 Water table

Ground water was not encountered in further investigation to 1m below the trial hole.

2.5 Existing surface water drainage

The site currently drains surface water to a network drain. The existing garages on site do not utilise SuDS.

The curtilage of the entire site encloses an area of approximately 561.2m^2 of which, pre-development, 561.2m^2 is classed as being impermeable (55m^2 roofs, 506.2m^2 impermeable hard-standing and paths). The new development decreases the impermeable area from 561.2m^2 to 70m^2 (of which 70m^2 is roof area).

However, for the purposes of this assessment the area covered by the development is considered greenfield with all rainwater draining via natural process.

2.6 Greenfield estimation of peak rate of run-off

2.6.1 Methodology

The following greenfield run-off rate calculations have been carried out in accordance with the IH Report 124 'Flood estimation for small catchments'[1]. The pro rata method on the size of catchment has been used.

2.6.2 Formula

For catchments less than 50ha:

$$Q_{BAR50ha} = 1.08\,(50/100)^{0.89} * SAAR^{1.17} * SPR^{2.17} \tag{1}$$

$$Q_{BAR} = Q_{BAR50ha} * \frac{A}{50} \tag{2}$$

$$Q_{1yr} = Q_{BAR} * 0.85 \tag{3}$$

$$Q_{100yr} = Q_{BAR} * GC_{100} \tag{4}$$

2.6.3 Variables

Qbar/Qmed =0.85

SAAR = 616mm

Hydrological Region 6

Growth curve factors: 30 yr = 2.3; 100 yr = 3.19

SPR = 0.47

Note: Area reflects positively drained areas only. I.e. Whole site area minus areas of significant open space.

2.6.4 Calculations

$$\begin{aligned} Q_{BAR50ha} &= 1.08 * 0.5^{0.89} * 616^{1.17} * 0.47^{2.17} \\ &= 0.58 * 1835.73 * 0.19 \\ &= 207.86 \end{aligned}$$

Using Equation 2:

$$\begin{aligned} Q_{BAR} =& \frac{207.86 * 0.06}{50} \\ =& 0.23 ls^{-1} \end{aligned}$$

Using Equation 3:

$$\begin{aligned} Q_1 =& 0.23 * 0.85 \\ =& 0.20 ls^{-1} \end{aligned}$$

Using Equation 4:

$$\begin{aligned} Q_{100} =& 0.23 * 3.19 \\ =& 0.74 ls^{-1} \end{aligned}$$

2.6.5 Peak green field run-off rates

For the 1 year Return Period event the peak runoff calculates to 0.20 ls^{-1}
For the 30 year Return Period event the peak runoff calculates to 0.54 ls^{-1}
For the 100 year Return Period event the peak runoff calculates to 0.74 ls^{-1}

3 SuDS Principles

In line with the SuDS management train, the following hierarchy has been considered in applying the use of SuDS into the proposed development scheme.

3.1 SuDS design philosophy

The CIRIA SuDS[2] manual provides the design philosophy:

> "SuDS design should, as much as possible, be based around the following:
>
> - using surface water runoff as a resource
> - managing rainwater close to where it falls
> - managing runoff at the surface
> - allowing rainwater to soak into the ground
> - promoting evapotranspiration
> - slowing and storing run-off to mimic natural runoff characteristics
> - reducing contamination of runoff through pollution prevention and controlling the runoff at source
> - treating runoff to reduce the risk of urban contaminants causing environmental pollution."

3.2 Source control

- Sedum roofing.
- Infiltration devices. Typically soakaways.
- Rainwater harvesting.
- Bio-retention planting, rain gardens.
- Permeable paving, porous asphalt. These provide both infiltration and short term storage volumes thus reducing overall un-mitigated run-off volumes.

3.3 "End of pipe" solutions

To be considered only after implementation of the above options.

- Retention tanks with outfall controlled by hydraulic means to limiting discharge rates and volumes to discharge to existing SW flow pathways.

Sections 4.2 to 4.7 consider the viability of a range of these SuDS devices.

4 Appraisal of SuDS options

The primary aim is to meet the requirements of the Local Plan core policies and the SuDS hierarchy so as to manage SW on site.

4.1 Site constraints impacting on SuDS

- Approved site layout.
- Approved pitched roof design.
- No access to a watercourse.

4.2 Infiltration devices

With reference to Section 3.1, soakaways promote the following SuDS design criteria:

- manages rainwater close to where it falls
- allows rainwater to soak into the ground
- slows and stores run-off to mimic natural run-off characteristics
- treats run-off to reduce the risk of urban contaminants causing environmental pollution.

Given the infiltration rates calculated on site infiltration devices appear suited for this site and can be designed to accommodate design rainfall events (designed in line with BRE365 and Part H of the Building Regulations and at least 5m away from any structure).

Pollution mitigation indices

With Reference to Table 26.2 of the SuDS Manual, pollution hazard indices for:

Domestic Roofs are 0.2 (TSS), 0.2 Metals & 0.05 Hydrocarbons.

Mitigation indices provided are: 0.3, 0.3 & 0.3 hence soakaways are satisfactory for domestic roofing.

4.3 Expansive planting

With reference to Section 3.1, expansive planting promotes the following SuDS design criteria:

- manages rainwater close to where it falls

- slows and stores run-off to mimic natural run-off characteristics
- treats run-off to reduce the risk of urban contaminants causing environmental pollution.

4.4 Permeable hard standing

With reference to Section 3.1, permeable paving promotes the following SuDS design criteria:

- manages rainwater close to where it falls
- manages runoff at the surface
- allows rainwater to soak into the ground
- slows and stores run-off to mimic natural runoff characteristics
- treats runoff to reduce the risk of urban contaminants causing environmental pollution.

4.4.1 Permeable paving

A 30% void ratio is assumed through a 350mm sub-base. This is appropriate for a DOT Type 3 Sub-base hence the storage capacity equates to circa 105mm per $1m^2$ therefore based on a M6 100hr + cc storm of 87mm rainfall the paving offers, without any allowance for infiltration, a circa 1:1.2 drained volume:storage volume capacity. Hence there is no anticipated exceedance flow from the areas of permeable paving.

All permeable paving offers sufficient storage volume to accommodate the 5mm event.

Pollution mitigation indices

With Reference to Table 26.2 of the SuDS Manual, pollution hazard indices for:

Domestic driveways are 0.5 (TSS), 0.4 Metals & 0.4 Hydrocarbons.

Mitigation indices provided are: TSS 0.7, Metals 0.6, Hydrocarbons 0.7 = suitable for trafficked areas.

4.5 Rainwater harvesting

With reference to Section 3.1, Rainwater harvesting promotes the following SuDS design criteria:

- uses surface water runoff as a resource

- manages rainwater close to where it falls

and:

- stores rainwater for later use

4.5.1 For external use

Rain water harvesting / water butts: These provide additional, "off line[1]" SuDS, and are deemed a suitable SuDS component for small plots[2], extract at Figure 2. The image shows a water butt in "off-line" configuration using a standard diverter.

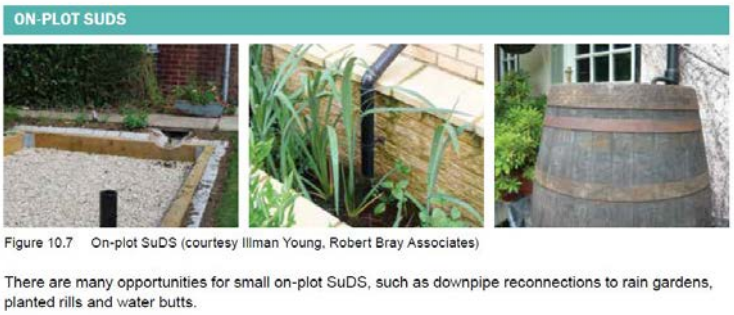


Figure 2: Use of water butts as provided in the SuDS manual

The collection and re-use of water can reduce run off volumes arising from roofs. The collected water, via readily available diverters (e.g. Web link: Standard diverter example, as per Figure 3), being used for external uses.

[1]The term "off-line" refers to the fact that a water butt is a harvesting device that is not "in-line" in the same manner that a pipe is in-line. Water is collected (harvested) until the water butt is full. When full, the rainwater continues down the rainwater pipe. Outflow from the tank is not "automatic" since this would negate the reason to harvest rainwater. Instead, manual drawdown occurs with the harvested water being used for external uses. Since a water butt may be full, the useful volume is not accounted for in storage and run-off calculations.



Figure 3: Standard rainwater diverter

Rainwater butts can, in part, accommodate the 5mm event dependent on manual drawdown and evaporation.

4.6 Sedum/green roofs.

Not required.

4.7 "End of pipe" solutions

Not required.

5 Proposed surface water disposal strategy

The following sections consider the strategy for water arising from the roof areas, driveways and hard standing and areas of landscaping.

5.1 Soakaway

All surface water arising from the area of new roofing is controlled by direct infiltration through soakaways. Notes:

- For this report the drained area to the soakaway(s) arises from the area of new roofing plus a 1.1 allowance for urban creep.
- The soakaways are designed for all events up to and including the M100 24hr event.
- An allowance of x1.4 is made for climate change in line with current best practice.
- FEH22 point rainfall data used.

Designed to BRE365, and to accommodate all surface water arising from a drained area of 1900m^2 requires 2 , 95% void ratio soakaways 2m wide x 46.7m long with a 0.8m effective depth. See Table 1.

Permeability	3.90E-05	ms^{-1}
Urban Creep	1.1	
Drained area	1900	m^2
Designed drained area	2090	m^2
Return Period	100	yr
% voids	95	%
Climate change	1.4	

Design Width, m	2
Design $Depth_{eff}$, m	0.8
Design Qty	2

Duration, mins	5	10	15	30	60	120	240	360	600	1440
Rainfall, mm	12.8	25.7	38.5	50.5	63.5	75.9	88.7	95.9	104.5	117.9
Volume in, m^3	13.4	26.8	40.2	52.8	66.4	79.3	92.7	100.3	109.2	123.2
Length req'd, m	8.8	17.4	26.0	33.4	40.5	45.2	46.6	45.1	40.5	27.9

Crit Length, m	46.7
Crit Duration, mins	210
Empty to 50%, hrs	6.49

Table 1: BRE 365 Calculation results

The minimum design length with respect to the critical storm duration is shown in Figure 4.

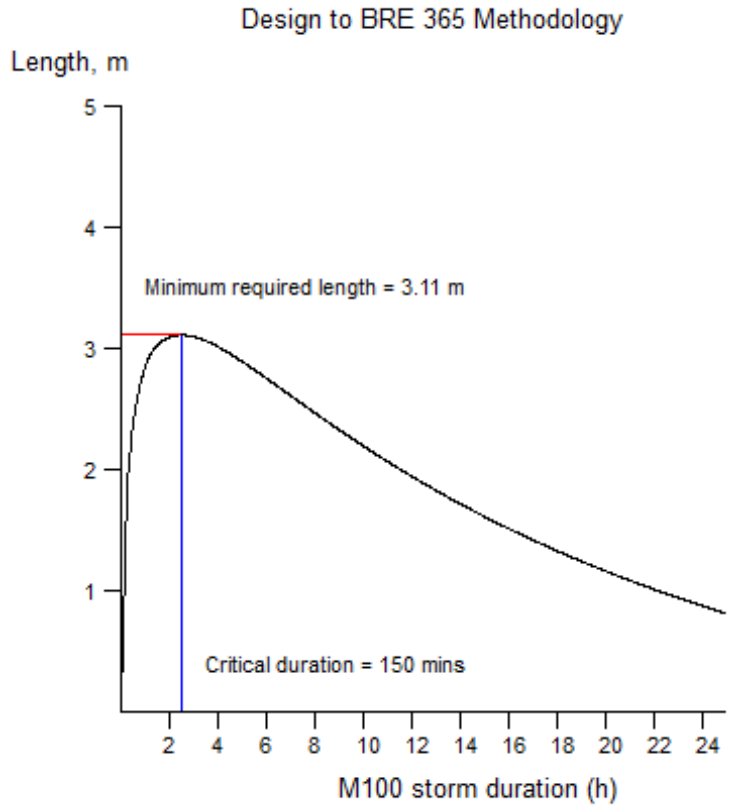


Figure 4: Critical storm duration and soakaway length

5.1.1 Sedimentation risk

Generally, roofing carries a very low sediment loading. Worst case 216 $kg.ha^{-1}yr^{-1}$ - so for this site that equates to circa 1.5$kg.yr^{-1}$ in the worst case. Generally this would reduce the attenuation capacity by circa 2% over 50yrs (all data from the SuDS maunual). The design allows for this amount with extra capacity provided to a 100yr design life. The BRE 365 method acknowledges this sedimentation and hence the base area is not considered in the sizing calculations.

5.1.2 Minimising sedimentation risk

The developer will fit accessible sumped rainwater gulleys at the base of all RWP's so as to reduce the amount of any sediment entering the soakaway.

The developer will also fit clip-in leaf guards to all roof gutters so as to remove gross solids.

5.1.3 Soakaway detail

The soakaways are designed to use open crates offering a circa 95% void ratio, encased within a geotextile membrane and provided with circa 450mm minimum cover. A

typical detail is shown in Figure 5.

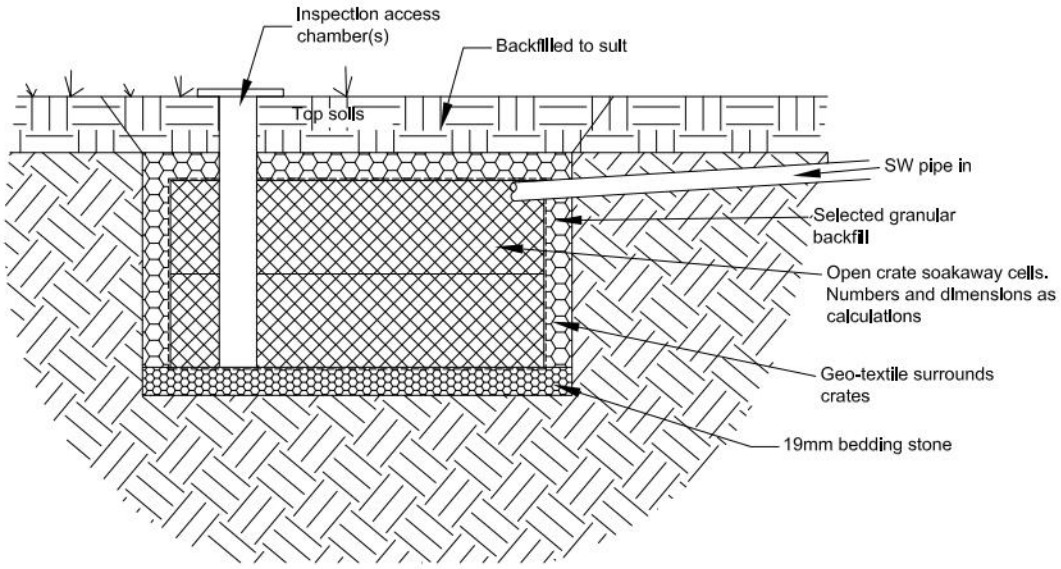


Figure 5: Typical soakaway details

5.1.4 Drainage run capacity check

Flow will be conveyed via 225mm diameter drainage runs laid at no less than 1:100 falls giving a maximum design capacity of $50ls^{-1}$(Part H design chart, Figure 6).

1 in 100yr max mean intensity storm = $110mmhr^{-1}$

Drained area to one pipe = $950m^2$

Required pipe capacity = 950 x 0.11 / 3.6 = 29 ls^{-1}

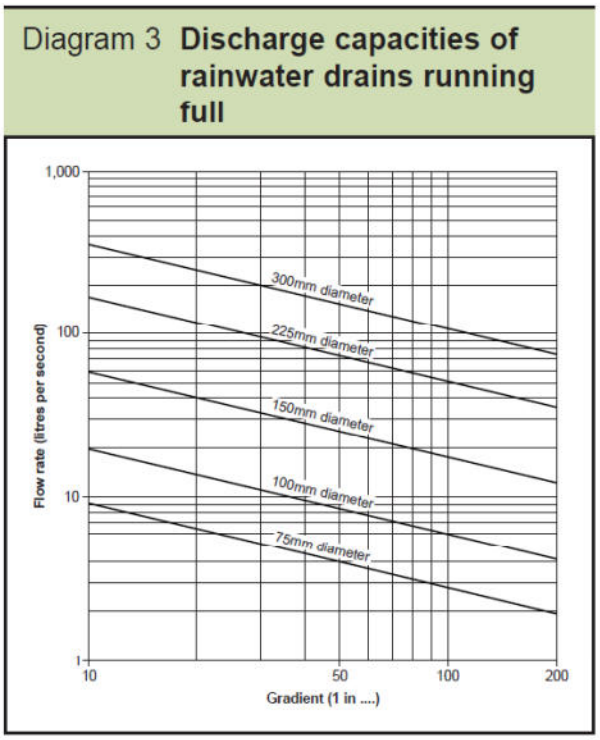


Figure 6: Part H drainage design chart

5.2 Rainwater Harvesting

The project team have detailed a "off line" rainwater butts to collect water for external use primarily to reduce potable water demand. These also serve as an additional SuDS feature. Since these are in off-line configuration any exceedance flows are automatically directed back to the downpipes.

5.3 Hard standing

5.3.1 Access drive

The existing access road will be (re)constructed using a permeable medium on a DOT/MOT 3 sub-base of a minimum 350mm depth (refer to Section 4.4).

Note: The depth requirement above satisfies hydraulic criteria only. Structural loading design for the intended porous asphalt may require greater hardcore depths.

The perimeter of these areas will be considered for expansive planting to accommodate any exceedance flows.

5.3.2 Around the dwelling

Due to the extensive RPZ in proximity to the dwelling, all hardstanding around the house will be formed using a "no-dig" geo-grid in-filled with loose 19mm gravel/stone.

Suitable options for these two areas are provided at Appendix C.

5.4 Landscaped areas

Significant areas of hard standing are being removed and these revert to typical domestic planting.

5.5 Drainage layout

Please refer to the drainage layout showing SuDS features at Appendix D.

5.6 Timetable for implementation

5.6.1 Demolition phase

During the demolition phase, rainwater will be managed in line with the requirements under the CDM regulations using existing SW gullies with measures in place to prevent contaminants entering the network (sand bag bunding).

5.6.2 Construction phase

The existing access driveway will be retained to allow site access during the construction phase.

Any permeable paving, or similar pervious surfaces, will only be installed when all construction activities are either complete, or near completion so as to minimise blockage of the surface.

5.6.3 Post construction phase

Water butts will be installed prior to final completion as part of the final landscaping.

Areas of landscaping and boundary planting will be undertaken as the project nears completion.

Inspection chambers pumped and cleaned out.

6 Maintenance of SuDS

Ultimate responsibility for the long term maintenance with SuDS in this environment lay with the owner of each dwelling (as yet unknown).

The site SW drainage will remain private.

All SuDS on site will be installed with full consideration to long term maintenance. The following guidance applies:

6.1 Soakaways (and pre treatment sediment sumps)

Figure 7[2] provides details maintenance operations required for a soakaway system.

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Inspect for sediment and debris in pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings	Annually
	Cleaning of gutters and any filters on downpipes	Annually (or as required based on inspections)
	Trimming any roots that may be causing blockages	Annually (or as required)
Occasional maintenance	Remove sediment and debris from pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings	As required, based on inspections
Remedial actions	Reconstruct soakaway and/or replace or clean void fill, if performance deteriorates or failure occurs	As required
	Replacement of clogged geotextile (will require reconstruction of soakaway)	As required
Monitoring	Inspect silt traps and note rate of sediment accumulation	Monthly in the first year and then annually
	Check soakaway to ensure emptying is occurring	Annually

Figure 7: Maintenance operations for soakaway

6.2 Permeable pavements

The maintenance plan for permeable pavements will include:

- Monthly litter removal;
- Bi-Annual jet wash and sweeping.
- Annual inspection and repairs as/if required.

6.3 Water butts

A maintenance plan for water butts should include:

- Regular inspection of silt traps and filters.
- Removal of sediments and debris as required.

6.4 Vegetation expansion

The maintenance plan for any garden planting will include:

- Monthly inspections until vegetation is established;
- Six monthly inspections after the vegetation has become established;
- Monthly litter removal.

7 Summary

All surface water arising can be managed on site. All surface water arising from roofed areas is controlled by direct infiltration through a soakaway. A water butt will reduce potable water demand provide additional SuDS on site.

Significant areas of existing impermeable surfaces will be removed entirely and revert to landscape planting. All areas of hard standing on the site will be reconstructed using a permeable medium.

There is no design exceedance outfall away from the site. Exceedance flows and flows arising from system failure can be accommodated on site within areas of landscape planting, soakaway crates and the sub-base to the hard standing.

The use of SuDS techniques on site, as detailed above and when installed in line with best practice (I.e. CIRIA 753 & CIRIA 768), will reduce and treat the run-off volumes in line with the core policies.

Signed: 

Dr Robin Saunders CEng, C. Build E, MCABE, BEng(Hons), PhD

Drainage and Building Engineer

Date: 27th October, 2026

References

[1] DCW Marshall & AC Bayliss. Flood estimation for small catchments. Technical Report No. 124, Institute of Hydrology, June 1994.

[2] CIRIA. The SUDS manual. Technical report, CIRIA, 2015.

A Geo-Insight report

Groundsure LOCATION INTELLIGENCE

Geo Insight

Garages, HEADLEY ROAD EAST, WOODLEY, WOKINGHAM, RG5 4JG

Order Details

Date: 13/10/2026

Your ref: 263318

Our Ref: GS-78X-6KG-ZNX-PVN

Site Details

Location: 476736 173379

Area: 0.06 ha

Authority: Wokingham Borough Council ↗



Summary of findings p. 2 >

OS MasterMap site plan p.10 >

Aerial image p. 5 >

Insight User Guide ↗

Contact us with any questions at:
info@groundsure.com ↗
01273 257 755

Certified B Corporation

Summary of findings

Page	Section	Geology 1:10,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
11 >	1.1 >	10k Availability >	Identified (within 500m)				
12 >	1.2 >	Artificial and made ground (10k) >	0	0	0	2	-
13 >	1.3 >	Superficial geology (10k) >	0	0	2	3	-
14	1.4	Landslip (10k)	0	0	0	0	-
15 >	1.5 >	Bedrock geology (10k) >	1	0	1	0	-
16 >	1.6 >	Bedrock faults and other linear features (10k) >	0	0	1	0	-
Page	Section	Geology 1:50,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
17 >	2.1 >	50k Availability >	Identified (within 500m)				
18 >	2.2 >	Artificial and made ground (50k) >	0	0	0	2	-
19	2.3	Artificial ground permeability (50k)	0	0	-	-	-
20 >	2.4 >	Superficial geology (50k) >	0	0	2	3	-
21	2.5	Superficial permeability (50k)	None (within 50m)				
21	2.6	Landslip (50k)	0	0	0	0	-
21	2.7	Landslip permeability (50k)	None (within 50m)				
22 >	2.8 >	Bedrock geology (50k) >	1	0	1	0	-
23 >	2.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
23 >	2.10 >	Bedrock faults and other linear features (50k) >	0	0	1	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
24	3.1	BGS Boreholes	0	0	0	-	-
Page	Section	Natural ground subsidence >					
25 >	4.1 >	Shrink swell clays >	Low (within 50m)				
26 >	4.2 >	Running sands >	Very low (within 50m)				
27 >	4.3 >	Compressible deposits >	Negligible (within 50m)				
28 >	4.4 >	Collapsible deposits >	Very low (within 50m)				
29 >	4.5 >	Landslides >	Very low (within 50m)				
30 >	4.6 >	Ground dissolution of soluble rocks >	Negligible (within 50m)				

©Innervision Design 2026
www.innervision-design.co.uk

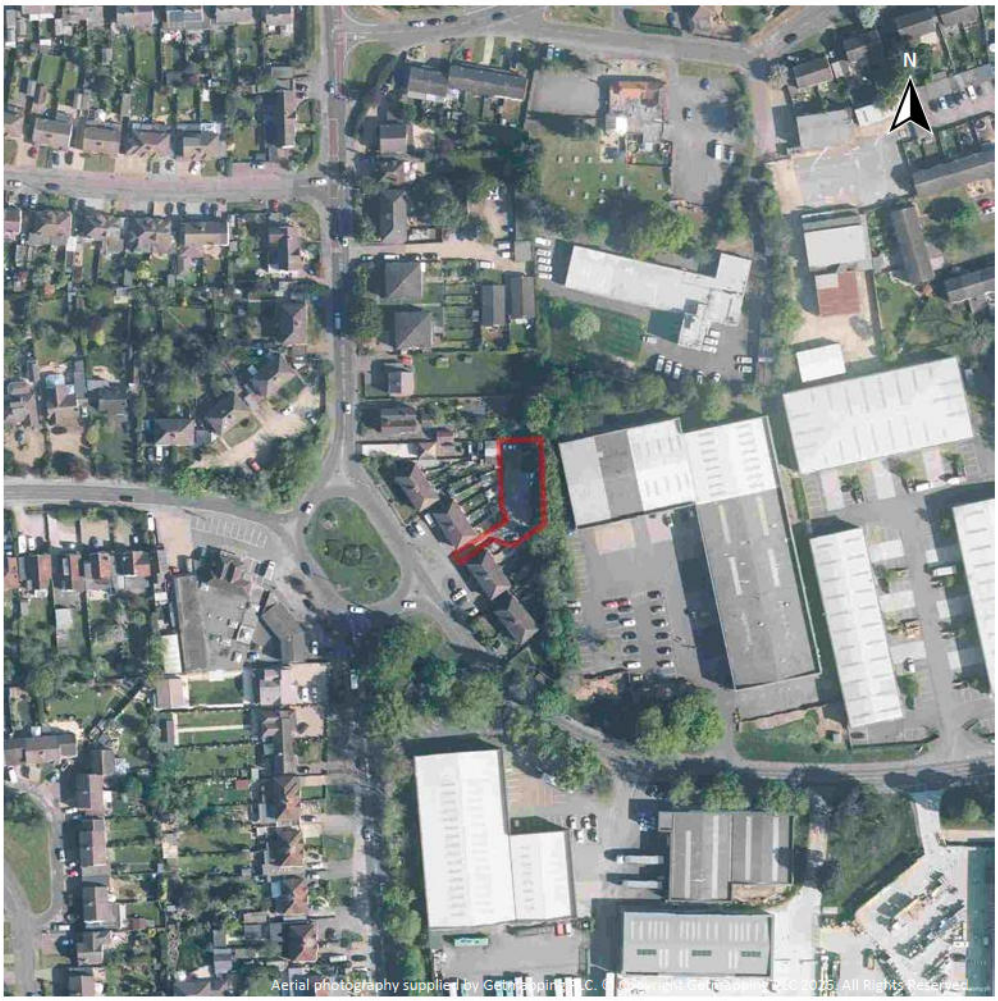
Page	Section	Mining and ground workings >	On site	0-50m	50-250m	250-500m	500-2000m
32	5.1	BritPits	0	0	0	0	-
33 >	5.2 >	Surface ground workings >	0	0	3	-	-
33	5.3	Underground workings	0	0	0	0	0
33	5.4	Underground mining extents	0	0	0	0	-
33 >	5.5 >	Historical Mineral Planning Areas >	0	0	0	4	-
34 >	5.6 >	Non-coal mining >	1	0	0	0	0
34 >	5.7 >	JPB mining areas >	Identified (within 0m)				
35	5.8	The Coal Authority non-coal mining	0	0	0	0	-
35 >	5.9 >	Researched mining >	0	0	0	1	-
35	5.10	Mining record office plans	0	0	0	0	-
36	5.11	BGS mine plans	0	0	0	0	-
36	5.12	Coal mining	None (within 0m)				
36	5.13	Brine areas	None (within 0m)				
36	5.14	Gypsum areas	None (within 0m)				
36	5.15	Tin mining	None (within 0m)				
37	5.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
38	6.1	Natural cavities	0	0	0	0	-
38	6.2	Mining cavities	0	0	0	0	0
38	6.3	Reported recent incidents	0	0	0	0	-
38	6.4	Historical incidents	0	0	0	0	-
Page	Section	Radon >					
40 >	7.1 >	Radon >	Less than 1% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
42 >	8.1 >	BGS Estimated Background Soil Chemistry >	1	0	-	-	-
42	8.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
42	8.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m

©Innervision Design 2026
www.innervision-design.co.uk

43	9.1	Underground railways (London)	0	0	0	-	-
43	9.2	Underground railways (Non-London)	0	0	0	-	-
43	9.3	Railway tunnels	0	0	0	-	-
43	9.4	Historical railway and tunnel features	0	0	0	-	-
43	9.5	Royal Mail tunnels	0	0	0	-	-
44	9.6	Historical railways	0	0	0	-	-
44	9.7	Railways	0	0	0	-	-
44	9.8	Crossrail 2	0	0	0	0	-
44	9.9	HS2	0	0	0	0	-

©Innervision Design 2026
www.innervision-design.co.uk

Recent aerial photograph



Capture Date: 30/04/2022

Site Area: 0.06ha

©Innervision Design 2026
www.innervision-design.co.uk

Recent site history - 2019 aerial photograph



Capture Date: 29/06/2019

Site Area: 0.06ha

©Innervision Design 2026
www.innervision-design.co.uk

Recent site history - 2015 aerial photograph



Capture Date: 20/04/2015

Site Area: 0.06ha

©Innervision Design 2026
www.innervision-design.co.uk

Recent site history - 2010 aerial photograph

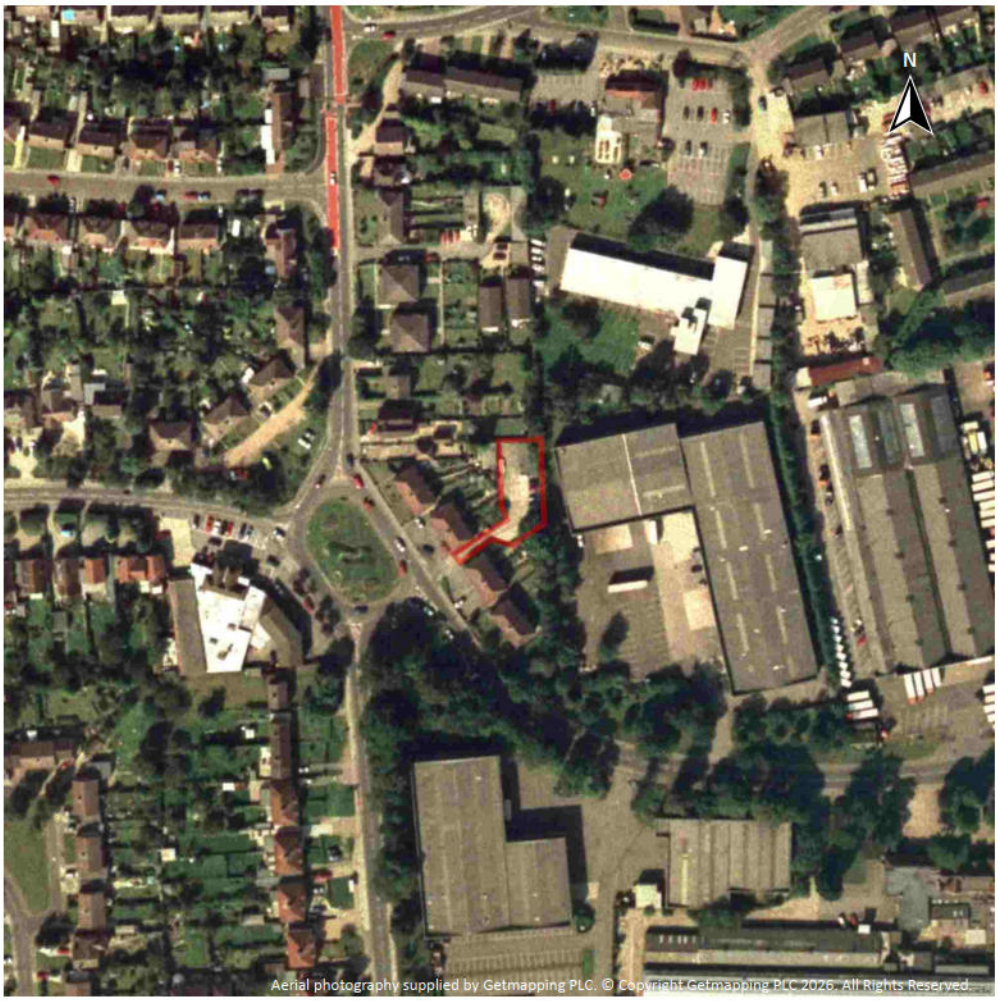


Capture Date: 22/09/2010

Site Area: 0.06ha

©Innervision Design 2026
www.innervision-design.co.uk

Recent site history - 1999 aerial photograph

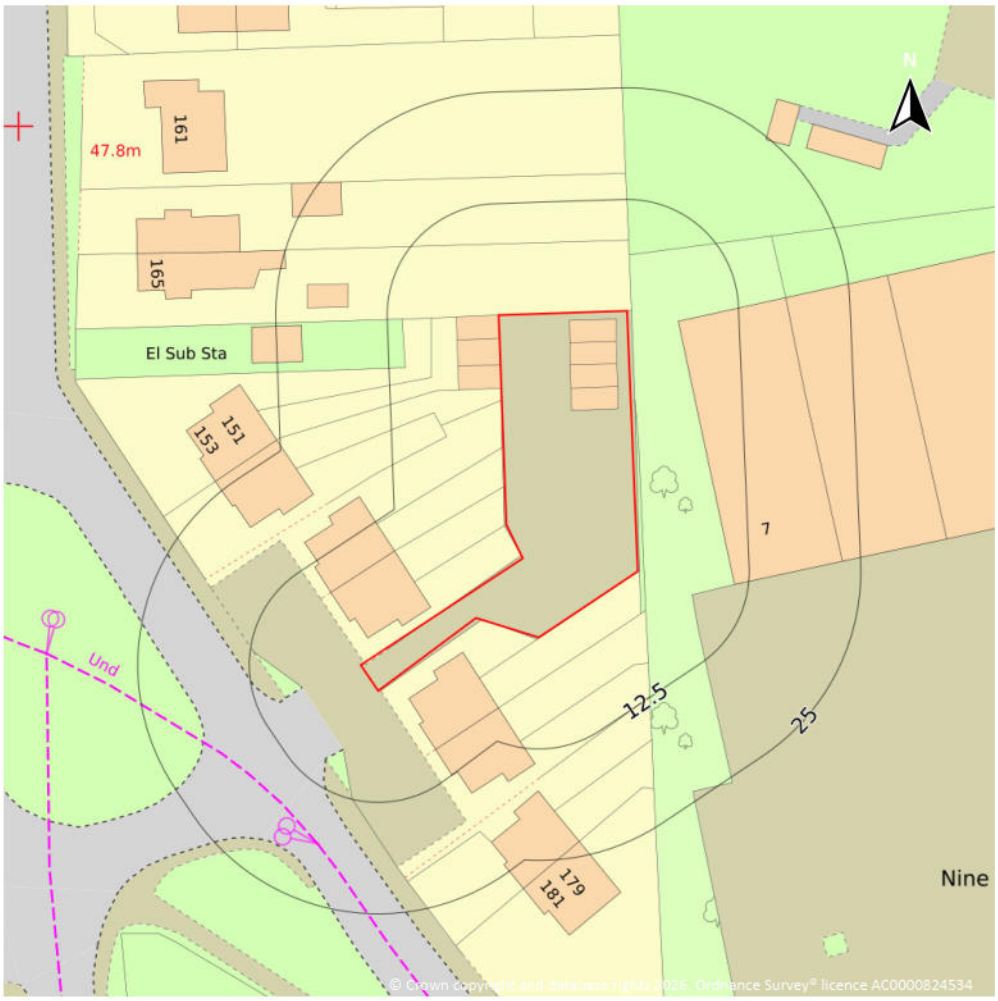


Capture Date: 04/09/1999

Site Area: 0.06ha

©Innervision Design 2026
www.innervision-design.co.uk

OS MasterMap site plan



Site Area: 0.06ha

1 Geology 1:10,000 scale - Availability



Site Outline

Search buffers in metres (m)

Full coverage

Partial coverage

No coverage

1.1 10k Availability

Records within 500m	1

An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

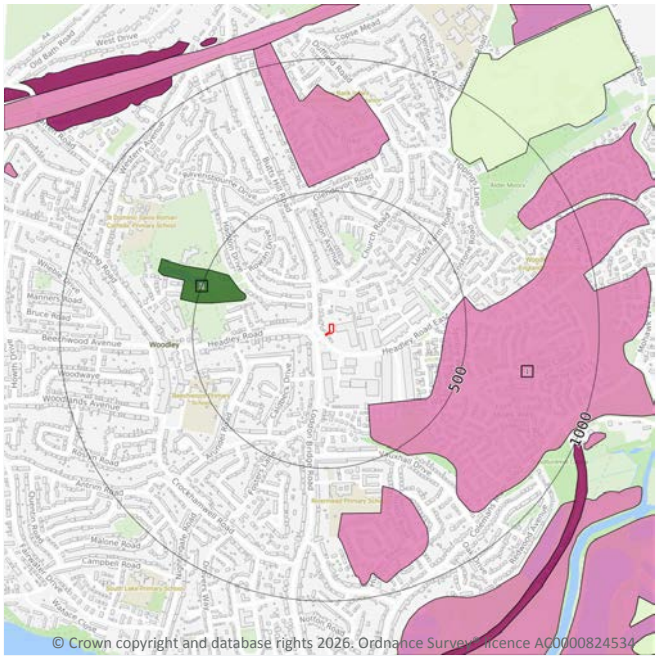
Features are displayed on the Geology 1:10,000 scale - Availability map on **page 11 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**No coverage**	**SU77SE**

This data is sourced from the British Geological Survey.

©Innervision Design 2026
www.innervision-design.co.uk

Geology 1:10,000 scale - Artificial and made ground



Site Outline

Search buffers in metres (m)

- Reclaimed ground
- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

1.2 Artificial and made ground (10k)

Records within 500m	2

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

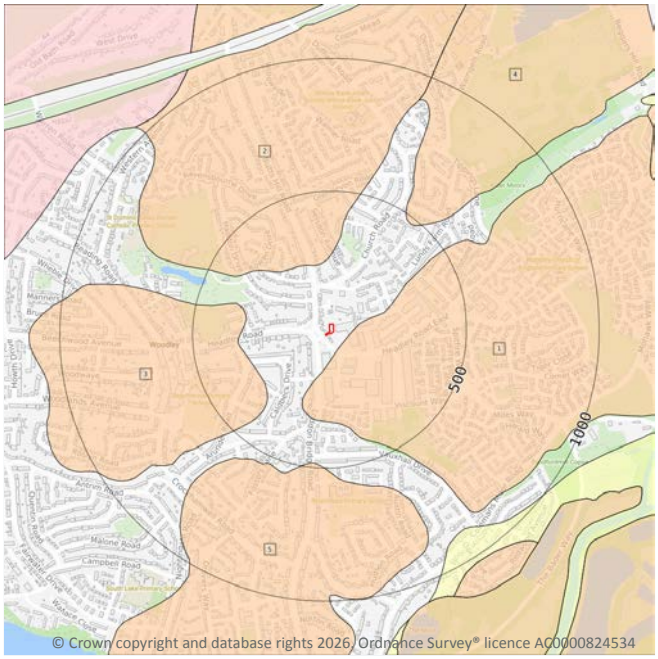
Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 12 >**

ID	Location	LEX Code	Description	Rock description
1	302m SE	WGR-VOID	Worked Ground (Undivided)	Void
2	331m W	LSGR-ARTGR	Landscaped Ground (Undivided)	Artificially modified ground

This data is sourced from the British Geological Survey.

©Innervision Design 2026
www.innervision-design.co.uk

Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

Superficial geology (10k)
Please see table for more details.

1.3 Superficial geology (10k)

Records within 500m	5

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 13 >**

ID	Location	LEX Code	Description	Rock description
1	53m SE	RTD3-XSV	River Terrace Deposits, 3-Sand And Gravel	Sand and gravel
2	229m N	RTD4-XSV	River Terrace Deposits, 4-Sand And Gravel	Sand and gravel
3	290m SW	RTD4-XSV	River Terrace Deposits, 4-Sand And Gravel	Sand and gravel
4	477m NE	RTD3-XSV	River Terrace Deposits, 3-Sand And Gravel	Sand and gravel

©Innervision Design 2026
www.innervision-design.co.uk

ID	Location	LEX Code	Description	Rock description
5	482m S	RTD3-XSV	River Terrace Deposits, 3-Sand And Gravel	Sand and gravel

This data is sourced from the British Geological Survey.

1.4 Landslip (10k)

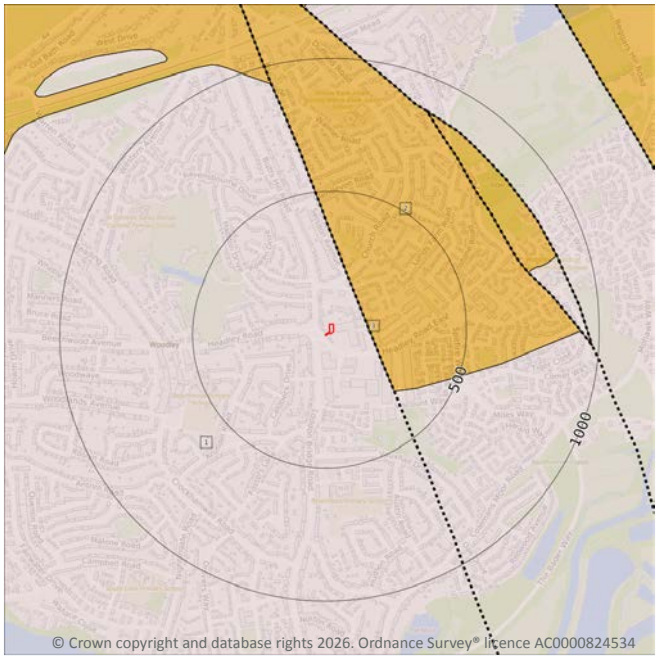
Records within 500m	**0**

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

©Innervision Design 2026
www.innervision-design.co.uk

Geology 1:10,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (10k)

Bedrock geology (10k)
Please see table for more details.

1.5 Bedrock geology (10k)

Records within 500m	**2**

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 15 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**LC-XCZS**	**London Clay Formation-Clay, Silt And Sand**	**Ypresian**
2	118m E	LMBE-XCZS	Lambeth Group-Clay, Silt And Sand	Thanetian

This data is sourced from the British Geological Survey.

©Innervision Design 2026
www.innervision-design.co.uk

1.6 Bedrock faults and other linear features (10k)

Records within 500m	**1**

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 15 >**

ID	Location	Category	Description
3	118m E	FAULT	Fault, inferred, displacement unknown

This data is sourced from the British Geological Survey.

©Innervision Design 2026
www.innervision-design.co.uk

2 Geology 1:50,000 scale - Availability



Site Outline

Search buffers in metres (m)

Geological map tile

2.1 50k Availability

Records within 500m	1

An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

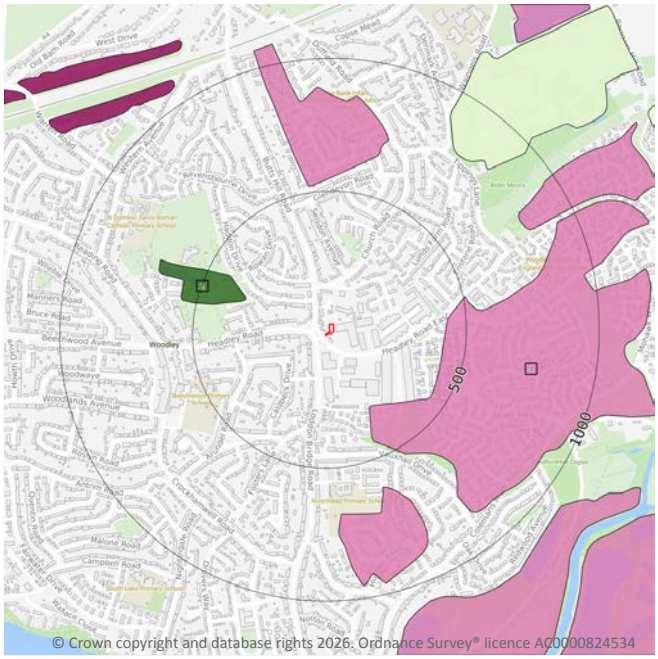
Features are displayed on the Geology 1:50,000 scale - Availability map on **page 17 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	No coverage	EW268_reading_v4

This data is sourced from the British Geological Survey.

©Innervision Design 2026
www.innervision-design.co.uk

Geology 1:50,000 scale - Artificial and made ground



Site Outline

Search buffers in metres (m)

- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

2.2 Artificial and made ground (50k)

Records within 500m	2

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on **page 18 >**

ID	Location	LEX Code	Description	Rock description
1	310m SE	WGR-VOID	Worked Ground	Void
2	329m NW	LSGR-ARTGR	Landscaped Ground	Artificially modified ground

This data is sourced from the British Geological Survey.

©Innervision Design 2026
www.innervision-design.co.uk

2.3 Artificial ground permeability (50k)

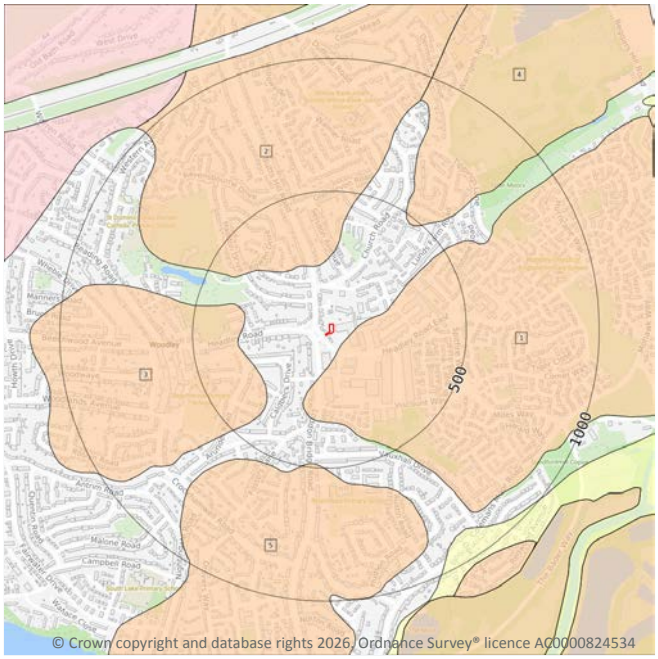
Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

©Innervision Design 2026
www.innervision-design.co.uk

Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

Superficial geology (50k)
Please see table for more details.

2.4 Superficial geology (50k)

Records within 500m	5

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 20 >**

ID	Location	LEX Code	Description	Rock description
1	54m SE	RTD3-XSV	River Terrace Deposits, 3	Sand and gravel
2	226m N	RTD4-XSV	River Terrace Deposits, 4	Sand and gravel
3	287m SW	RTD4-XSV	River Terrace Deposits, 4	Sand and gravel
4	475m NE	RTD3-XSV	River Terrace Deposits, 3	Sand and gravel

©Innervision Design 2026
www.innervision-design.co.uk

ID	Location	LEX Code	Description	Rock description
5	484m S	RTD3-XSV	River Terrace Deposits, 3	Sand and gravel

This data is sourced from the British Geological Survey.

2.5 Superficial permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

2.6 Landslip (50k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

2.7 Landslip permeability (50k)

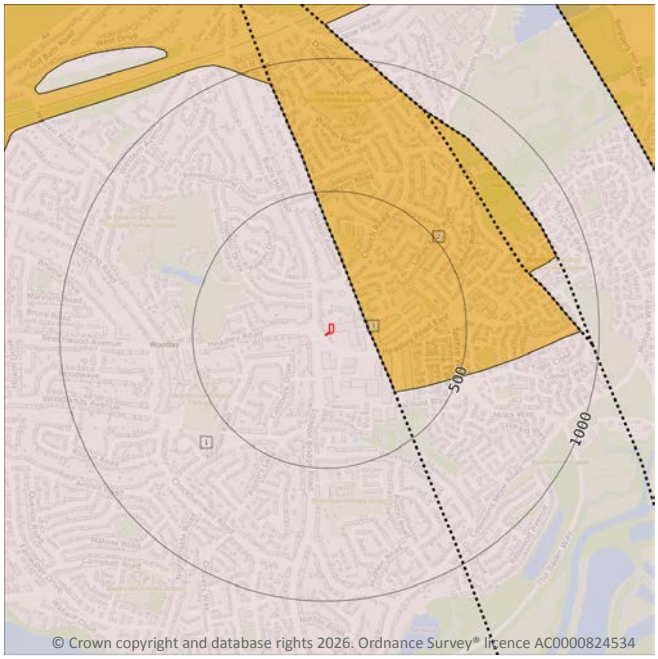
Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

©Innervision Design 2026
www.innervision-design.co.uk

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

2.8 Bedrock geology (50k)

Records within 500m	2

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 22 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**LC-XCZS**	**London Clay Formation-Clay, silt and sand**	**Ypresian**
2	117m E	LMBE-XCZS	Lambeth Group-Clay, silt and sand	Thanetian

This data is sourced from the British Geological Survey.

©Innervision Design 2026
www.innervision-design.co.uk

2.9 Bedrock permeability (50k)

Records within 50m	**1**

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Mixed**	**Moderate**	**Very Low**

This data is sourced from the British Geological Survey.

2.10 Bedrock faults and other linear features (50k)

Records within 500m	**1**

Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 22 >**

ID	Location	Category	Description
3	117m E	FAULT	Fault, inferred, crossmark on downthrow side, throw in metres

This data is sourced from the British Geological Survey.

©Innervision Design 2026
www.innervision-design.co.uk

3 Boreholes

3.1 BGS Boreholes

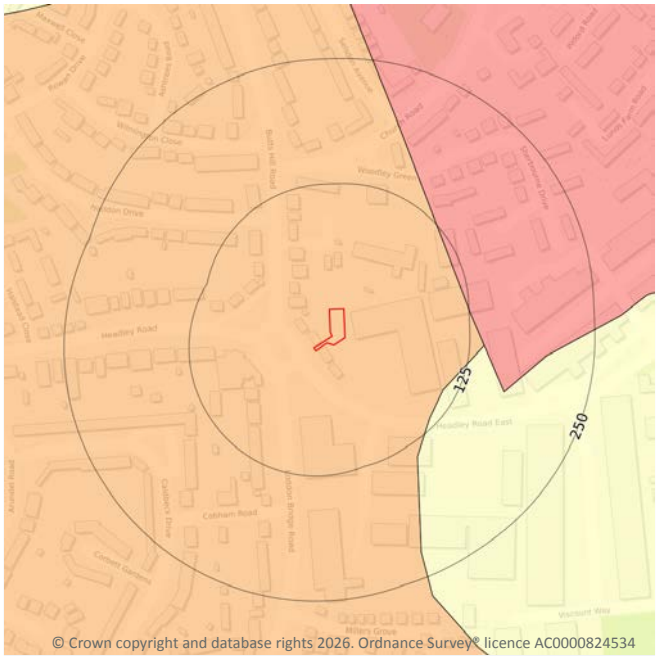
Records within 250m	0

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

This data is sourced from the British Geological Survey.

©Innervision Design 2026
www.innervision-design.co.uk

4 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

4.1 Shrink swell clays

Records within 50m	1

The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

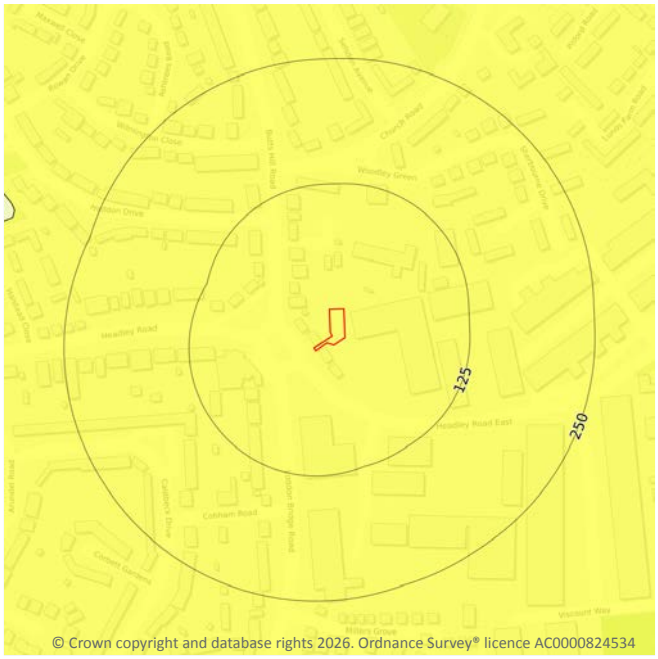
Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 25 >**

Location	Hazard rating	Details
On site	**Low**	**Ground conditions predominantly medium plasticity.**

This data is sourced from the British Geological Survey.

©Innervision Design 2026
www.innervision-design.co.uk

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

4.2 Running sands

Records within 50m	1

The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 26 >**

Location	Hazard rating	Details
On site	**Very low**	**Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.**

This data is sourced from the British Geological Survey.

©Innervision Design 2026
www.innervision-design.co.uk

Natural ground subsidence - Compressible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

4.3 Compressible deposits

Records within 50m	1

The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

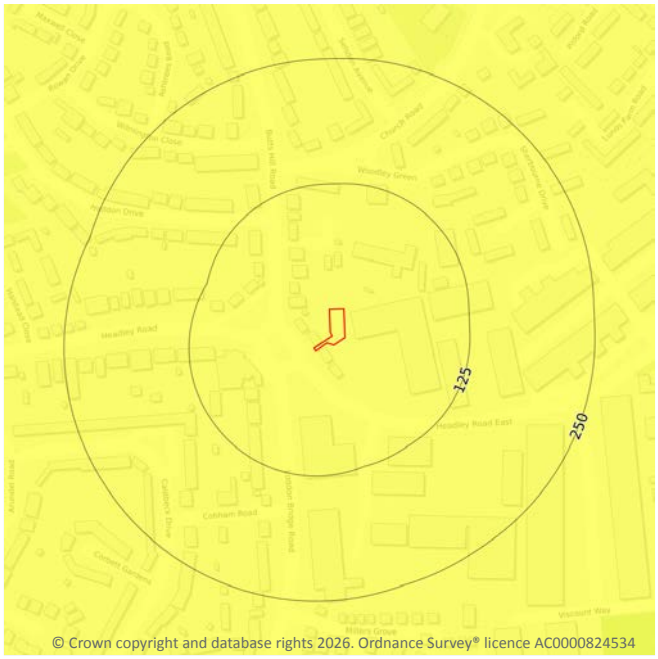
Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 27 >**

Location	Hazard rating	Details
On site	**Negligible**	**Compressible strata are not thought to occur.**

This data is sourced from the British Geological Survey.

©Innervision Design 2026
www.innervision-design.co.uk

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

4.4 Collapsible deposits

Records within 50m	1

The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

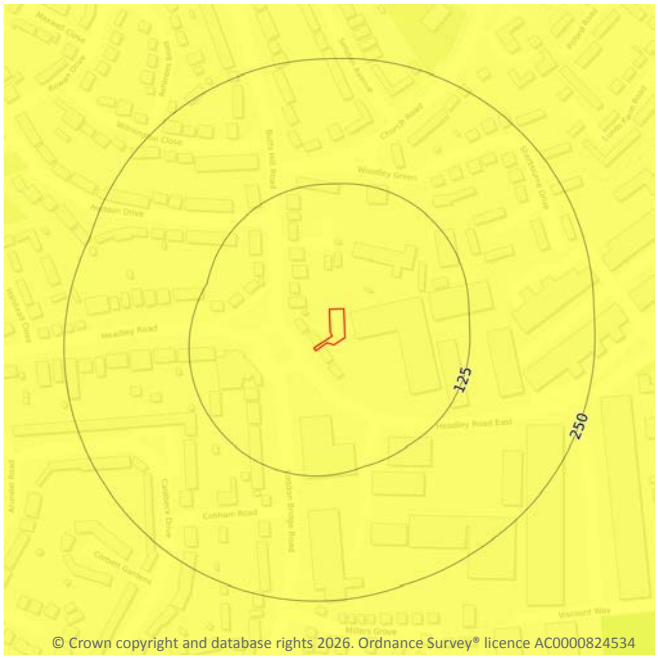
Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 28 >**

Location	Hazard rating	Details
On site	**Very low**	**Deposits with potential to collapse when loaded and saturated are unlikely to be present.**

This data is sourced from the British Geological Survey.

©Innervision Design 2026
www.innervision-design.co.uk

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

4.5 Landslides

Records within 50m	1

The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 29 >**

Location	Hazard rating	Details
On site	**Very low**	**Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.**

This data is sourced from the British Geological Survey.

©Innervision Design 2026
www.innervision-design.co.uk

Natural ground subsidence - Ground dissolution of soluble rocks



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

4.6 Ground dissolution of soluble rocks

Records within 50m	1

The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

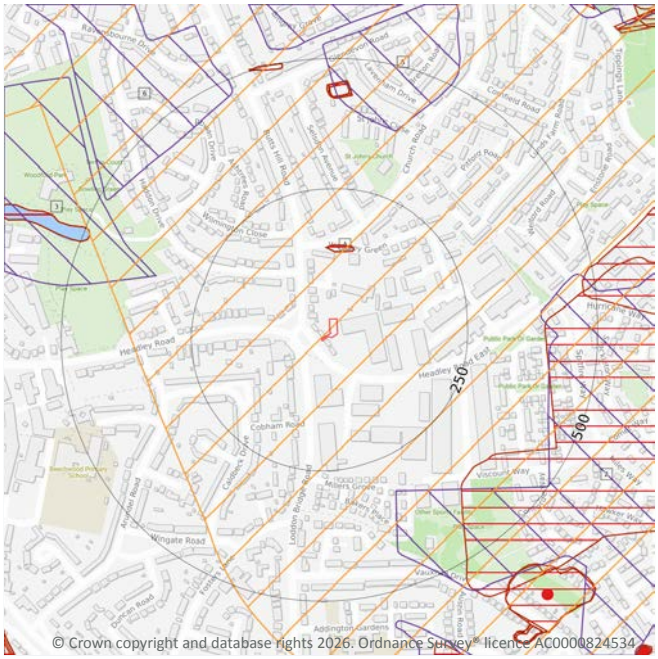
Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 30 >**

Location	Hazard rating	Details
On site	**Negligible**	**Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.**

©Innervision Design 2026
www.innervision-design.co.uk

This data is sourced from the British Geological Survey.

5 Mining and ground workings



Site Outline

Search buffers in metres (m)

BritPits

Surface ground workings

Underground workings

Underground mining extents

Historical mineral planning areas

TCA non-coal mining

Non Coal Mining

Sporadic underground mining of restricted extent possible

Localised small scale underground mining possible

Small scale mining possible

Underground mining known or likely within or in close proximity

Underground mining known within or in very close proximity

5.1 BritPits

Records within 500m	0

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

This data is sourced from the British Geological Survey.

©Innervision Design 2026
www.innervision-design.co.uk

5.2 Surface ground workings

Records within 250m	3

Historical land uses identified from Ordnance Survey® mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining and ground workings map on **page 32 >**

ID	Location	Land Use	Year of mapping	Mapping scale
A	128m N	Pond	1938	1:10560
A	128m N	Pond	1910	1:10560
A	128m N	Pond	1898	1:10560

This is data is sourced from Ordnance Survey®/Groundsure.

5.3 Underground workings

Records within 1000m	0

Historical land uses identified from Ordnance Survey® mapping that indicate the presence of underground workings e.g. mine shafts.

This is data is sourced from Ordnance Survey®/Groundsure.

5.4 Underground mining extents

Records within 500m	0

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

This data is sourced from Groundsure.

5.5 Historical Mineral Planning Areas

Records within 500m	4

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

Features are displayed on the Mining and ground workings map on **page 32 >**

©Innervision Design 2026
www.innervision-design.co.uk

ID	Location	Site Name	Mineral	Type	Planning Status	Planning Status Date
2	320m SE	Woodley Airfield	Sand and gravel	Surface mineral working	Valid	23/12/63
3	341m W	Headley Road	Sand and gravel	Surface mineral working	Refused	17/12/56
5	378m N	Near Lunds Farm	Sand and gravel	Surface mineral working	Refused	Not available
6	448m NW	Wheelers Green	Sand and gravel	Surface mineral working	Refused	Not available

This data is sourced from the British Geological Survey.

5.6 Non-coal mining

Records within 1000m	**1**

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

Features are displayed on the Mining and ground workings map on **page 32 >**

ID	Location	Name	Commodity	Class	Likelihood
1	**On site**	**Not available**	**Chalk**	**C**	**Underground mine workings may have occurred in the past, or current mines may be operating to modern engineering standards. Potential for difficult ground conditions should be considered.**

This data is sourced from the British Geological Survey.

5.7 JPB mining areas

Records on site	**1**

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

©Innervision Design 2026
www.innervision-design.co.uk

Location	Details
On site	**Whilst outside of an area where The Coal Authority have information on coal mining activities, Johnson Poole & Bloomer (JPB) may have information such as mining plans and maps held within their archive that have occurred within 1km of this property. Please note, the plans held by JPB may also relate to non-mining records. Further details and a quote for services (if appropriate) can be obtained by emailing this report to enquiries.gs@jpb.co.uk ↗.**

This data is sourced from Johnson Poole and Bloomer.

5.8 The Coal Authority non-coal mining

Records within 500m	**0**

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the Coal Authority and permission should be sought from Groundsure prior to any re-use.

This data is sourced from The Coal Authority.

5.9 Researched mining

Records within 500m	**1**

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of risk have been captured.

Location	Mineral type
302m SE	Stone

This data is sourced from Groundsure.

5.10 Mining record office plans

Records within 500m	**0**

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

©Innervision Design 2026
www.innervision-design.co.uk

5.11 BGS mine plans

Records within 500m	0

This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

5.12 Coal mining

Records on site	0

Areas which could be affected by past, current or future coal mining.

This data is sourced from the Coal Authority.

5.13 Brine areas

Records on site	0

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

5.14 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

5.15 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

©Innervision Design 2026
www.innervision-design.co.uk

5.16 Clay mining

Records on site	0

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).

©Innervision Design 2026
www.innervision-design.co.uk

6 Ground cavities and sinkholes

6.1 Natural cavities

Records within 500m	0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Stantec UK Ltd.

6.2 Mining cavities

Records within 1000m	0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Stantec UK Ltd.

6.3 Reported recent incidents

Records within 500m	0

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

This data is sourced from Groundsure.

6.4 Historical incidents

Records within 500m	0

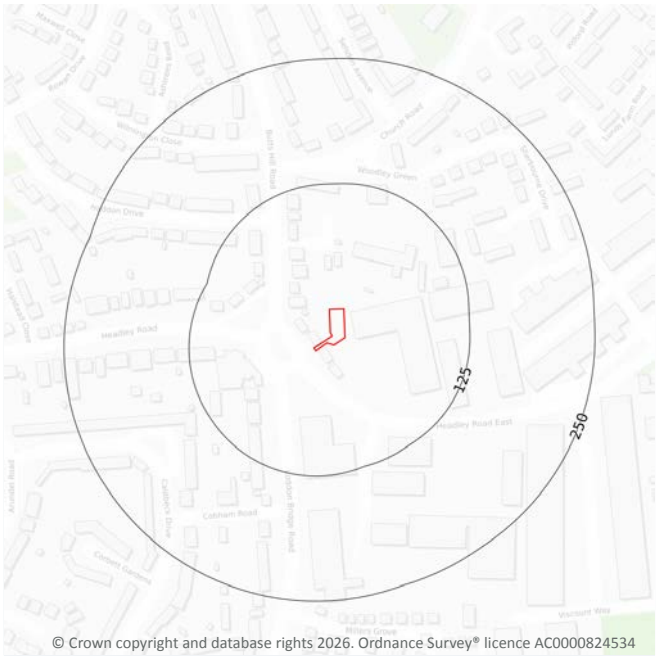
This dataset comprises an extract of 1:10,560, 1:10,000, 1:2,500 and 1:1,250 scale historical Ordnance Survey® maps held by Groundsure, dating back to the 1840s. It shows shakeholes, deneholes and other 'holes' as noted on these maps. Dene holes are medieval chalk extraction pits, usually comprising a narrow shaft with a number of chambers at the base of the shaft. Shakeholes are an alternative name for suffusion sinkholes, most commonly found in the limestone landscapes of North Yorkshire but also extensively noted around the Brecon Beacons National Park.

Not all 'holes' noted on Ordnance Survey® mapping will necessarily be present within this dataset.

©Innervision Design 2026
www.innervision-design.co.uk

This data is sourced from Groundsure.

7 Radon



Site Outline

Search buffers in metres (m)

- Greater than 30%
- Between 10% and 30%
- Between 5% and 10%
- Between 3% and 5%
- Between 1% and 3%
- Less than 1%

7.1 Radon

Records on site	1

The Radon Potential data classifies areas based on their likelihood of a property having a radon level at or above the Action Level in Great Britain. The dataset is intended for use at 1:50,000 scale and was derived from both geological assessments and indoor radon measurements (more than 560,000 records). A minimum 50m buffer should be considered when searching the maps, as the smallest detectable feature at this scale is 50m. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain (1:100,000 scale).

Features are displayed on the Radon map on **page 40 >**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Less than 1%**	**None**

©Innervision Design 2026
www.innervision-design.co.uk

This data is sourced from the British Geological Survey and UK Health Security Agency.

8 Soil chemistry

8.1 BGS Estimated Background Soil Chemistry

Records within 50m	1

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km^2. In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km^2; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**

This data is sourced from the British Geological Survey.

8.2 BGS Estimated Urban Soil Chemistry

Records within 50m	0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km^2).

This data is sourced from the British Geological Survey.

8.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km^2.

This data is sourced from the British Geological Survey.

©Innervision Design 2026
www.innervision-design.co.uk

9 Railway infrastructure and projects

9.1 Underground railways (London)

Records within 250m	0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

9.2 Underground railways (Non-London)

Records within 250m	0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

9.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey® mapping.

This data is sourced from the Ordnance Survey®.

9.4 Historical railway and tunnel features

Records within 250m	0

Railways and tunnels digitised from historical Ordnance Survey® mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

This data is sourced from Ordnance Survey®/Groundsure.

9.5 Royal Mail tunnels

Records within 250m	0

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

This data is sourced from Groundsure/the Postal Museum.

9.6 Historical railways

Records within 250m	0

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

This data is sourced from OpenStreetMap.

9.7 Railways

Records within 250m	0

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

This data is sourced from Ordnance Survey® and OpenStreetMap.

9.8 Crossrail 2

Records within 500m	0

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London. Please note that the Crossrail 2 project has been temporarily suspended. It is possible funding will be received in the future, but there is no guarantee of this.

This data is sourced from publicly available information by Groundsure.

9.9 HS2

Records within 500m	0

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 ltd.

©Innervision Design 2026
www.innervision-design.co.uk

Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see https://www.groundsure.com/sources-reference ↗.

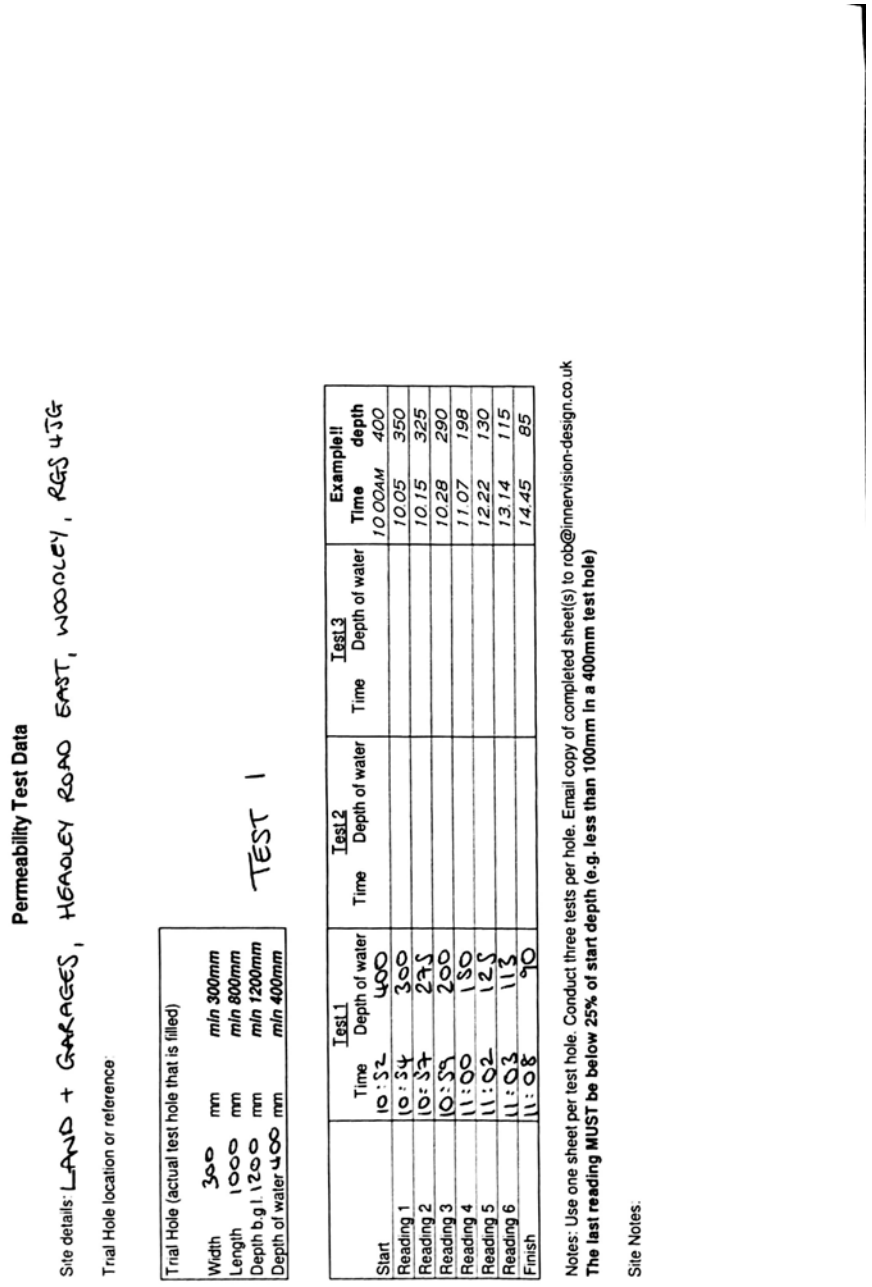
Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: www.groundsure.com/terms-conditions-april-2026/ ↗.

©Innervision Design 2026
www.innervision-design.co.uk

B Site Investigation

Infiltration testing to BRE 365 was conducted on site within a 0.60m x 0.6m x 0.5m deep test hole at soakaway operational depth (1.0 to 1.5m b.g.l).



Permeability Test Data

Site details: LAND + GARAGES, HEADLEY ROAD EAST, WOODLEY, RG5 4JG

Trial Hole location or reference

TEST 1

Trial Hole (actual test hole that is filled)			
Width	300	mm	*min 300mm*
Length	1000	mm	*min 800mm*
Depth b.g.l	1200	mm	*min 1200mm*
Depth of water	400	mm	*min 400mm*

	Test1		Test2		Test3		Example!!	
	Time	Depth of water	Time	Depth of water	Time	Depth of water	Time	depth
Start	10:52	400					*10.00AM*	*400*
Reading 1	10:54	300					*10.05*	*350*
Reading 2	10:54	295					*10.15*	*325*
Reading 3	10:59	200					*10.28*	*290*
Reading 4	11:00	180					*11.07*	*198*
Reading 5	11:02	125					*12.22*	*130*
Reading 6	11:03	113					*13.14*	*115*
Finish	11:08	90					*14.45*	*85*

Notes: Use one sheet per test hole. Conduct three tests per hole. Email copy of completed sheet(s) to rob@innervision-design.co.uk
The last reading MUST be below 25% of start depth (e.g. less than 100mm in a 400mm test hole)

Site Notes:

©Innervision Design 2026
www.innervision-design.co.uk

Permeability Test Data

Site details: LAND + GARAGES, HEADLEY ROAD EAST, WOODLEY, RG5 4JG

Trial Hole location or reference:

Trial Hole (actual test hole that is filled)			
Width	300	mm	***min 300mm***
Length	1000	mm	***min 800mm***
Depth b.g.l.	1200	mm	***min 1200mm***
Depth of water	400	mm	***min 400mm***

TEST 2

	Test 1		Test 2		Test 3		Example!!	
	Time	Depth of water	Time	Depth of water	Time	Depth of water	**Time**	**depth**
Start	11:11	400					*10.00AM*	*400*
Reading 1	11:13	350					*10.05*	*350*
Reading 2	11:15	260					*10.15*	*325*
Reading 3	11:18	200					*10.28*	*290*
Reading 4	11:21	160					*11.07*	*198*
Reading 5	11:26	145					*12.22*	*130*
Reading 6	11:31	113					*13.14*	*115*
Finish	11:35	95					*14.45*	*85*

Notes: Use one sheet per test hole. Conduct three tests per hole. Email copy of completed sheet(s) to rob@innervision-design.co.uk
The last reading MUST be below 25% of start depth (e.g. less than 100mm in a 400mm test hole)

Site Notes:

©Innervision Design 2026
www.innervision-design.co.uk

Permeability Test Data

Site details: LAND + GARAGES, HEADLEY ROAD EAST, WOODLEY, RG5 4JG

Trial Hole location or reference:

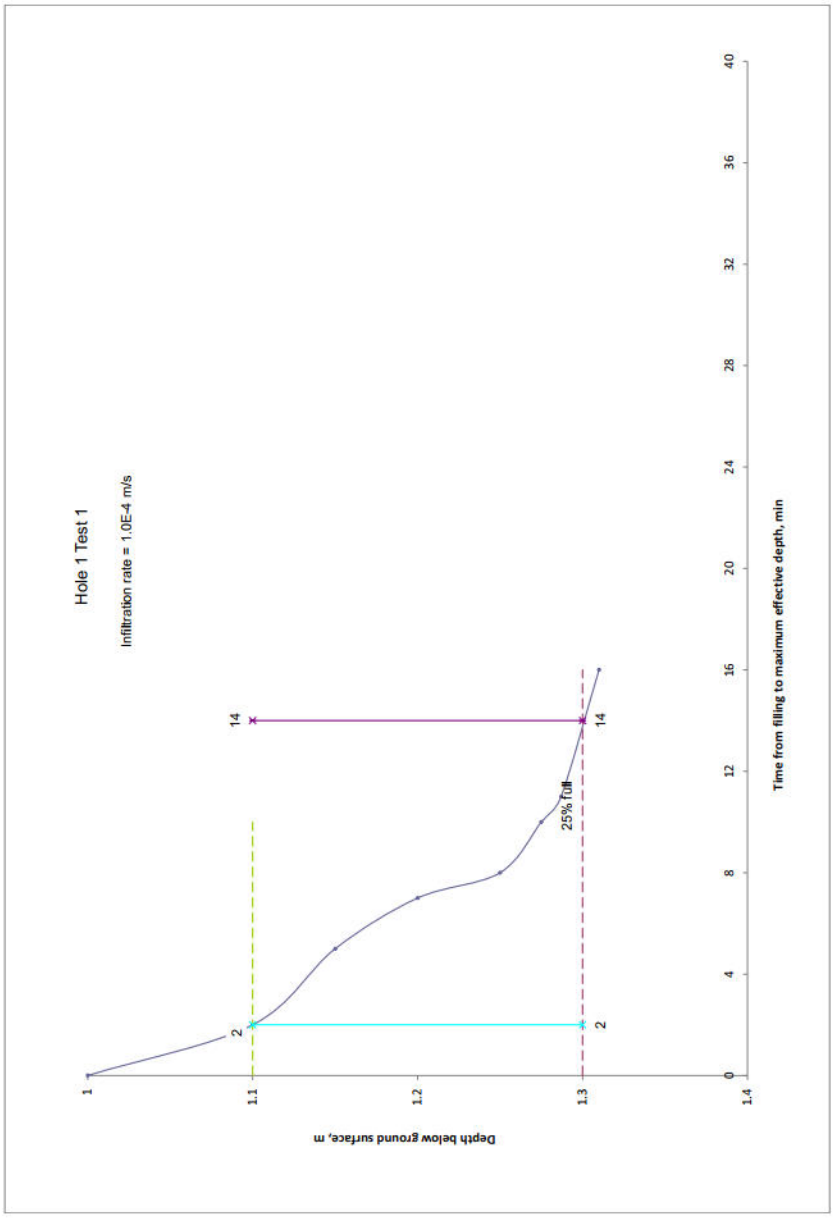
Trial Hole (actual test hole that is filled)			
Width	300	mm	***min 300mm***
Length	1000	mm	***min 800mm***
Depth b.g.l.	1200	mm	***min 1200mm***
Depth of water	400	mm	***min 400mm***

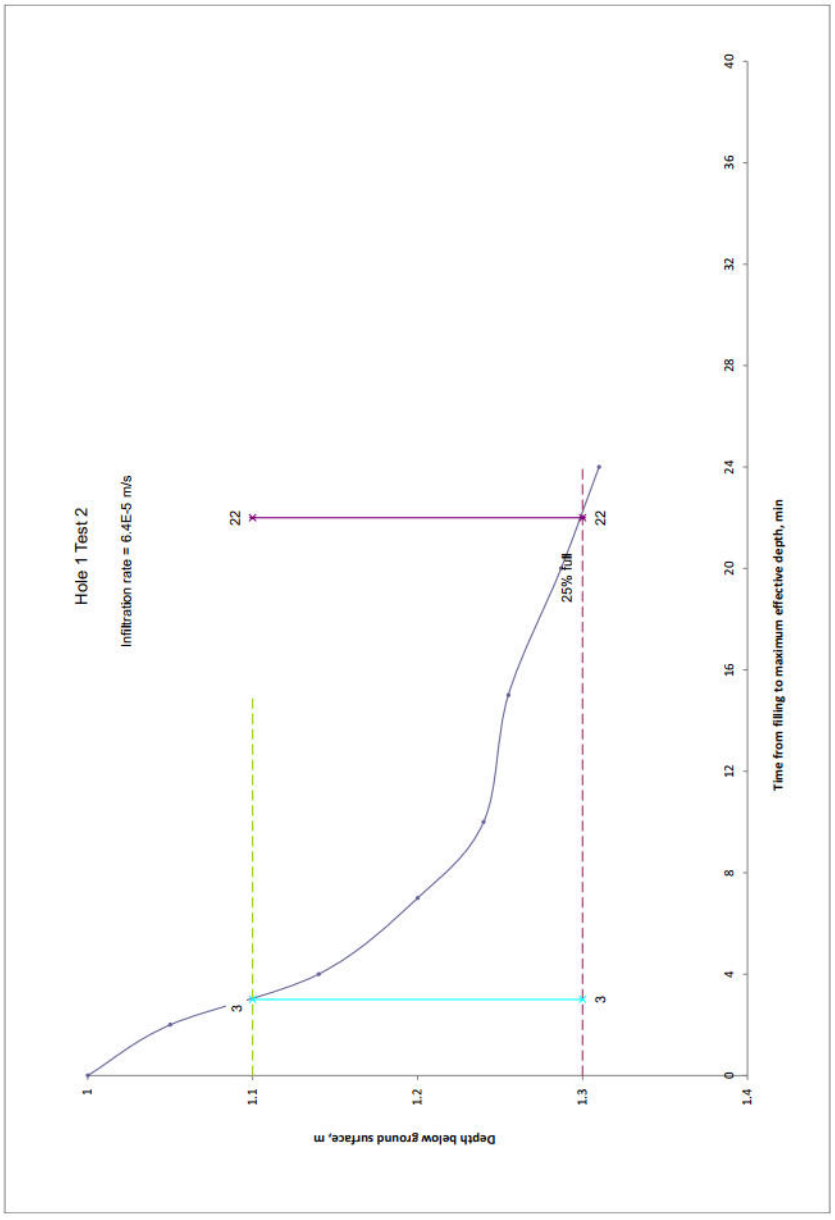
TEST 3

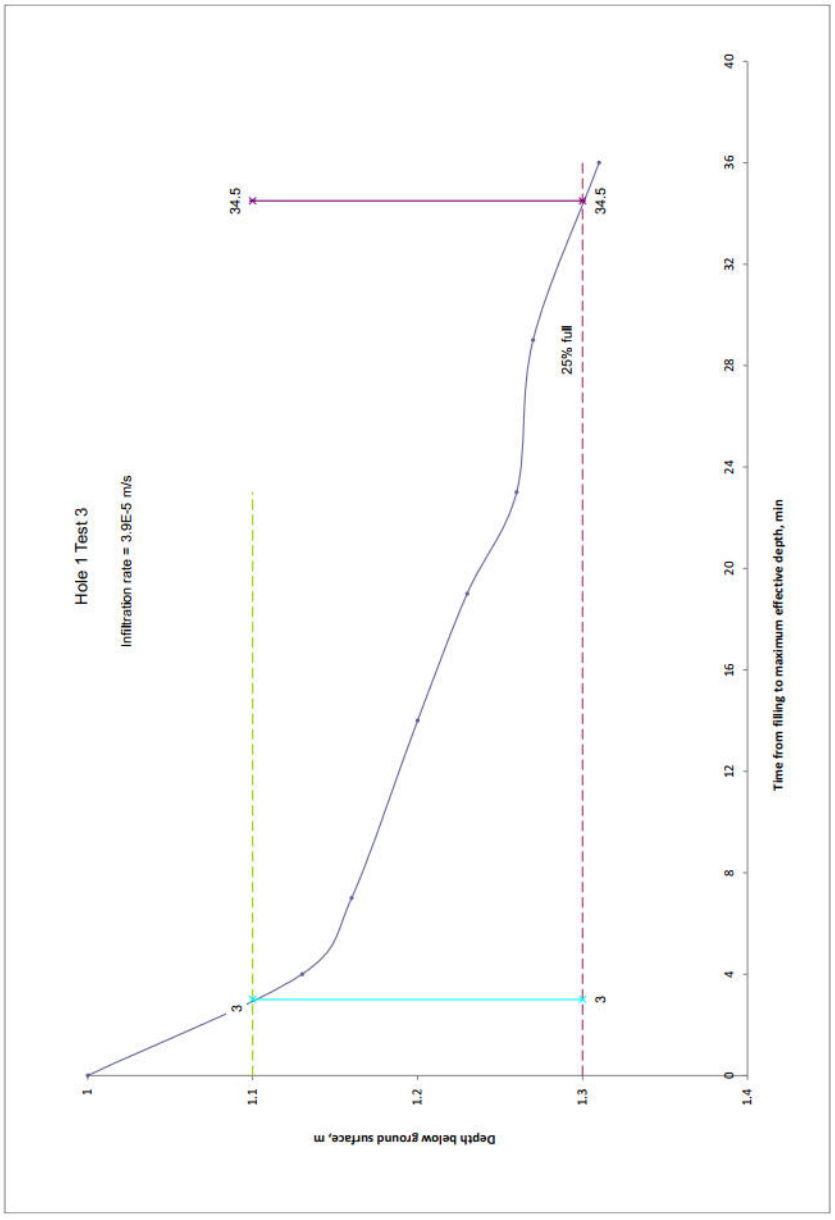
	Test 1		Test 2		Test 3		Example!!	
	Time	Depth of water	Time	Depth of water	Time	Depth of water	**Time**	**depth**
Start	11:38	400					*10.00AM*	*400*
Reading 1	11:42	250					*10.05*	*350*
Reading 2	11:45	240					*10.15*	*325*
Reading 3	11:52	200					*10.28*	*290*
Reading 4	11:57	170					*11.07*	*198*
Reading 5	12:01	140					*12.22*	*130*
Reading 6	12:07	130					*13.14*	*115*
Finish	12:14	95					*14.45*	*85*

Notes: Use one sheet per test hole. Conduct three tests per hole. Email copy of completed sheet(s) to rob@innervision-design.co.uk
The last reading MUST be below 25% of start depth (e.g. less than 100mm in a 400mm test hole)

Site Notes:


Hole 1 Test 1
Infiltration rate = 1.0E-4 m/s
Depth below ground surface, m
Time from filling to maximum effective depth, min
1
1.1
1.2
1.3
1.4
0
4
8
12
16
20
24
28
32
36
40
2
14
25% full


Hole 1 Test 2
Infiltration rate = 6.4E-5 m/s
22
22
25% full
3
3
Depth below ground surface, m
1
1.1
1.2
1.3
1.4
Time from filling to maximum effective depth, min
0
4
8
12
16
20
24
28
32
36
40


Hole 1 Test 3
Infiltration rate = 3.9E-5 m/s
34.5
34.5
25% full
3
3
Depth below ground surface, m
Time from filling to maximum effective depth, min
1
1.1
1.2
1.3
1.4
0
4
8
12
16
20
24
28
32
36
40

C Pervious surface options

C.1 Geo grid around the dwelling

GCL PRODUCTS

RUBBER GRASS MATS
RUBBER PLAY TILES
BELT CONVEYORS
STEEL FIXING PINS
PLASTIC FIXING PEGS
LAWN & BORDER EDGING
FORCED ACTION MIXERS
WATER STORAGE CRATES
RESIN BOUND GRAVEL
RUBBER GYM MATTING
GRASS PROTECTION MESHES
GRASS REINFORCEMENT MESHES
GROUND REINFORCEMENT & GRAVEL RETENTION GRID
SUBMERSIBLE COMBI PUMPS
RECYCLED PLASTIC DECKING
RECYCLED PLASTIC LUMBER
LANDSCAPING & WEED CONTROL MEMBRANES

Scan QR code for more info

GCL Products Limited are dedicated to providing our customers the most accurate details in order for them to make an informed decision on our range. However, there may occasionally be errors or omissions and we reserve the right to amend or remove specifications without notice.

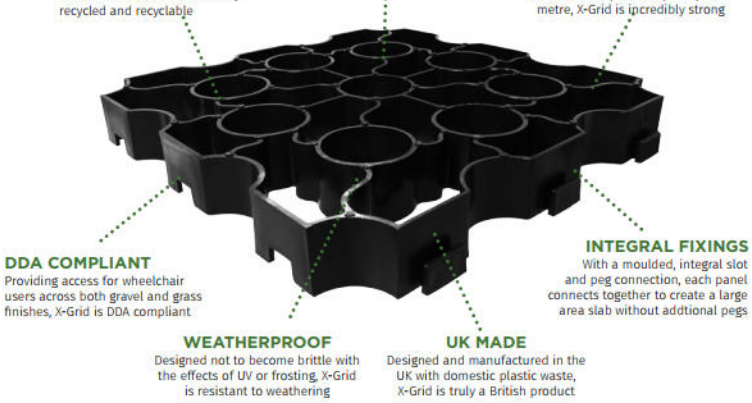
This document was produced in April 2019 and the reliability and accuracy of this data should be checked by the reader prior to design or purchase.

gclproducts.co.uk
sales@gclproducts.co.uk
+44 (0)1246 418144

X-Grid

Ground Reinforcement Grid

Designed and manufactured in the UK from **100% recycled plastic**, X-Grid is the ultimate in ground reinforcement and gravel retention grid. With a load capacity of up to **428 tonnes per square metre** and yet weighing only just over 5kg per square metre, X-Grid is the ideal product for use when creating a solid, durable and low-maintenance surface. As the cells can be filled with any number of different materials, there's sure to be a final finish suitable for practically any project. Grass roads, farm gateways, livestock areas and domestic or commercial parking are just a few uses for one of the **most versatile** building and surfacing products available on the market.



KEY FACTS

- Load Capacity: **428 Tonnes/m²**
- Panel Size: **330x330x40mm**
- Colour: **Black/Green/Natural**
- Panel Weight: **574g**
- Void Ratio: **93%**
- Operating Temp: **-50 to +90°c**
- Connection: **Integral Slot & Peg**
- Material: **Recycled Polypropylene**
- Wall Thickness: **3mm**
- Panels/m²: **9**
- Lifespan: **Up to 25 years**
- Max Gradient: **12%**
- Rate of Installation: **100m²/ person/hour**

APPLICATIONS

GOLF & LEISURE
Bunkers, buggy paths, marinas, jetties, fishing swims, racetracks

LANDSCAPING
Paths, walkways, grass roads, embankments

HOT TUBS
Strong enough to take the weight of a hot tub or swim spa of any size

GARDEN BUILDINGS
Sheds, log cabins, summerhouses & greenhouses can be placed on X-Grid

DRIVEWAYS
Creating gravel or grassed driveways is simple with X-Grid's unique design

EQUESTRIAN & FARM
Farm gateways, exercise areas, paddocks, tracks and feed areas

v1

C.2 Porous Asphalt to access drive



©Innervision Design 2026
www.innervision-design.co.uk



Porous Asphalts in planning legislation

The recent announcement on the imminent implementation of Schedule 3 of the Floods and Water Management Act 2010 will have significant implications. It means that all projects larger than 100m² or more than one property, with a drainage implication will need to incorporate a SuDS based drainage scheme and gain approval before construction can commence. There is also likely to be more emphasis on amenity, biodiversity and water quality of that drainage system rather than just the quantity of water from a site. Tarmac porous pavements are proven to improve the quality of road and hardstanding water runoff.

Introducing the next generation of Porous Asphalts from Tarmac

Designed to work with porous pavement designs where a sustainable drainage solution is required for site conditions, planning requirements or client specifications.

Our new and updated range of UltiPorous Asphalts also helps to address climate concerns over flooding and drought events and deliver a longer lasting performance that reduces the carbon footprint compared to non-porous drainage methods.

Where planning conditions specify a SuDS solution for driveways, car parks or access roads, Tarmac's UltiPorous and UltiSuDS can provide the ideal solutions.

©Innervision Design 2026
www.innervision-design.co.uk

Making it easier to choose porous surfacing

Our new range or Porous Asphalts makes the process of choosing a porous surfacing material simpler for architects, design engineers and their clients with applications for the different products clearly defined.

ULTIPOROUS

Porous Asphalt for driveways, car parks, footpaths and public spaces in both residential and commercial environments, with porous binder course

ULTIPOROUS LEISURE

Porous Asphalt for playgrounds, sports surfaces and multi use games areas (MUGA's) with porous binder course. Also suitable for footways, cycle ways and occasional parking.

ULTIPOROUS TENNIS

Porous Asphalt designed for outdoor tennis courts, with porous binder course.

ULTISuDS

BBA HAPAS accredited Porous Asphalt System for larger car parks in residential, retail and commercial spaces developments.

ULTICOLOUR POROUS

Coloured Porous Asphalts for driveways, car parks, roads, cycle lanes and footpaths, with porous binder course. This can be included in a BBA HAPAS accredited system.



Verified minimum hydraulic conductivity

All Tarmac Porous Asphalts are designed to provide a minimum hydraulic conductivity of 5,000mm/Hr/m² using the BS DD 229 testing method and meet the requirements laid out in CIRIA 753 and SAPCA.

©Innervision Design 2026
www.innervision-design.co.uk



Improving water quality with Porous Asphalts

By trapping pollutants within the pavement UltiPorous Asphalts are proven to improve the quality of surface water run-off. This improves the purity of any surface water entering the environment and helps to reduce pollution in rivers and streams.

Enhancing drought resilience with Porous Asphalts

Improved water quality from Porous Asphalt pavements allows architects to design water capture and storage into new housing, community or commercial developments. This allows rainwater to be retained rather than lost as run-off into rivers. It also helps to improve resilience in times of low rainfall.

Water conservation using Porous Asphalts for rainwater capture and storage

Tarmac Porous Asphalts are suitable for use in sustainable drainage systems that capture rainwater and store it for use as an amenity for things like car washing, window cleaning or watering plants. As research shows, our Porous Asphalts also provide a degree of passive filtration as pollutants are captured and retained within the pavement. This means that the water captured has a relatively higher amenity value and can be used for a wider range of uses.

©Innervision Design 2026
www.innervision-design.co.uk

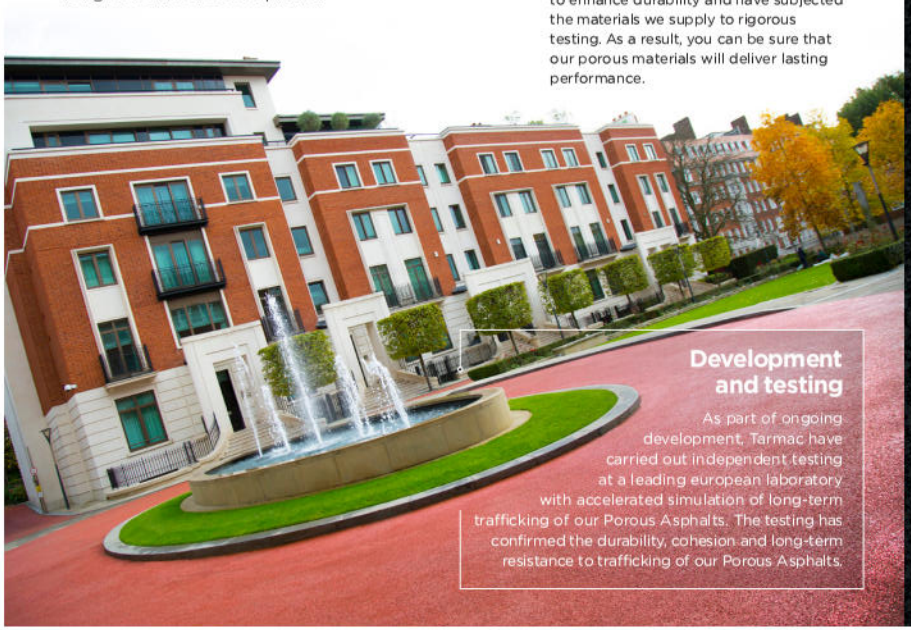
©Innervision Design 2026
www.innervision-design.co.uk

Continuous development of Porous Asphalts

Tarmac has been supplying porous pavements for at least 20 years for a range of applications from supermarket car parks, residential adoptable roads and parking areas. This experience has been used in the continued development of our range of UltiPorous Asphalts.

Since Porous Asphalts have a more open structure, ensuring pavement toughness and durability is a challenge that needs careful consideration.

At Tarmac, we have been using our experience of porous paving materials to enhance durability and have subjected the materials we supply to rigorous testing. As a result, you can be sure that our porous materials will deliver lasting performance.



Development and testing

As part of ongoing development, Tarmac have carried out independent testing at a leading european laboratory with accelerated simulation of long-term trafficking of our Porous Asphalts. The testing has confirmed the durability, cohesion and long-term resistance to trafficking of our Porous Asphalts.

Choosing your porous pavement

Making it easier to choose porous surfacing

Our new range or Porous Asphalts makes the process of choosing a porous surfacing material simpler for architects, design engineers and their clients. All of the technical details are available on NBS source which can be used to build a specification.

Maintaining a Porous Asphalt pavement

Understanding the requirement for scheduled maintenance of Porous Asphalt surfacing is an important element of the process, to prevent the pores becoming blocked and maintain the porous and free draining nature of the system. Fortunately, Tarmac supply detailed aftercare guides, available on our website advising end user clients on how to do this.

Technical support on choosing Porous Asphalts

Our Technical Product Support Managers can offer advice on material selection to help you get the correct material and pavement design for your site.



D Proposed drainage layout

