

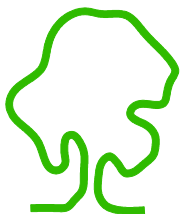
NICK CLARKSON

**THE MAPLES, SPENCERS PLACE, HORSHAM,
WEST SUSSEX RH12 2EZ**



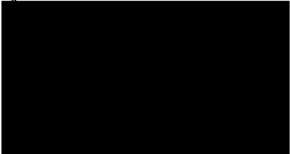
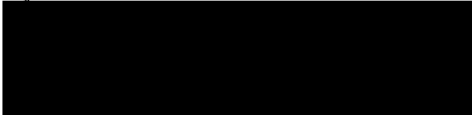
Drainage Strategy – Surface Water and Foul Sewage

December 2025
(Revised March 2026)



EAS ltd
Environmental Assessment Services Ltd

REPORT DATA SHEET

Requirement	Data
Report Reference	843/FolkesArchitects/TheMaples/DDS
Date	December 2025
Client	Nick Clarkson
Report type	Drainage Strategy
Purpose	Planning
Revisions	March 2026
Prepared by	Daniel Milford BSc (Hons) 
	Signed
Approved by	Eur Ing Malcolm McKemey BSc (Hons), CEng, CEnv, MICE, MCIWEM, MIEEnvSc 
	Signed

NICK CLARKSON

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CONTENTS

1. EXISTING SITE AND PROPOSED DEVELOPMENT
2. FLOOD RISK ASSESSMENT
3. EXISTING DRAINAGE
4. PROPOSED DRAINAGE
5. SURFACE WATER DRAINAGE DESIGN
6. PROPOSED FOUL SEWERAGE
7. OPERATION AND MAINTENANCE
8. CONCLUSIONS
9. RECOMMENDATIONS

APPENDICES

APPENDIX A: FIGURES

Figure 1: Site Location Plan
Figure 2: Existing Site Layout
Figure 3: Proposed Site Layout
Figure 4: Proposed Drainage Design

APPENDIX B: SITE PHOTOGRAPHS

APPENDIX C: SOUTHERN WATER SEWER PLANS

APPENDIX D: ENVIRONMENT AGENCY FLOOD RISK SUMMARY

APPENDIX E: UK SUSTAINABLE DRAINAGE CALCULATIONS (GREENFIELD RUNOFF RATE)

APPENDIX F: OUTPUT FROM DRAINAGE DESIGN SOFTWARE AND ATTENUATION STORAGE CALCULATIONS

APPENDIX G: ASHDOWN SITE INVESTIGATION GEOTECHNICAL REPORT

NICK CLARKSON

**THE MAPLES, SPENCERS PLACE, HORSHAM,
WEST SUSSEX RH12 2EZ**

Drainage Strategy – Surface Water and Foul Sewage

December 2025
(Revised March 2026)

1. EXISTING SITE & PROPOSED DEVELOPMENT

- 1.1 The site comprises of an existing chalet bungalow, workshop and surrounding areas of garden, patio and parking space. The site area is approximately 980 m². The Ordnance Survey (OS) map reference for the site is TQ 1676 3174. The site elevation is approximately +45 m OD. See Appendix A, Figure 1: Site Location Plan and Figure 2: Existing Site Layout.
- 1.2 According to the British Geological Survey (available online), the site lies on a bedrock of Upper Tunbridge Wells sand – sandstone and siltstone, interbedded. Online Environment Agency (EA) groundwater mapping identifies the site to lie on a Secondary A aquifer with a high groundwater vulnerability. The site does not lie within a groundwater source protection zone.
- 1.3 It is proposed to redevelop the site through the demolition of the existing bungalow and workshop and erection of a replacement two storey dwellinghouse.

2. FLOOD RISK ASSESSMENT

- 2.1 According to the EA online Flood Map for Planning, the site lies within Flood Zone 1. The nearest area within Flood Zones 2 and 3 is located some 200 m west of the site, associated with Boldings Brook, a tributary of the river Arun, that runs behind the residences on Redford Avenue.
- 2.2 The EA online Risk of Flooding from Surface Water map shows that the majority of the site is not at risk of surface water flooding with a small section of the northeastern boundary having a 1 in 100-year (1% AEP) flood risk and a small section of the southeastern boundary having a 1 in 1000-year (0.1% AEP) flood risk.
- 2.3 As the site is less than 1 ha in area and lies within Flood Zone 1, there is no requirement for a site specific flood risk assessment under the National Planning Policy Framework (NPPF) and associated guidance documents.

3. EXISTING DRAINAGE

- 3.1 The site was visited on 19 September 2025. See Appendix B: Site Photographs.
- 3.2 From observations made during the visit, formal surface water drainage on the site comprises of a drainpipe in the porch to the rear of the existing bungalow discharging into a grated drain. The chambers then move east and north following the path through the alley between the bungalow and workshop and to another chamber in front of the workshop. A strip drain in front of the workshop, and a drain within the workshop, both connect to the chamber in front of the workshop. From this chamber, surface water is discharged into the public sewer along Spencers Place, most likely public sewer chamber 7751. See Appendix C for sewer maps
- 3.3 Records from the CON29DW Residential Drainage and Water Enquiry state that foul water from the property drains to a public sewer. The layout is unknown at this time, however this most likely drains to public sewer chamber 7701 on Spencers Place.
- 3.4 As a general rule, the flow permitted to leave the developed site should not exceed the Greenfield flow rate. The Greenfield runoff rate for the site has therefore been estimated using the UK Sustainable Drainage (UKSuDS) Greenfield Runoff Estimation Tool. The runoff rates are given for scenarios up to (and including) the 1 in 100 year storm event, as summarised in Table 3.1 below and provided in Appendix E.

TABLE 3.1
GREENFIELD RUNOFF RATES

Return period	Flow rates (l/s)
1 in 1 year	0.6
1 in 10 year	1.1
1 in 30 year	1.6
1 in 100 year	2.3

- 3.5 According to the DEFRA non-statutory technical standards for sustainable drainage systems, the maximum discharge permitted to leave the whole site post development should not exceed 1 in 1-year greenfield flow rate (0.6 l/s).
- 3.6 The foul sewage should also be allowed for in the permitted discharge flow rate. The peak foul sewage design flow has been calculated for the proposed site as 0.05 l/s (see Section 5 below) therefore the surface water discharge should not exceed 0.55 l/s. However, the minimum flow currently achievable with commercially available flow control devices is 1.0 l/s.

4. PROPOSED DRAINAGE

4.1 The proposed residential development is expected to decrease the impermeable area of the site significantly when compared to its former use. As existing, approximately 398m² of the site is impermeable, consisting of the buildings and concrete paving. It has been estimated that following development 243.8 m² of the site will comprise impermeable surfacing, and the remaining 744 m² will comprise soft landscaping and permeable surfacing. The runoff co-efficient of the green roof has been estimated as 0.5. This reduces the impermeable area of the site to 211.4 m². This is expected to decrease the peak flow following a rainfall event. The soft landscaping will still discharge informally as Greenfield (as existing) and only the controlled drainage from the impermeable areas will be subject to SuDS measures.

4.2 The reduction of impermeable area at the site post development, and the use of SuDS features such as green roof, attenuation storage and permeable paving will decrease surface water runoff from the site, increasing sustainability and reducing the impact on flood risk elsewhere.

4.3 It is required that the drainage design of the developed site should retain onsite flows up to the 1 in 100 year return period event, including an allowance for climate change and an increase in impermeable area of 10% due to urban creep. The ways in which this can be achieved are discussed below.

4.4 **Drainage to Soakaway**

4.4.1 Drainage to soakaway (infiltration) is the preferred Sustainable Drainage System (SuDS) solution. The underlying Upper Tunbridge Wells Sand is not considered a suitable medium for soakaway. Variable (falling) head testing was undertaken at the site by Ashdown Site Investigation Ltd, in order to investigate the practicality of soakaway as a method of disposal of surface water. The Geotechnical Assessment report was issued 11 November 2025.

4.4.2 A trial pit, located in the rear garden, was excavated to 3.00 m below ground level in order to examine the geology at the site. No groundwater was encountered during the excavation of the trial pit. The geology appeared to comprise of a layer of topsoil, a layer of made ground and an underlying substrate of clay with bands of gravel.

4.4.3 An infiltration rate was calculated as 4.62×10^{-8} m/s. This is very low, below the practicable limit for infiltration and drainage to soakaway is therefore not considered to be a feasible option for the site.

4.5 **Attenuation Storage**

4.5.1 The alternative to soakaway drainage would be attenuation storage onsite, with discharge limited to the Greenfield flow for the impermeable areas (in this case 0.55 l/s). This would require a discharge point, namely the existing surface water sewer system, as no above ground surface water bodies are close enough to act as a discharge point.

- 4.5.2 Using the UKSuDS Surface Water Storage Requirements model, the total storage volume required for the site, for the 1 in 100 year plus climate change scenario, has been calculated as 9.8 m³. See Appendix F.
- 4.5.3 Attenuation storage could be provided in the form of ponds, swales, a detention basin or an underground geocellular/modular system wrapped in a geomembrane. In this instance an underground geocellular/modular system is considered to be the most appropriate for the site.
- 4.5.4 A suitable location for the geocellular/modular system would be below the proposed driveway. This would position it closest to the public surface water sewer for discharge. As this would be positioned beneath the driveway the storage unit should lie at least 250 mm below the surface.
- 4.5.5 The model output recommends the dimensions of the geocellular/modular system to be 6 m x 2 m x 0.8 m. See Appendix A, Figure 4: Proposed Drainage Design.

4.6 **Other Sustainable Urban Drainage System (SUDS) Options**

- 4.6.1 Permeable paving is to be utilised in the driveway and any patio areas. Permeable paving will permit surface water to infiltrate into the underlying structure, delay discharge and reduce peak flows following a rainfall event. It is recommended that the permeable paving be underlain by a shallow drainage blanket connected to the surface water drainage system.
- 4.6.2 Rainwater harvesting could also be practiced. Rainwater could be used for irrigation purposes within the garden, via water butts connected to roof downpipes. Rain gardens could also be installed.
- 4.6.3 A green roof has been incorporated into the proposed design. Green roofs reduce the volume and rate of runoff and can be low maintenance, generally requiring bi-annual maintenance visits.

5. SURFACE WATER DRAINAGE DESIGN

5.1 **Design Philosophy**

- 5.1.1 The drainage strategy is for surface water to be drained into an attenuation storage geocellular/modular system before being discharged into the public surface water sewer system, with discharge limited to the Greenfield flow for the site (0.55 l/s, however 1.0 l/s is the lowest practical flow rate), achieved via an orifice plate or vortex valve. See Figure 4 in Appendix A for the proposed drainage arrangement.

5.2 Design Storm

- 5.2.1 The surface water drainage system has been designed and tested for surcharge for 1 in 1-year, 1 in 30-year and 1 in 100-year storm events with a 45% allowance for climate change and 10% urban creep. See Appendix A, Figure 4 for the proposed drainage design and Appendix F for pipe and chamber layout and sizing of the attenuation storage from the MasterDrain model.

5.3 Drainage Design Model

- 5.3.1 An appropriate attenuation storage size has been calculated as 6 m long, 2 m wide and 0.8 m depth. This could be accommodated below the driveway and front garden. See Figure 4 in Appendix A.

5.4 Hydrogeological Data

- 5.4.1 Hydrological data for the site as used in the MasterDrain model is given in Appendix F. The chamber details, pipe sizes and levels are shown in Appendix F and summarised in Table 5.1 below:

TABLE 5.1
SURFACE WATER DRAINAGE

Ref.	Dia (mm)	Cover level (mAOD)	Invert level (mAOD)	Pipe dia in (mm)	Pipe dia out (mm)
SW1	450	45.810	45.310	-	375
SW2	600	45.200	44.700	375	500
SW3	900	45.400	44.570	500	500
SW4	450	45.290	44.790	-	225
STORAGE	-	45.730	44.400	500, 225	500
SW5	600	45.700	44.340	500	500
7751	-	45.010	44.020	500	-

5.5 Extreme event

- 5.5.1 If an extreme storm event overwhelmed the surface water drainage system at the site and/or if the drainage system were to fail, ground levels would indicate that surface water would drain into the road lying across the northeastern site boundary, and onto the southeast adjacent properties gardens, as per the present situation.

6. PROPOSED FOUL SEWERAGE

- 6.1 There is an existing foul sewer connection on site which discharges to a public foul sewer along the Spencers Place Road. The public sewer is identified on the Southern Water sewer plan as a 225mm diameter foul gravity sewer. See Appendix C.

- 6.2 The preferred foul sewage disposal option is to utilise the existing connection to the public foul sewer from the chamber at the site entrance.
- 6.3 A Section 106 application under the Water Industry Act 1991 would be required from the local water authority to connect a private drain to the public sewer however, as the existing property already has an approved connection to a public foul sewer, no further application is required.
- 6.4 The proposed development will comprise one dwelling. According to the WRc publication "Sewers for Adoption" (8th Edition), the design (peak) flow from a proposed residential development should be based on water use of 4000 l/dwelling/day. This gives the overall (peak) foul sewage design flow for the site as 0.05 l/s.
- 6.5 The flow of sewage is calculated by the MasterDrain Foul model based on "drainage units"; the number of facilities (basins, baths, showers, WCs, washing machines, dishwashers, etc.).
- 6.6 The results of the sewerage design from the MasterDrain Foul analysis given in Appendix F and illustrated in Figure 4 are summarised in Table 6.1 below:

TABLE 6.1
FOUL SEWERAGE

Ref.	Dia (mm)	Cover level (mAOD)	Invert level (mAOD)	Pipe dia in (mm)	Pipe dia out (mm)
FW1	450	45.630	45.130	-	100
FW2	450	45.890	44.910	100	100
7701	-	45.690	42.370	100	-

- 6.7 It is advised that the peak foul sewage design flow (0.05 l/s) should be deducted from the maximum permitted discharge from the surface water attenuation storage.

7. OPERATION AND MAINTENANCE

- 7.1 The drainage system will generally require minimal operational input once construction has been completed. However, it will require some regular maintenance. The maintenance of the surface water chambers and green roof will be the responsibility of the owners of the residence.
- 7.2 Required maintenance will include:
- The chambers, gullies, gutters and channels will require regular removal of any silt or other debris. Maintenance should be carried out at the time of year after most leaf fall has occurred.

- Seasonal visual inspection of green roof to assess plant health and condition, regular clearance of leaves or debris from drainage outlets and checking moisture level of substrate is not waterlogged or overly dry.

7.3 There is no change of land use from residential for the proposed development and as such the pollution risk to surface water and groundwater will be unchanged.

8. CONCLUSIONS

- 8.1 The site currently comprises of an existing chalet bungalow, workshop and surrounding areas of garden, patio and parking space in Spencers Place, Horsham. It is proposed to redevelop the site through the demolition of the existing bungalow and workshop and erect a replacement two storey dwellinghouse. The proposed development is expected to decrease the areas of impermeable surface at the site as well as introduce additional SUDS methods such as a green roof and permeable paving.
- 8.2 The site lies within Flood Zone 1, at low risk of tidal and fluvial flooding, and is also shown to be at low risk of surface water flooding.
- 8.3 Presently surface water is drained to the public surface water sewer along Spencers Place. The underlying Upper Tunbridge Wells Sand was shown to have a poor infiltration rate (4.62×10^{-8} m/s) via percolation testing undertaken at the site by Ashdown Site Investigation Ltd. As such drainage to soakaway would not be practicable option for the site.
- 8.4 The alternative SuDS preferred method of draining surface water is drainage to attenuation storage with outflow limited to 1 in 1-year greenfield flow rate (1.0 l/s). This would require a discharge point, of which the only option would be the existing surface water sewer (chamber 7751). The total storage volume required to retain the 1 in 100 year plus climate change flood event on site has been calculated as 14.25 m³, based on the HR Wallingford UK SUDS Model.
- 8.5 The most feasible attenuation storage option for the proposed site layout would be a geocellular/modular system, wrapped in a geomembrane. It is considered that a geocellular storage system providing the required storage volume of 14.25 m³, 11.2 m x 1.6 m and 0.8 m in depth, could be located below the driveway, to the north of the dwelling.
- 8.6 The foul sewerage drainage scheme for the dwelling comprises draining the foul sewage into the existing public foul sewer system (chamber 7701).

9. RECOMMENDATIONS

- 9.1 The drainage system will generally require minimal operational input once construction has been completed. However, it will require some regular maintenance including regular removal of silt and debris from chambers, gutters and channels, and seasonal visual inspection of green roof.
- 9.2 The geocellular/modular system and all chambers are to be kept clear of debris and build ups of silt to ensure working order and prevent loss of maximum capacity.



APPENDIX A:

FIGURES

- | | |
|-----------|--------------------------|
| Figure 1: | Site Location Plan |
| Figure 2: | Existing Site Layout |
| Figure 3: | Proposed Site Layout |
| Figure 4: | Proposed Drainage Design |



10m
50ft



NICK CLARKSON

Scale as shown

THE MAPLES, SPENCERS PLACE, HORSHAM,
WEST SUSSEX RH12 2EZ

Figure 1: Site Location Plan

March 2026



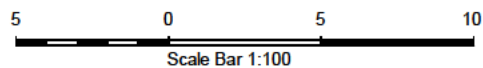
NICK CLARKSON

Scale as shown

THE MAPLES, SPENCERS PLACE, HORSHAM,
WEST SUSSEX RH12 2EZ

Figure 3: Proposed Site Layout

March 2026



APPENDIX B

SITE PHOTOGRAPHS

The Maples bungalow



Existing drainpipe downpipe in rear porch



Existing drainage from rear of building



Existing drainage in between buildings



Strip drain in front of garage



Existing drainage in front of house leading to public sewer



Garden area facing east



Garden area facing west



Rear of bungalow



Drainpipe downpipes in garage

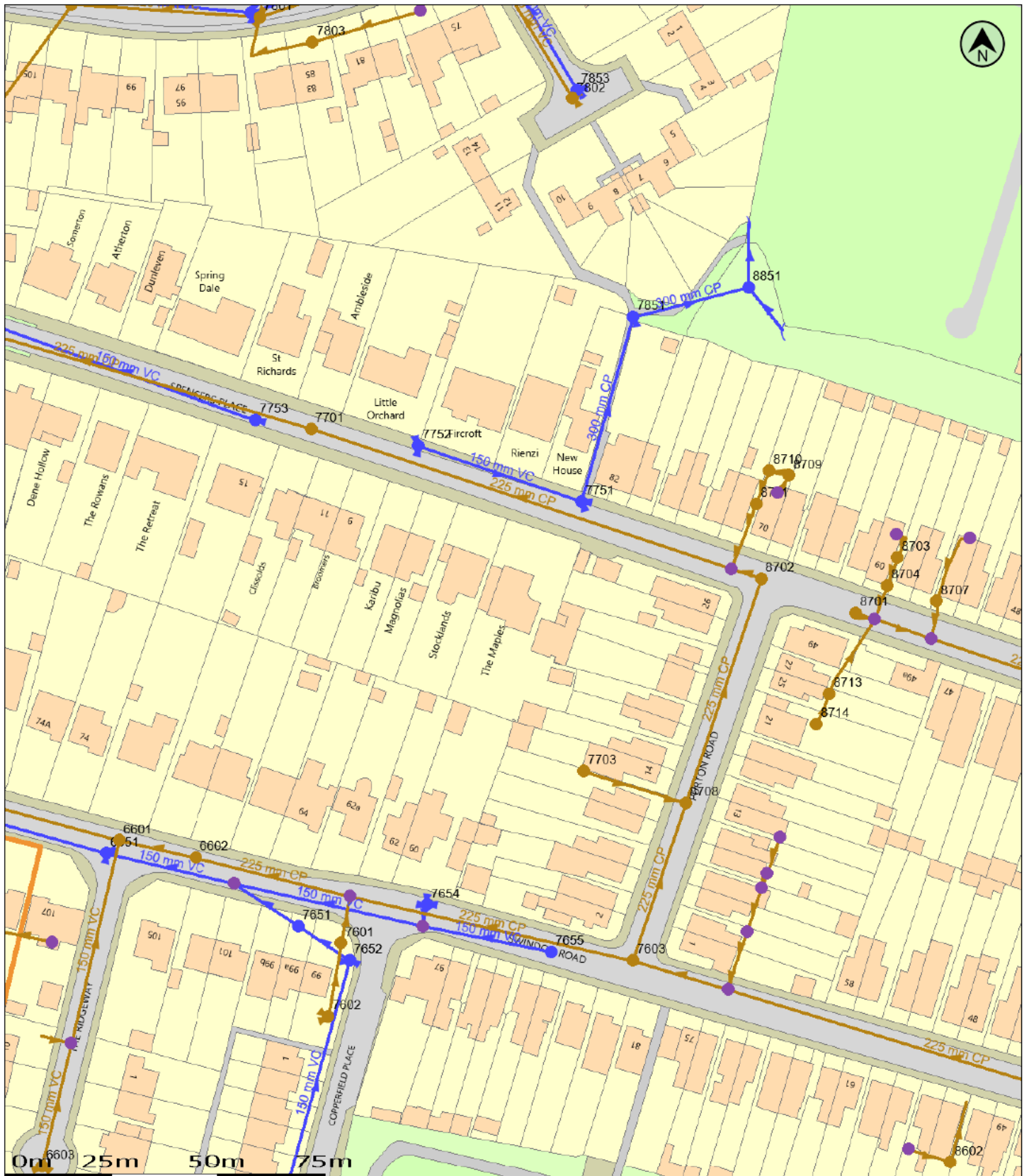


West of bungalow



APPENDIX C

SOUTHERN WATER SEWER PLANS



(c) Crown copyright and database rights 2025 Ordnance Survey AC0000808122

Data updated: 21/09/25

Scale: 1:1250

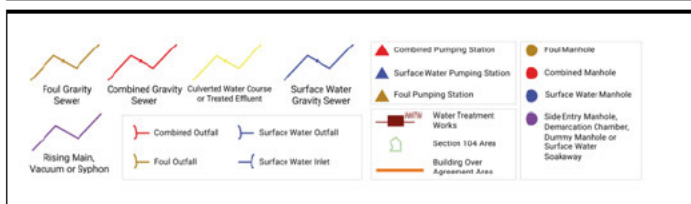
Map Centre: 516765,131754

Date: 06/10/25

Our Ref: 1900180 - 1

Wastewater Plan A4

Powered by digdat



[Redacted]	
The Maples	
[Redacted]	



The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determined on site. This plan is produced by Southern Water Services Ltd (c) Crown copyright and database rights 2025 Ordnance Survey AC0000808122. This map is to be used for the purposes of viewing the location of Southern Water plant only. Any other uses of the map data or further copies is not permitted.

WARNING: BAC pipes are constructed of Bonded Asbestos Cement.

WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement.

[illegible]

APPENDIX D

ENVIRONMENT AGENCY FLOOD RISK SUMMARY

Flood map for planning

Your reference	Location (easting/northing)	Created
Unspecified	516767/131745	18 September 2025 10:20

Your selected location is in flood zone 1, an area with a low probability of flooding.

You will need to do a flood risk assessment if your site is **any of the following**:

- bigger than 1 hectare (ha)
- in an area with critical drainage problems as notified by the Environment Agency
- identified as being at increased flood risk in future by the local authority's strategic flood risk assessment
- at risk from other sources of flooding (such as surface water or reservoirs) and its development would increase the vulnerability of its use (such as constructing an office on an undeveloped site or converting a shop to a dwelling)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2025 AC0000807064. <https://flood-map-for-planning.service.gov.uk/os-terms>



Flood map for planning

Your reference
Unspecified

Location (easting/northing)
516767/131745

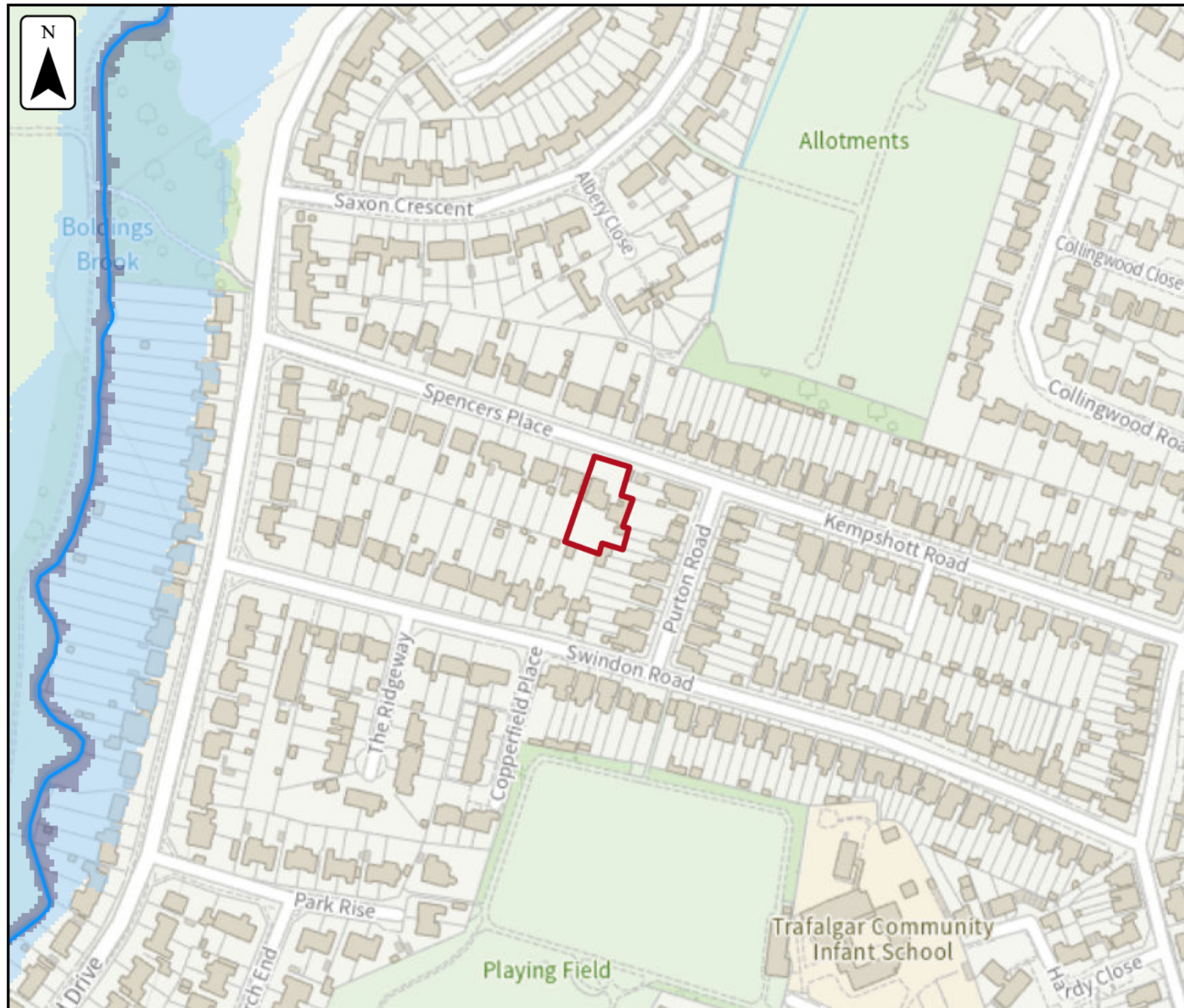
Scale
1:2,500

Created
18 Sep 2025 10:21

-  Selected area
-  Flood zone 3
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Water storage area



0 20 40 60m



APPENDIX E

UK SUSTAINABLE DRAINAGE CALCULATIONS
(GREENFIELD RUNOFF RATE)

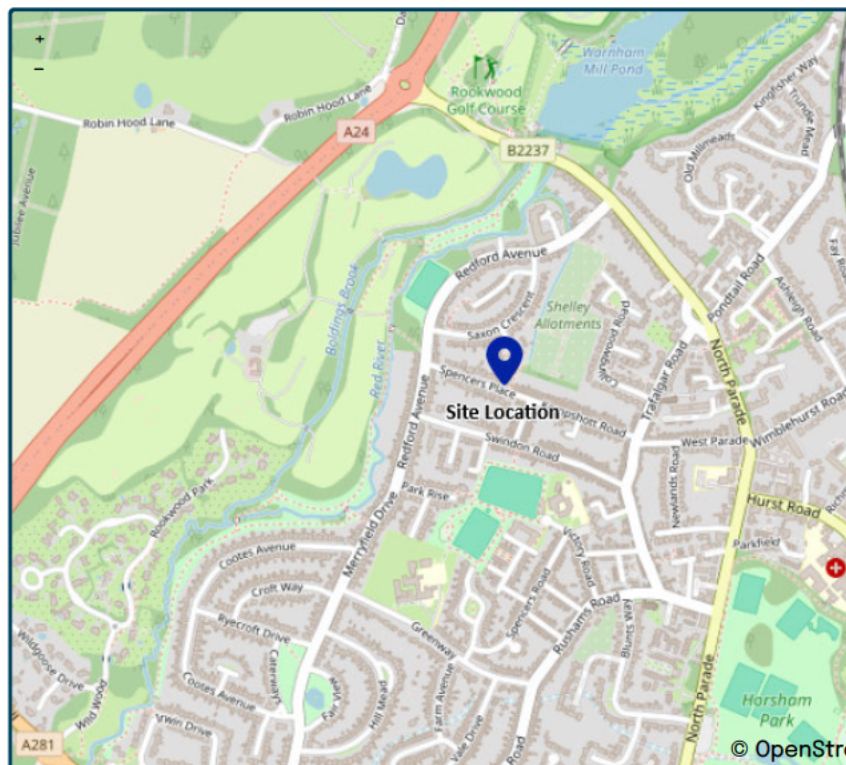
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	02/03/2026
Calculated by	
Reference	
Model version	2.2.3

Location

Site name	The Maples
Site location	Horsham



© OpenStreetMap (<https://www.openstreetmap.org/copyright>) contributors.

Site easting (British National Grid)	516770
Site northing (British National Grid)	131742

Site details

Total site area (ha)	0.098	ha
----------------------	------------------------------------	----

Greenfield runoff

Method

Method

FEH statistical (2025)

FEH statistical (2025)

	My value		Map value
SAAR9120 (mm)	838	mm	
BFIHOST19scaled	0.35		
QMed-QBar conversion	1.136		1.136
QMed (l/s)	0.6	l/s	
QBar (FEH statistical 2025) (l/s)	0.7	l/s	

Growth curve factors

	My value		Map value
Hydrological region	7		7
1 year growth factor	0.85		
2 year growth factor	0.88		
10 year growth factor	1.62		
30 year growth factor	2.3		
100 year growth factor	3.19		
200 year growth factor	3.74		

Results

Method	FEH statistical (2025)
Flow rate 1 year (l/s)	0.6 l/s
Flow rate 2 year (l/s)	0.6 l/s
Flow rate 10 years (l/s)	1.1 l/s
Flow rate 30 years (l/s)	1.6 l/s
Flow rate 100 years (l/s)	2.3 l/s
Flow rate 200 years (l/s)	2.6 l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.3) developed by HR Wallingford and available at uksuds.com (<https://www.uksuds.com/>). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at [uksuds.com/terms-conditions](https://www.uksuds.com/terms-conditions) (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

APPENDIX F

OUTPUT FROM DRAINAGE DESIGN SOFTWARE AND ATTENUATION STORAGE CALCULATIONS



MasterDrain
HY 11.0

Environmental Assessment Services Ltd

<http://www.easltd.co.uk>

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Haywards Heath,
West Sussex, RH17 5LZ
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email: info@easltd.co.uk

Job No. 843		
Sheet no. 1		
Date 02/03/26		
By	Checked	Reviewed

Project	The Maples
Title	Hydrological data for The Maples

Data:-

FSR values

Location	= HORSHAM	Grid reference	= TQ1730
M5-60 (mm)	= 19.9	SAAR (mm/yr)	= 800
r	= 0.34	Soil	= 0.45
Long reference	= 517130	Area	= England and Wales
Hydrological area	= 7	Hydrological zone	= 7

Soil classification for WRAP type 4

Clayey, or loamy over clayey soils with an impermeable layer at shallow depth.

FEH values

c	= -0.026	d1	= 0.347	d2	= 0.342
d3	= 0.365	e	= 0.319	f	= 2.466



Environmental Assessment Services



MasterDrain
HY 11.0

Environmental Assessment Services Ltd

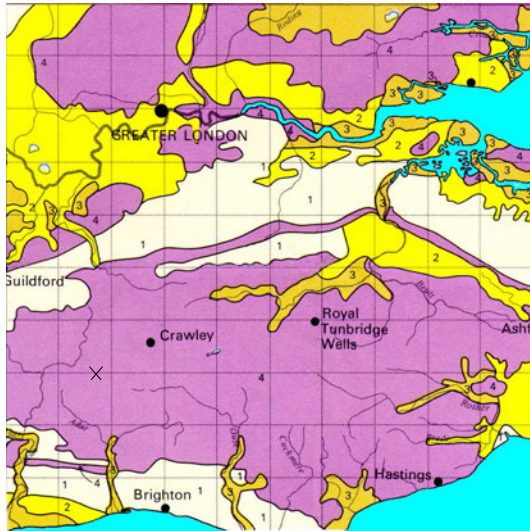
<http://www.easitd.co.uk>

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Job No. 843		
Sheet no. 2		
Date 02/03/26		
By	Checked	Reviewed

Project **The Maples**

Title **Hydrological data for The Maples**



<- Soil

M5-60 ->



<- SAAR

r x 100 ->



Map extracts reproduced by permission of H R Wallingford.



Environmental Assessment Services

Environmental Assessment Services Ltd http://www.easltd.co.uk London Rd, Hickstead Haywards Heath, West Sussex, RH17 5LZ Tel: 01444 882552 email: info@easltd.co.uk		Job No. 843		
		Sheet no. 1		
		Date 16/03/26 10:14		
Project The Maples		By EAS	Checked	Reviewed
Title Manhole printout for MAPLES MAR26.SW				

Manhole ref.	X ref	Y ref	Form	Cham diam. or length	Rect. width	Chamb. height	Shaft height	MH Volume	Exit Diam	Exit Crown	Exit Invert	Chamb const	Slab level	Cover Level	Dwnstr MH
SW1	5.23	1.17	circ	450	N/A	0.50		0.08	375	45.710	45.310	N/A	45.260	45.810	SW2
SW2	25.26	0.00	circ	600	N/A	0.50		0.14	500	45.225	44.700	N/A	44.650	45.200	SW3
SW3	23.53	12.76	circ	900	N/A	0.83		0.53	500	45.095	44.570	N/A	44.520	45.400	STORAGE
SW4	16.72	10.88	circ	450	N/A	0.50		0.08	225	45.040	44.790	N/A	44.740	45.290	STORAGE
STORAGE	15.80	26.95	circ	3032	N/A	1.33		9.60	500	44.925	44.400	N/A	44.350	45.730	SW5
SW5	20.26	29.96	circ	600	N/A	1.36		0.38	500	44.865	44.340	N/A	44.290	45.700	7751

All manholes to be as per 'Sewers for Adoption'

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Job No.
843

Sheet no.
2

Date
16/03/26 10:14

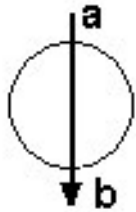
Project
The Maples

Title
Manhole printout for MAPLES MAR26.SW

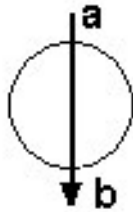
By
EAS

Checked

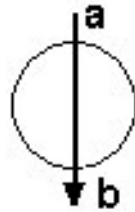
Reviewed



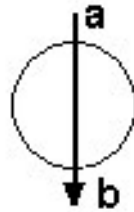
MH = SW1
a=head
b = 375



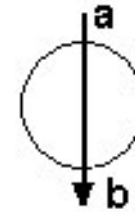
MH = SW2
a= 375
b = 500



MH = SW3
a= 500
b = 500



MH = SW4
a=head
b = 225



MH = STORAGE
a= 500
b = 500

MH = SW5
a= 500
b = 500

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		Sheet no. 3		
		Date 16/03/26 10:15		
Project The Maples	By EAS		Checked	Reviewed
Title Manhole printout for MAPLES MAR26.SW				

These explanatory notes should be read in conjunction with the Manhole printout

- 1) Manhole ref - the reference for the manhole in question
- 2) Form - either circular or rectangular
- 3) Chamber diam or length - diameter of chamber if circular, or length if rectangular - in metres
- 4) Rectangular width - if form is rectangular, this gives the width of the chamber
- 5) Chamber height - height of chamber from invert
- 6) Shaft height - height of access shaft if applicable, from top of chamber to ground level
- 7) Manhole volume - cubic capacity of manhole chamber
- 8) Exit diameter - diameter of pipe leaving this manhole
- 9) Exit crown - crown level of pipe leaving this manhole
- 10) Exit invert - invert level of pipe leaving this manhole
- 11) Chamb const - manhole construction :-
 - N/A - not specified
 - Conc - concrete rings
 - Poly - polypropylene rings surrounded by selected fill
 - Poly/conc - polypropylene rings surrounded by concrete
 - Brick - brick built with waterproof render
 - In situ - concrete cast in situ
- 12) Slab level - surface level of base slab (if no sump, this is placed at 50mm below exit invert to allow levels manipulation).
- 13) Manhole diameters of 9999 have exceeded the sizes available in SfA
- 14) Manhole diameters may have to be modified due to the number of branches



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SW

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Project The Maples	By EAS	Checked	Reviewed
Title Surcharge calcs (Sized at 100 yrs storm) for MAPLES MAR26.SW CCF = 45%			

Using in-line restrictors
Return period = 100 yrs
Climate change factor = 45

PEAK hydrograph values printed
Storm duration = 15 mins
No offline storage

Mean rain intens. 134.00 mm/hr
Storm profile = Summer
Using FSR data

Peak rain intens. 525.28 mm/hr
Sample period = 7.5 secs.

Entry	SECT.:	MANHOLE	:	PIPE	:	PIPE	:	CHAMBER	:	INVERT:	:	WATER	:	GRND	:	SURCHARGE		:	EXCESS	:	FLOODED	:	DRAINED	:	STATUS
No.	No. :	REF	:	CAPACITY	:	SIZE	:	DIAM/LxW	:	LEVEL	:	LEVEL	:	LEVEL	:	:	:	:	FLOW	:	VOL	:	AREA (m ²)	:	
	:	:	:	l/s	:	mm	:	mm	:	m	:	m	:	m	:	fract.	Depth	:	l/s	:	m ³	:	x FACTOR	:	
1	I	1.01	SW1	349.2	9.3	375		450		45.31		45.33		45.81		0.03	0.02		0.00		0.000		147		OK
2	I	1.02	SW2	428.4	9.3	500		600		44.70		44.73		45.20		0.02	0.03		0.00		0.000		147		OK
3	I	1.03	SW3	437.4	11.8	500		900		44.57		44.60		45.40		0.03	0.03		0.00		0.000		186		OK
4	B	2.01	SW4	81.4	0.9	225		450		44.79		44.80		45.29		0.01	0.01		0.00		0.000		15		OK
5	I	1.04	STORAGE	449.4	12.7	500		3032		44.40		44.43		45.73		0.03	0.03		0.00		0.000		201		OK
6	I	1.05	SW5†	755.7	1.0	500		600		44.34		44.34		45.70		0.00	0.00		0.00		0.000		201		OK



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Project	The Maples
Title	Surcharge calcs (Sized at 100 yrs storm) for MAPLES MAR26.SW CCF = 45%

Notes

Printout headings

- | | | |
|---|---|--|
| 1) Entry no - position in file | 2) Section no - pipe identifier | 3) Manhole ref - Manhole identifier |
| 4) Pipe cap - full bore capacity of that pipe | 5) Rate of flow - calculated flow rate (l/s) ± = flow restrictor. | 6) Pipe diam - outlet pipe diameter (mm) |
| 7) Chamber diam - chamber diam. at base of MH | 8) Invert level - invert level of manhole | 9) Water level - calculated peak water level. |
| 10) Grnd level - ground / cover level | 11) Surch. fract - calc.flow/pipe capacity | 12) Surch. depth - surcharge level above soffit |
| 13) Overflow - surcharged flow rate (l/s) | 14) Flooded vol - volume of water above cover | 15) Upstrm Vol - upstream pipe vol to previous manhole(s) |
| 16) Status - OK - outlet not surcharged | 17) Status - Surcharged - outlet surcharged | 18) Status - Warning - water level within 299mm of cover level |
| 19) Status - Flooded - cover over-topped | 20) § against diameter indicates throttle pipe used. | |

Title box

Hydrograph data

- | | | |
|---|--------------------------------------|--|
| 1) Ret. period - that used to calculate profile | 2) Duration - length of storm (mins) | 3) Profile - either Winter (75%) or Summer (50%) |
|---|--------------------------------------|--|

Flow restrictors

Manhole reference - SW5

Restrictor flowrate - 1 l/s



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SW

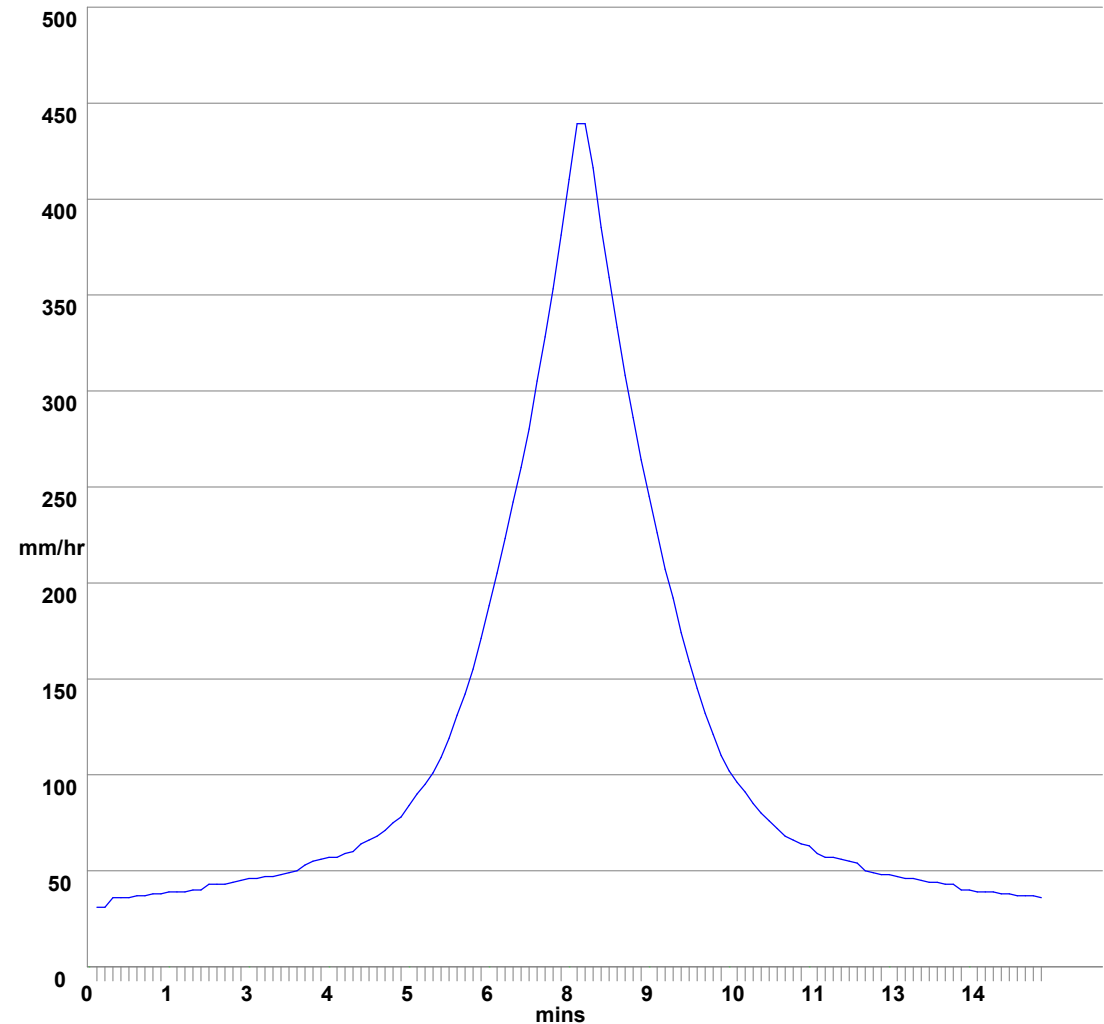
Project
The Maples

Title
Surcharge calcs (Sized at 100 yrs storm) for MAPLES MAR26.SW CCF = 45%

Time mins	Rain mm/hr	Time mins	Rain mm/hr	Time mins	Rain mm/hr
0:08	31.37	5:08	89.63	10:08	96.35
0:15	31.37	5:15	95.23	10:15	90.75
0:22	35.85	5:22	100.83	10:22	85.15
0:30	35.85	5:30	108.67	10:30	79.54
0:38	35.85	5:38	118.76	10:38	76.18
0:45	36.97	5:45	131.08	10:45	71.70
0:52	36.97	5:52	142.28	10:52	68.34
1:00	38.09	6:00	154.61	11:00	66.10
1:08	38.09	6:08	171.41	11:08	63.86
1:15	39.21	6:15	188.22	11:15	62.74
1:22	39.21	6:22	205.02	11:22	59.38
1:30	39.21	6:30	222.95	11:30	57.14
1:38	40.33	6:38	241.99	11:38	57.14
1:45	40.33	6:45	259.92	11:45	56.02
1:52	42.57	6:52	280.08	11:52	54.90
2:00	42.57	7:00	304.73	12:00	53.78
2:08	42.57	7:08	328.26	12:08	50.42
2:15	43.69	7:15	352.91	12:15	49.29
2:22	44.81	7:22	380.91	12:22	48.17
2:30	45.93	7:30	410.04	12:30	48.17
2:38	45.93	7:38	439.17	12:38	47.05
2:45	47.05	7:45	439.17	12:45	45.93
2:52	47.05	7:52	415.64	12:52	45.93
3:00	48.17	8:00	385.40	13:00	44.81
3:08	49.29	8:08	358.51	13:08	43.69
3:15	50.42	8:15	332.74	13:15	43.69
3:22	52.66	8:22	308.09	13:22	42.57
3:30	54.90	8:30	285.69	13:30	42.57
3:38	56.02	8:38	264.40	13:38	40.33
3:45	57.14	8:45	245.35	13:45	40.33
3:52	57.14	8:52	226.31	13:52	39.21
4:00	59.38	9:00	207.26	14:00	39.21
4:08	60.50	9:08	191.58	14:08	39.21
4:15	63.86	9:15	173.65	14:15	38.09
4:22	66.10	9:22	159.09	14:22	38.09
4:30	68.34	9:30	144.52	14:30	36.97
4:38	70.58	9:38	132.20	14:38	36.97
4:45	75.06	9:45	121.00	14:45	36.97
4:52	78.42	9:52	109.79	14:52	35.85
5:00	84.03	10:00	101.95	15:00	35.85

Hydrograph profile derived from data in the Flood Studies Report

Return period= 100 yrs Duration= 15 mins Profile - summer





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SW

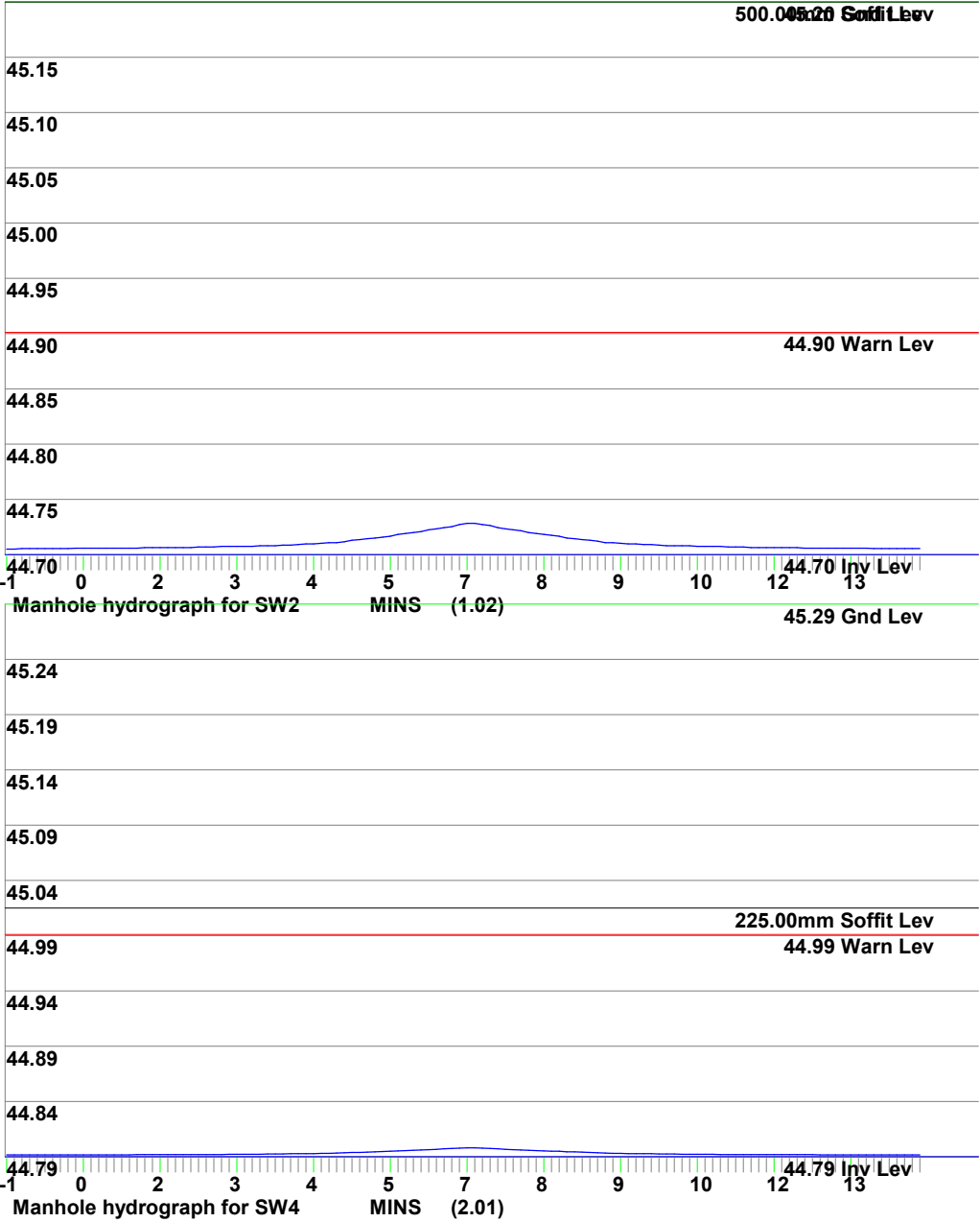
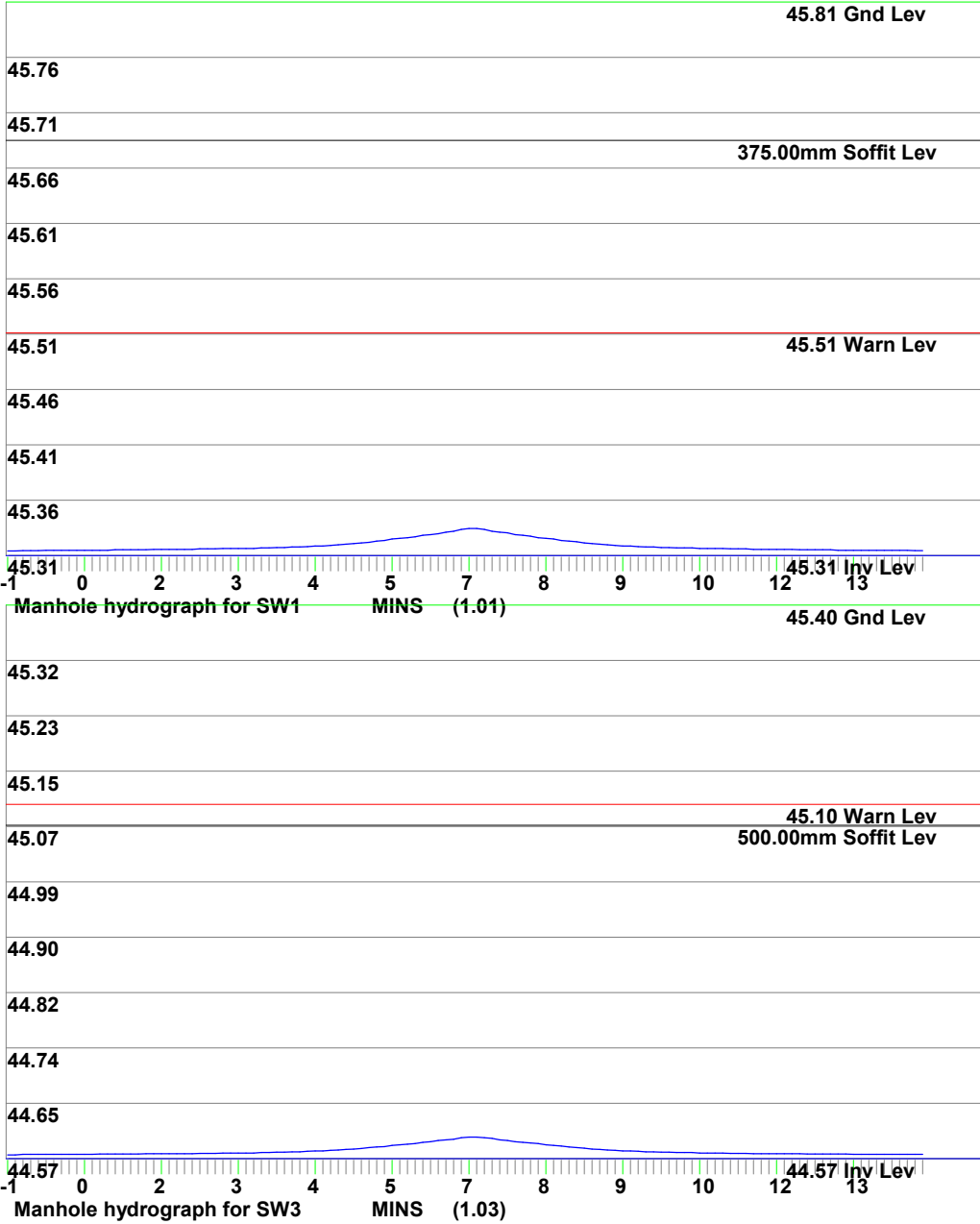
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Project The Maples	Title Surcharge calcs (Sized at 100 yrs storm) for MAPLES MAR26.SW CCF = 45%



Manhole hydrograph for SW4

MINS (2.01)

13



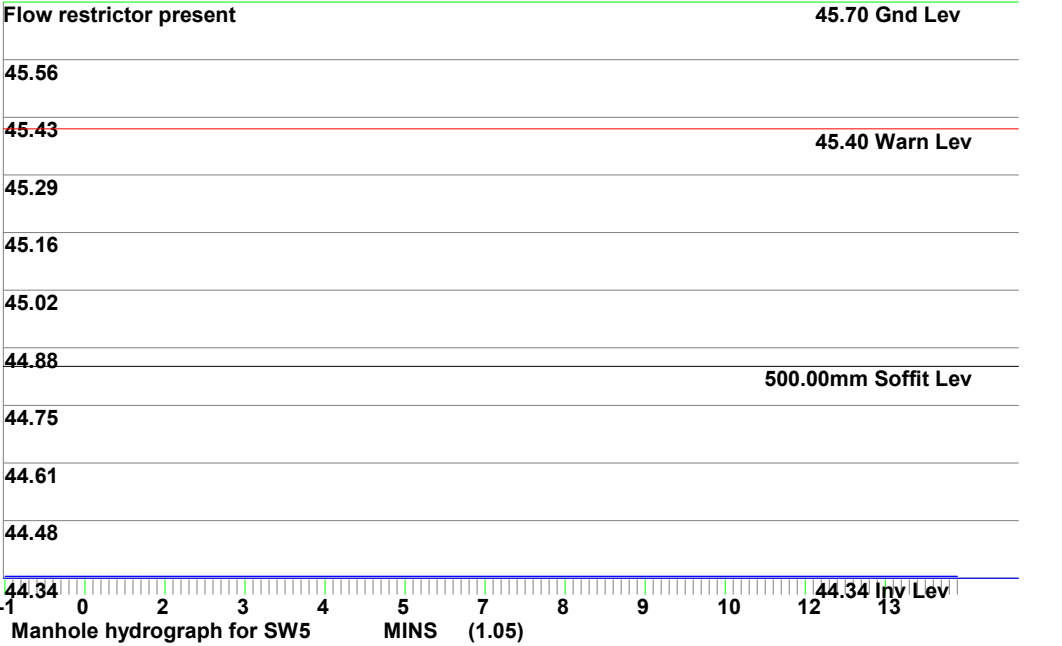
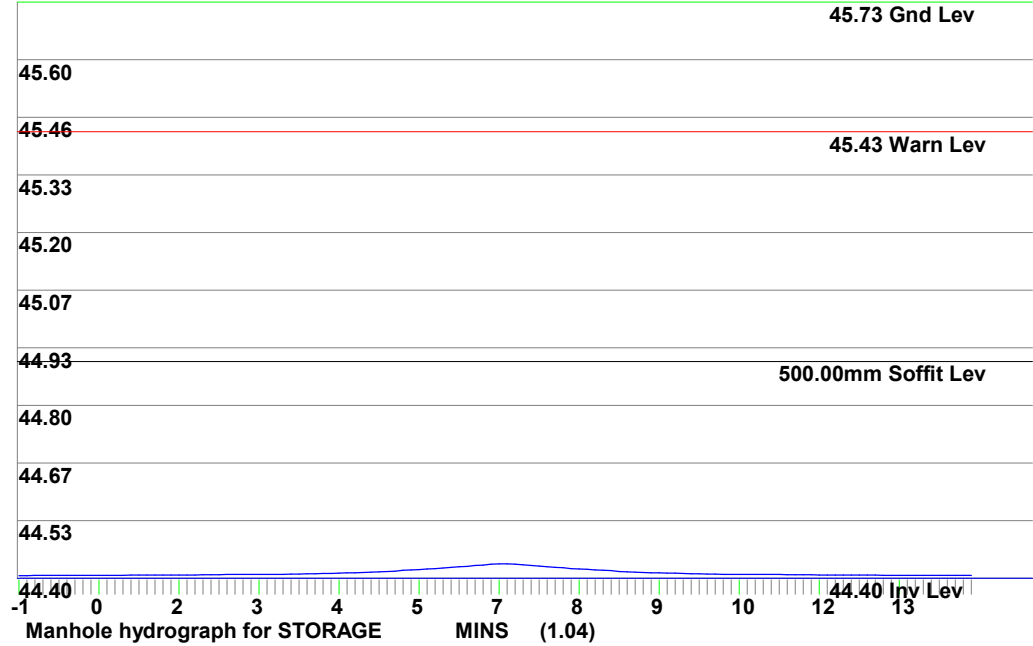
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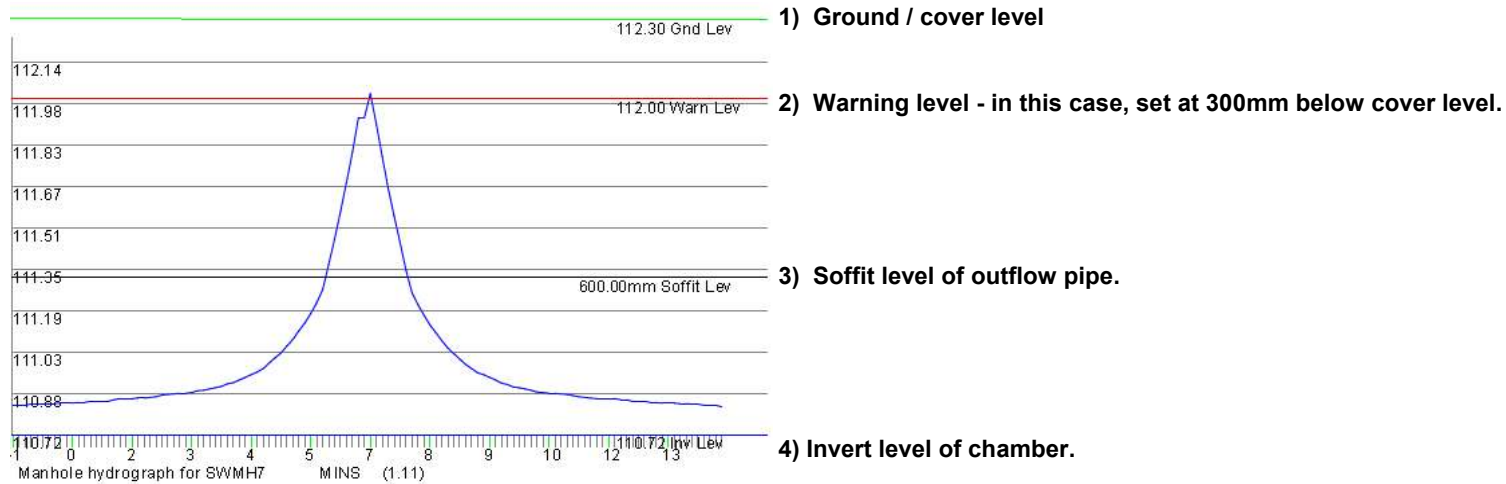
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Project The Maples	
Title Surcharge calcs (Sized at 100 yrs storm) for MAPLES MAR26.SW CCF = 45%	



Notes

- Lower section of the graph shows the water depth filling the channel. Channel is assumed to be a full pipe diameter in depth.
- Upper section of the graph shows the water depth filling the chamber. Chamber has a greater width/diameter than the channel, so increases in depth are proportionally less.
- The top of the graph clips the warning level and would be marked thus on the printout.
- In many cases the invert of the offline storage is required to enter at the channel soffit level, meaning that the pipe will still surcharge but flooding risk reduced.
- The diagram above is a general one and is not part of the current calculation.



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Foul 11.5

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Project

The Maples

Title

Manhole printout for MAPLES.FL

Manhole ref.	Form	Cham diam. or length	Rect. width	Chamb. height	Shaft height	MH Volume	Ent. Diam	Ent. Crown	Ent. Invert	Exit Diam	Exit Crown	Exit Invert	Chamb const	Cover Level	Dwnstr MH
FW1	circ	450	N/A	0.50		0.08	Head	----	----	100	45.255	45.130	N/A	45.630	FW2
FW2	circ	450	N/A	0.98		0.16	100	0.000	0.000	100	45.035	44.910	N/A	45.890	7701

All manholes to be as per 'Sewers for Adoption'

Levels calculated for level inverts



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Project The Maples			
Title Manhole printout for MAPLES.FL			

These explanatory notes should be read in conjunction with the Manhole printout

- 1) Manhole ref - the reference for the manhole in question
- 2) Form - either circular or rectangular
- 3) Chamber diam or length - diameter of chamber if circular, or length if rectangular - in metres
- 4) Rectangular width - if form is rectangular, this gives the width of the chamber
- 5) Chamber height - height of chamber from invert
- 6) Shaft height - height of access shaft if applicable, from top of chamber to ground level
- 7) Manhole volume - cubic capacity of manhole chamber
- 8) Exit diameter - diameter of pipe leaving this manhole
- 9) Exit crown - crown level of pipe leaving this manhole
- 10) Exit invert - invert level of pipe leaving this manhole
- 11) Manhole diameters of 9999 have exceeded the sizes available in Sfa
- 12) Manhole diameters may have to be modified due to the number of branches

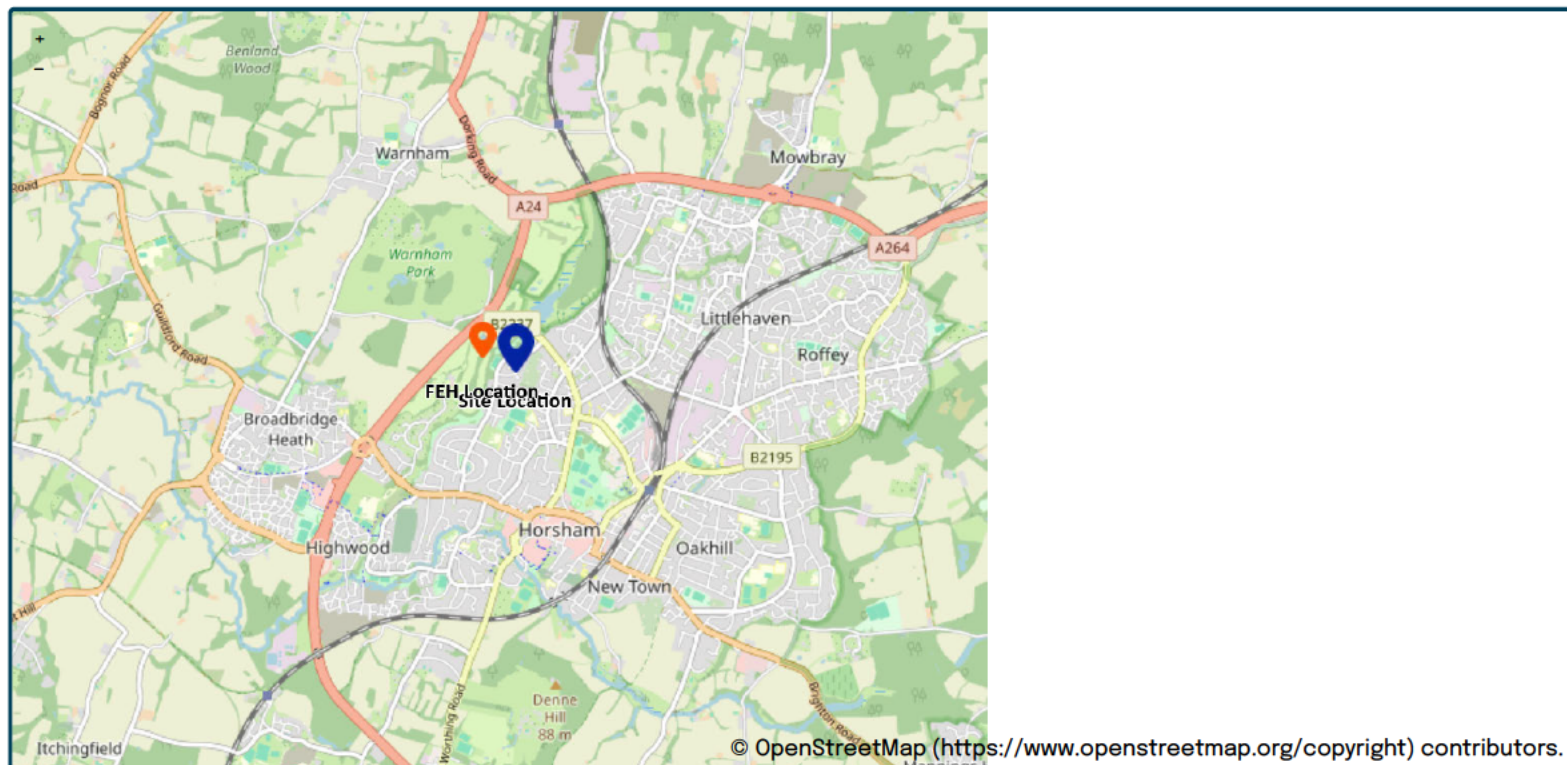
This is an estimation of the storage volume requirements that are needed to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). It is recommended that the total storage volume for the site is distributed across the site using multiple SuDS and that hydraulic modelling software is used to undertake and finalise the detailed design of the drainage system.

Project details

Date	02/03/2026
Calculated by	EAS Ltd
Reference	843
Model version	2.2.3

Location

Site name	The Maples
Site location	Horsham



Site easting (British National Grid)	516770
Site northing (British National Grid)	131740

Site areas

Total site area (ha)	0.098	ha
----------------------	-------	----

Roof area

Total roof area (ha)	0.02114	ha
Contributing roof area (ha)	0.02114	ha
Non-contributing roof area (ha)	0	ha

Paved area

Total paved area (ha)	0	ha
Contributing paved area (ha)	0	ha
Non-contributing paved area (ha)	0	ha

Grass / vegetated area

Total grass / vegetated area (ha)	0.0744	ha
Contributing grass / vegetated area (ha)	0	ha
Non-contributing grass / vegetated area (ha)	0.0744	ha

Total area

Total contributing area (ha)	0.02114	ha
------------------------------	---------	----

Contributing areas with urban creep allowance

Urban creep allowance factor	+10%	
Contributing roof area (adjusted for urban creep) (ha)	0.02114	ha
Contributing paved area (adjusted for urban creep) (ha)	0	ha
Contributing grass / vegetated area (adjusted for urban creep) (ha)	0	ha

Storage design parameters

Storage base shape	Rectangular / square	
Storage base length to width ratio	3:1	
Storage design depth (m)	0.8	m
Storage side slope (1 in x)	Vertical sided	
Storage voids ratio (%)	100% (all voids)	
Storage volume design return period (years)	1:100 years	

Discharge flow rate from the site

Method

Type of site

Previously developed

Specify the method

FEH statistical (2025) + relaxation

FEH statistical (2025)

My value

Map/default value

SAAR9120 (mm)

838

mm

BFIHOST19scaled

0.35

QMed (l/s)

0.6

l/s

QMed-QBar conversion

1.136

☐

1.136

Total area for greenfield runoff calculation (ha)

0.09554

ha

☐

0.09554

QBar (l/s)

0.7

l/s

Hydrological region

7

☐

7

Return period (years)

1:1 year

Growth curve factor

0.85

Relaxation factor

1x

Final discharge rate

Runoff calculation method

FEH statistical (2025) + relaxation

Design flow rate (l/s)

0.6

l/s

Blockage risk

Specify the method

Flow rate

Minimum discharge flow rate to prevent blockage

1l/s

My value

Calculated value

Design orifice diameter (mm)

23

mm

☐

23

Flow rate of orifice (l/s)

0.98

l/s

Rainfall and runoff

Rainfall input type

FEH22 CSV file

FEH_Catchment_Rainfall_FEH22_AM_516500_131750.csv

Distance from FEH location to site (km)

0.3

km

Climate change allowance factor

145%

Specify the runoff method from grass / vegetated areas

Fixed percentage - based on rainfall event depth and SPR

My value

Map value

How should SPR be derived?

WRAP soil type

4

4

SPR

0.47

Model results

- Maximum discharge flow rate: 1.0 (l/s)
- Outflow orifice diameter: 23 (mm)
- Storage base length: 6.0 (m)
- Storage base width: 2.0 (m)
- Storage base area: 12 (m²)
- Storage total volume: 9.8 (m³)
- Storage total water volume: 9.8 (m³)
- Storm return periods run: 1, 2, 10, 30, 100, 200 (years)
- Storm durations run: 15, 30, 60, 120, 180, 240, 360, 540, 720, 900, 1080, 1440, 1800, 2160, 2880, 3600, 4320, 5040, 5760 (minutes)

Return Period (years)	Critical Duration (minutes)	Peak Flow Rate (l/ s)	Max Depth (m)	Max water volume (m ³)	Max storage volume (m ³)
1	240	0.5	0.20	2.4	2.4
2	180	0.5	0.25	3.0	3.0
10	180	0.7	0.46	5.7	5.7
30	180	0.9	0.62	7.5	7.5
<u>100</u>	<u>120</u>	<u>1.0</u>	<u>0.80</u>	<u>9.8</u>	<u>9.8</u>
200	180	1.1	0.92	11	11

Please note runoff estimation and storage volume estimation are subject to uncertainty. Storage volume results are therefore reported to the nearest 1 m³ value, unless storage volumes are less than 10 m³, in which case, storage volumes are provided to 1 decimal place.

Disclaimer

This report was produced using the surface water storage volume design tool (2.2.3) developed by HR Wallingford and available at uksuds.com (<https://www.uksuds.com/>). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at uksuds.com/terms-conditions (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate surface water storage volumes for the whole site based on a limiting discharge rate from the site. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

HR Wallingford are not responsible for any rainfall data shared that is subject to licensing terms imposed by UK Centre for Ecology & Hydrology's Flood Estimation Handbook web service (<https://fehweb.ceh.ac.uk/Home/Terms> (<https://fehweb.ceh.ac.uk/Home/Terms>)).

Appendix A - Rainfall Depths

Rainfall depths (mm) with climate change

Duration (minutes)	Duration (hours)	1 years	2 years	10 years	30 years	100 years	200 years
15	0.25	6.50	8.57	16.69	21.98	27.83	31.25
30	0.5	9.13	12.05	23.64	31.41	39.99	45.34
60	1	12.00	15.94	31.51	41.98	53.84	61.26
120	2	18.20	22.78	40.61	52.24	65.74	74.24
180	3	22.36	27.27	46.40	58.87	73.44	82.93
240	4	25.47	30.62	50.68	63.79	79.30	89.62
360	6	29.96	35.47	56.87	70.92	88.15	99.82
540	9	34.49	40.34	63.22	78.39	97.89	111.66
720	12	37.82	43.92	67.89	84.03	105.47	121.13
900	15	40.57	46.88	71.60	88.67	111.84	129.11
1080	18	42.90	49.40	74.81	92.68	117.41	136.00
1440	24	46.86	53.69	80.46	99.63	127.03	147.36
1800	30	50.33	57.42	85.23	105.36	134.68	156.37
2160	36	53.54	60.83	89.48	110.37	141.16	163.91
2880	48	59.39	67.00	96.99	119.06	151.90	176.15
3600	60	64.89	72.78	103.81	126.63	160.70	185.76
4320	72	70.09	78.21	110.11	133.50	168.40	194.00
5040	84	75.09	83.42	116.07	139.90	175.36	201.29
5760	96	79.97	88.48	121.80	145.94	181.77	207.92

Rainfall depths (mm) without climate change

Duration (minutes)	Duration (hours)	1 years	2 years	10 years	30 years	100 years	200 years
15	0.25	4.48	5.91	11.51	15.16	19.19	21.55
30	0.5	6.30	8.31	16.30	21.66	27.58	31.27
60	1	8.28	10.99	21.73	28.95	37.13	42.25
120	2	12.55	15.71	28.01	36.03	45.34	51.20
180	3	15.42	18.81	32.00	40.60	50.65	57.19
240	4	17.57	21.12	34.95	43.99	54.69	61.81
360	6	20.66	24.46	39.22	48.91	60.79	68.84
540	9	23.79	27.82	43.60	54.06	67.51	77.01
720	12	26.08	30.29	46.82	57.95	72.74	83.54
900	15	27.98	32.33	49.38	61.15	77.13	89.04
1080	18	29.59	34.07	51.59	63.92	80.97	93.79
1440	24	32.32	37.03	55.49	68.71	87.61	101.63

Duration (minutes)	Duration (hours)	1 years	2 years	10 years	30 years	100 years	200 years
1800	30	34.71	39.60	58.78	72.66	92.88	107.84
2160	36	36.92	41.95	61.71	76.12	97.35	113.04
2880	48	40.96	46.21	66.89	82.11	104.76	121.48
3600	60	44.75	50.19	71.59	87.33	110.83	128.11
4320	72	48.34	53.94	75.94	92.07	116.14	133.79
5040	84	51.78	57.53	80.05	96.48	120.94	138.82
5760	96	55.15	61.02	84.00	100.65	125.36	143.39

APPENDIX G

ASHDOWN SITE INVESTIGATION
GEOTECHNICAL REPORT



**GEOTECHNICAL
ASSESSMENT REPORT**

**3 THE MAPLES
SPENCERS PLACE
HORSHAM
WEST SUSSEX**

PROJECT REFERENCE: P17434

REPORT REFERENCE: R16917

Report Beneficiary: Mr & Mrs Clarkson

Document Control			
Issue No.	Status	Issue Date	Notes
1	Final	10 th November 2025	
Report Section		Prepared By	Approved By
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Limitations

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EXECUTIVE SUMMARY

The following presents a summary of the main findings of the report. It is emphasised that no reliance should be placed on any individual point until the whole of the report has been read as other sections of the report may put into context the information contained herein.

It is proposed to demolish the existing bungalow and workshop at 3 The Maples, Spencers Place, Horsham and construct a new detached one to two storey house with integral garage.

Reference to geological datasets indicates that the site is expected to be underlain by the Upper Tunbridge Wells Sand. The ground investigation confirmed the underlying soils to comprise a variable thickness of made ground, overlying Upper Tunbridge Wells Sand deposits.

The Upper Tunbridge Wells Sand is classed as a Secondary A Aquifer. The site does not lie within a SPZ. Groundwater was not encountered during the short period of the intrusive investigation works.

Precautions against shrinkage and heave for any new shallow foundation system should assume a medium volume change potential for the fine-grained Upper Tunbridge Wells Sand.

A net allowable bearing capacity of 150kN/m^2 may be assumed for pad or strip foundations up to 1.00m in breadth that are constructed directly onto the Upper Tunbridge Wells Sand soils of at least stiff consistency.

Ground floors should be suspended unless the conditions set out within this report can be met.

A DS-1 Design Sulfate Class and an AC-1 ACEC classification should be assumed as a minimum for the design of concrete in contact with the ground.

The infiltration testing undertaken recorded highly variable infiltration characteristics with infiltration rates ranging between $1.91 \times 10^{-4}\text{m/sec}$ and $1.21 \times 10^{-4}\text{m/sec}$ within the shallow Upper Tunbridge Wells Sand, and the soils at depth recording a negligible infiltration rate of $4.62 \times 10^{-8}\text{m/sec}$.

TABLE OF CONTENTS

1.	INTRODUCTION	1
2.	SITE CONTEXT	2
2.1	Site Details	2
2.2	Geological and Hydrogeological Setting	2
3.	SITE WORKS	4
3.1	Introduction	4
3.2	Exploratory Holes	4
3.3	Sampling	4
3.4	In Situ Strength Testing	4
3.5	In Situ Infiltration Testing	4
3.6	Laboratory Testing	5
4.	GROUND CONDITIONS	6
4.1	Stratigraphy	6
4.2	Groundwater Conditions and Stability	6
5.	GEOTECHNICAL ASSESSMENT	7
5.1	Foundations	7
5.2	Ground Floors	9
5.3	Groundwater	10
5.4	Stability of Excavations	10
5.5	Aggressivity to Concrete	11
5.6	Stormwater Infiltration Systems	11

FIGURES AND APPENDICES

FIGURES

- Figure 1 Site Location Plan
Figure 2 Site Plan

APPENDIX A

Proposed Development Layout

APPENDIX B

Explanatory Notes
Exploratory Hole Records
DPSH-B Dynamic Probe Records

APPENDIX C

Geotechnical Laboratory Test Results

APPENDIX D

Aggressivity To Concrete Assessment
Borehole Infiltration Test Results
Trial Pit In Situ Infiltration Test Results

1. INTRODUCTION

It is proposed to demolish the existing bungalow and workshop at 3 The Maples, Spencers Place, Horsham and construct a new detached one to two storey house with integral garage. The development proposals also include a new external terrace, driveway and areas of soft landscaping/garden. A copy of the proposed development layout is presented in Appendix A.

Ashdown Site Investigation Ltd was requested to undertake a ground investigation and to provide advice to assist with the structural design.

The scope of the works covered by this report, and the terms and conditions under which they were undertaken, were set out within the offer letter Q15716, dated 17th September 2025. The instruction to proceed was received on behalf of the client, Mr & Mrs Clarkson.

The specific objectives of the works were to:

- a) Establish the expected geology and hydrogeology at the site;
- b) Investigate the shallow ground and groundwater conditions in the area of the proposed development; and
- c) Provide advice/parameters to assist others in undertaking design of spread foundations and ground floors, and to assist with the preliminary design of the stormwater drainage system.

2. SITE CONTEXT

2.1 Site Details

The site is located on the southern side of Spencers Place, Horsham, West Sussex, and is centred on the approximate Ordnance Survey national grid reference 516770, 131750. A site location plan and site plan are presented as Figure 1 and Figure 2, respectively.

The site currently comprises a detached bungalow with front and rear gardens, a paved driveway and patioed areas. A workshop building stands immediately adjacent the bungalow, to the east. A number of smaller outbuildings/sheds occupy areas within the rear garden, along with various trees, shrubs and bushes.

2.2 Geological and Hydrogeological Setting

2.2.1 Expected Geology and Aquifer Designation

The stratigraphic unit that may be expected to underlie the site has been established by reference to British Geological Survey (BGS) mapping and the BGS Lexicon of Named Rock Units. The expected stratigraphy is presented in the following table.

Table 1. Expected Strata and Aquifer Designation

Type	Stratum	Aquifer Designation
Bedrock	Upper Tunbridge Wells Sand	Secondary A Aquifer

The Tunbridge Wells Sand Formation forms part of the Wealden Group. The formation is of Valanginian age (133.9 to 139.4 million years old; Early Cretaceous). The Tunbridge Wells Sand Formation predominantly comprises repeating sequences of fine to medium grained sandstone, siltstone and silty sand with finely-bedded mudstones and thin limestones. In the western High Weald (between Haywards Heath and Tunbridge Wells) the formation can be divided into three, the informally named Lower and Upper Tunbridge Wells Sand and the intervening Grinstead Clay Member. The succession commences with rhythmically bedded sandstones, siltstones and mudstones of the lower part of the Lower Tunbridge Wells Sand which pass up into the massive sandstones of the Ardingly Sandstone Member. These are overlain by the finely bedded mudstones, mudstones and silty mudstones with subordinate clay ironstones and shelly limestones of the Grinstead Clay Member. This clay member is itself locally divided into upper and lower parts by the cross-bedded fine sandstone of the Cuckfield Stone Bed. Above the Grinstead Clay Member, the Upper Tunbridge Wells Sand comprises a generally more argillaceous rhythmic succession, including mudstones, siltstones and silty sandstones. Outside the western High Weald the Grinstead Clay Member is not recognisable, and the succession is mapped as undivided Tunbridge Wells Sand Formation. The formation is recorded by the BGS to range in thickness up to 122m.

2.2.2 Mining and Ground Workings

The geological units of the Wealden Group, including the Upper Tunbridge Wells Sand, were locally mined for iron during the early Roman period, the Medieval period and significantly between the 15th and 18th centuries. The mining activities were associated with hammer and furnace ponds, and forges. The locations of many of the workings are unknown, the works mostly having been dismantled and sites

overgrown with woodland. Many of the old ponds in the Weald may be representative of old hammer or furnace ponds.

The historical extraction was mostly from open pits excavated from surface, but during the Medieval period, extraction in the eastern Weald was increasingly from mine pits. These mine pits were typically five metres in diameter and up to twelve metres deep. The pits were worked in sequence with spoil from one pit used to in-fill the one before. In the western part of the Weald, the principal method of extracting iron ore was also the mine pit but smaller in scale; the pits consisted of a vertical shaft up to 2.5 metres in diameter and the base of the shaft would have been widened out.

The British Geological Survey GeolIndex Onshore viewer records the presence of a single mine/quarry within 1km of the site, The Common Brick Field some 300m to the south. A search of the Wealden Iron Research Group database revealed a single record of iron workings within 1km of the site, Warnham Furnace some 550m to the north. The risk posed to the development is considered to be negligible to very low.

Further assessment of the mining hazards can be undertaken, if required, to provide more detailed comment specific to the site.

2.2.3 *Groundwater Source Protection Zones (SPZ)*

The Environment Agency defines SPZs as those areas where groundwater supplies are at risk from potentially polluting activities and accidental releases of pollutants. SPZs are primarily a policy tool used to control activities close to water supplies intended for human consumption.

The site does not lie within a SPZ.

3. SITE WORKS

3.1 Introduction

The intrusive site works comprised a series of dynamic sampler boreholes and a single trial pit, together with accompanying in-situ geotechnical testing. The intrusive work was carried out on 14th October 2025. The exploratory hole locations are shown on Figure 2.

Descriptions of the strata encountered and comments on groundwater conditions are shown in the exploratory hole records given in Appendix B, which also includes explanatory notes to assist in their interpretation.

3.2 Exploratory Holes

The following table summarises the intrusive works undertaken at the site.

Table 2. Summary of Intrusive Works Undertaken

Designation	Depth (m bgl)	Method
WS01	3.00	Dynamic Sampler
WS02	3.00	Dynamic Sampler
WS03	2.50	Dynamic Sampler
WS04	3.00	Dynamic Sampler
TP01	0.75	Hand Dug Pit

3.3 Sampling

Samples of soil were taken from the exploratory holes at the depths shown in the exploratory hole records. The types of samples taken are indicated on the exploratory hole records. Details on the sample types are provided in the explanatory notes.

3.4 In Situ Strength Testing

The types and depths of in situ testing, together with the test results, are either given on the exploratory hole records or are summarised separately in Appendix B. Further details on the in situ testing methods are provided in the explanatory notes.

3.5 In Situ Infiltration Testing

In situ infiltration testing was undertaken in a single trial pit in general accordance with the test methodology given by BRE guidance¹. In addition, variable (falling) head testing was undertaken in a single borehole in general accordance with BS EN ISO 22282-2:2012². The results of the testing along with the infiltration rate calculations are included in Appendix D.

¹ Section 3.2.3 of Building Research Establishment (BRE) Digest 365, 2016.

² Geotechnical investigation and testing – Geohydraulic testing. Part 2: Water permeability tests in a borehole using open systems.

3.6 Laboratory Testing

Laboratory testing was scheduled by Ashdown Site Investigation Ltd.

Geotechnical testing was undertaken by Ashdown Site Investigation Ltd. Chemical testing was undertaken by a laboratory with recognised (UKAS and MCERTS) accreditation for quality control.

Results from the laboratory tests are provided in Appendix C, or summarised in Appendix D.

4. GROUND CONDITIONS

4.1 Stratigraphy

4.1.1 *Surface Covering*

In general, the exploratory holes were excavated through a surface cover of topsoil up to some 150mm in thickness.

Block paving some 60mm thick was lifted to enable the excavation of borehole WS03. Immediately beneath the paving a 240mm thick layer of sandy gravel sub-base material was encountered.

No specific surfacing materials were encountered in borehole WS01.

4.1.2 *Made Ground/Reworked Soils*

Made ground/reworked soils, generally comprising clay with varying gravel content, were recorded to a depth of 1.40m below ground level within borehole WS03, and to depths of between 0.40m and 0.60m below ground level within the other exploratory holes. The gravel fraction comprised variable quantities of brick, flint, sandstone and charcoal-like material, with organic material also noted within borehole WS03 between 1.00m and 1.40m depth.

4.1.3 *Upper Tunbridge Wells Sand*

Underlying the made ground, the investigation progressed into undisturbed stiff clay deposits with varying gravel content. The gravel fraction comprised subangular to subrounded fine to coarse sandstone and ironstone. These deposits became very stiff with depth and continued to the final investigation depth of 3.00m below ground level.

These deposits are considered to represent the Upper Tunbridge Wells Sand indicated to underlie the site on BGS geological maps.

4.2 Groundwater Conditions and Stability

Each of the exploratory holes was recorded to remain dry and stable during the course of drilling/excavation.

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5. GEOTECHNICAL ASSESSMENT

The geotechnical assessment has been prepared in connection with the development proposals shown on the drawings included in Appendix A.

In summary, the proposed development is to comprise the demolition of the existing bungalow and workshop and the construction of a new detached one to two storey house with integral garage, driveway and garden.

At the time of writing, no details were available concerning the specific loads likely to be applied to the foundations.

5.1 Foundations

5.1.1 Soil Shrinkage/Heave Potential

The fine-grained soils of the made ground/reworked soils and the Upper Tunbridge Wells Sand have been classified as clays, and with modified plasticity indices in the range of 14% to 31%, the soils may be expected to exhibit up to a medium volume change potential.

It is recommended that the design of precautions against shrinkage and heave for any new foundation system (spread footings and ground beams etc.) should assume a medium volume change potential for the fine-grained Upper Tunbridge Wells Sand and take into account current guidance such as that given by the Building Research Establishment (BRE)³ or the National House Builders Council (NHBC)⁴.

Whilst this report has been prepared to provide advice to assist designers in undertaking detailed design, the report itself does not represent a detailed design statement. Detailed foundation design, including assessment of foundation type, minimum founding depths for spread foundations, and requirements for placement of void formers et cetera, should take into account the findings of this report and the presence of trees (previous, present and proposed). In connection with the latter, it is recommended that an arboricultural survey of the site that identifies the species and maturity of the existing or any recently felled trees in the areas of the proposed new buildings should be provided to engineers responsible for the foundation design. Information on proposed planting schemes that may affect foundation design should also be provided.

5.1.2 Spread Foundations

5.1.2.1 Foundation Depths for Spread Foundations

Foundations should be constructed to bear below soils that are likely to be affected by significant soil volume changes caused by seasonal changes in moisture content to avoid damage to foundations that could otherwise arise. In addition, all made ground and any soils disturbed by the construction or removal of any previously existing foundations or services should be regarded as being variable in nature and state of compaction and, as such, unsuitable as a founding medium for shallow footings. New footings should be constructed so as to bear below made ground/disturbed natural soils and soil subject to seasonal soil volume changes, whichever is the deeper, and onto undisturbed, competent, natural deposits.

³ www.bre.co.uk : BRE Digests 240, 241 and 242, Low rise buildings on shrinkable clay soils, parts 1, 2 and 3; and BRE Digest 298 , The influence of trees on house foundations in clay soils and BRE Digest 412, Desiccation in clay soils.

⁴ <http://www.nhbc.co.uk/> : NHBC Standards, Chapter 4.2.

Summary guidance on suitable minimum foundation depths to protect against the effects of seasonal soil volume changes is presented in the table below but designers undertaking detailed design of foundations should follow the detailed guidance such as that provided within Chapter 4.2 of the NHBC Standards.

Table 3. Indicative Minimum Foundation Depths

Tree Type	Water Demand of Tree	Tree Distance to Tree Height Ratio (D/H)									
		0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.80	1.00	1.25
		Minimum Foundation Depth Required in Medium Volume Change Potential Soils (m)									
Broad Leaf	High	†			2.50	2.35	2.20	2.00	1.70	1.35	0.90*
	Moderate	2.00	1.85	1.70	1.60	1.45	1.30	1.15	0.90*	0.90*	0.90*
	Low	1.50	1.40	1.30	1.15	1.05	0.90*	0.90*	0.90*	0.90*	0.90*
Coniferous	High	†			2.30	1.95	1.60	1.25	0.90*	0.90*	0.90*
	Moderate	2.00	1.70	1.40	1.10	0.90*	0.90*	0.90*	0.90*	0.90*	0.90*

* Minimum foundation depth required to protect against soil volume changes.

† Foundations deeper than 2.50m require specialist design to protect against soil volume changes.

Where specialist foundation design is required (foundation depths exceeding the maximum permitted by the guidance) then piled foundations are likely to be needed, though commercial considerations may also dictate that piled foundations may be more economic even in comparison with conventional spread foundations constructed to depths less than the maximum permitted by guidance. Further works including deep boreholes would be required if structural engineers or quantity surveyors decide that piled foundations should be adopted.

Details on the water demand and mature height of common trees is given within Table 3 of Chapter 4.2 of the NHBC standards which should be referred to when assessing minimum foundation depths required for the proposed development. A summary is provided in the table below.

Table 4. Indicative Summary of Water Demand and Mature Height of Common Trees

Tree Type	High Water Demand		Moderate Water Demand		Low Water Demand	
	Tree	Height (m)	Tree	Height (m)	Tree	Height (m)
Broad Leaf	Elm	18 – 24*	Acacia	18	Birch	14
	Oak	16 – 24*	Alder	18	Elder	10
	Poplar	15 – 28*	Apple	10	Fig	8
	Willow	16 – 24*	Ash	11 – 23*	Hazel	8
	Eucalyptus	18	Laurel	10	Holly	12
	Hawthorn	10	Beech	20	Honey Locust	14
			Blackthorn	8	Hornbeam	17
			Cherry	8 – 17*	Laburnum	12
			Chestnut	20 – 24*	Magnolia	9
			Lime	22	Mulberry	9

Tree Type	High Water Demand		Moderate Water Demand		Low Water Demand	
			Maple	8 – 18*	Tulip Tree	20
			Pear	12		
			Plane	26		
			Plum	10		
			Sycamore	22		
			Tree of Heaven	20		
			Walnut	18		
			Whitebeam	12		
Coniferous	Cypress	18 – 20*	Cedar	20		
			Douglas Fir	20		
			Larch	20		
			Monkey Puzzle	18		
			Pine	20		
			Spruce	18		
			Wellingtonia	30		
			Yew	12		

* Dependent on particular species.

5.1.2.2 Bearing Capacity for Spread Foundations

For design purposes, a net allowable bearing capacity of 150kN/m² may be assumed for spread (pad or strip) foundations up to 1.00m across bearing within the Upper Tunbridge Wells Sand of at least stiff consistency. In this connection attention is drawn to the localised deep made ground/reworked soils recorded to a depth of 1.40m within borehole WS03. The quoted bearing capacity is expected to limit settlement to less than 25mm.

In view of the risk associated with the underlying geology at the site for potential mining hazards, it is recommended that as a minimum all stripped formation levels should be inspected by a suitably qualified person for evidence of historical backfilled shafts/chambers as a precaution, and the inspections should be appropriately documented.

5.2 Ground Floors

In view of the variable, and locally significant, thickness of made ground /reworked soils and presence of soils of medium volume change potential underlying the site, it is recommended that ground floors should be suspended.

Current guidance⁵ suggests that ground bearing floor slabs may, however, be considered where:

- 1) All made ground is removed from beneath the building footprint;

⁵ <http://www.nhbc.co.uk/> : NHBC Standards, Chapter 4.2.

- 2) The depth of foundations required to protect against seasonal soil volume changes close to trees is less than 1.5m; and
- 3) Further works demonstrate that close to the time of construction, no significant soil desiccation is present.

Where the above criteria cannot be met ground floors should be suspended.

If ground bearing floors are adopted it is recommended that the potential for differential movement, both between the floor slab and walls and across the floor slab itself, should be anticipated. Such floors should be fully debonded from walls. Formations should be adequately proof rolled and any excessively soft materials excavated and replaced with a suitable, well graded granular fill. The depth of any fill should be limited to a maximum of 600mm unless placed to an engineering specification designed to limit internal settlement of the fill materials to a tolerance to be advised by the designer.

5.3 Groundwater

Groundwater was not recorded within the boreholes drilled to depths of up to 3.00m below ground level during the short period of the intrusive works. It should be noted that water levels within the exploratory holes may not have equilibrated with the groundwater table at the time the readings were recorded and that groundwater levels should be expected to fluctuate seasonally.

The potential for perched groundwater to be present above the groundwater table, for example within the made ground/reworked soils etc, should not be overlooked. It is also possible that heavy precipitation during construction could lead to the ingress of perched groundwater or surface water run-off into excavations. In such circumstances it would be expected that water entering excavations would be adequately managed by either pumping from sumps or natural drainage, or a combination of the two.

5.4 Stability of Excavations

All made ground/reworked soils exposed in excavations should be assumed to be unstable, even in the short term. Whilst fine-grained natural soils may remain stable for a short period of time if not subjected to surcharge loads (such as may be imposed by existing foundations, traffic or storage of materials), the stability of these deposits if left unsupported should be assumed to have the potential to deteriorate. Where stable excavations are required, excavations should either be suitably supported or, where space permits, side slopes could be battered back to a safe angle of repose.

All excavations requiring human entry must be shored or battered as necessary to conform to current best practice, as accepted by the Health and Safety Executive (HSE)⁶. Current legislation requires that where personnel access is required into any excavation a competent person must inspect excavation supports or battering of slopes at the start of the working shift and at other specified times. No work should take place until the excavation is safe. Excavations should also be inspected after any event that may have affected their stability, such as a significant weather event, changes in surcharge loadings imposed by temporary storage of materials or changes in site traffic plans or alteration of support systems. Inspections should be formally recorded and any faults that are found should be corrected immediately.

Particular attention must be paid to ensuring the stability of nearby structures, services and neighbouring sites.

⁶ Relevant guidance is given on the HSE website, www.hse.gov.uk

5.5 Aggressivity to Concrete

The aggressivity of the soils to concrete has been assessed in accordance with guidance published by the BRE⁷. The results of the chemical laboratory testing together with a summary of the characteristic values is included in Appendix D.

In consideration of the soils encountered beneath the site it is considered that 'natural ground conditions' may be assumed for the purpose of assessing the aggressivity of the chemical environment for concrete classification (ACEC class). Whilst groundwater was not encountered during the short period of the works, in the absence of long-term monitoring data, 'mobile groundwater' conditions should be conservatively assumed.

The following table summarises the characteristic values indicated from the chemical analysis of the soils present beneath the site.

Table 5. Assessment of the Chemical Analysis of the Soil

	Characteristic Value	Design Sulfate Class	ACEC Classification
pH	5.8	-	-
Water Soluble Sulphate (mg/l as SO ₄) *	300	DS-1	AC-1

Notes: * Characteristic value rounded to nearest 100.

In accordance with the guidance, a DS-1 Design Sulfate Class and an AC-1 ACEC classification should be assumed for the design of concrete in contact with the ground.

5.6 Stormwater Infiltration Systems

In-situ infiltration testing⁸ was carried out in trial pit TP01. For each test the soil infiltration rate (f) was calculated by dividing the volume of water lost between 75% and 25% of the initial test depth by the sum of the average surface area of the sides of the trial pit in contact with the water during the test monitoring period, and its base area. This figure was then divided by the test duration (time taken for the water level to fall between 75% and 25% of the initial test depth) to give the soil infiltration rate in metres per second.

Variable (falling) head testing⁹ was undertaken in borehole WS04. From the test results, calculations were made to estimate the infiltration rate that could be expected for soakaways constructed to discharge into the underlying soils within the test zone.

The infiltration rates derived from the tests are summarised in the following table.

⁷ BRE Special Digest 1:2005 Concrete in Aggressive Ground.

⁸ Conducted in general accordance with the requirements of BRE 365, Soakaway Design.

⁹ Conducted in general accordance with the test procedure outline in BS EN ISO 22282-2:2012.

Table 6. Calculated Infiltration Rates

Exploratory Hole	Top of Response Zone (m bgl)	Bottom of Response Zone (m bgl)	Stratum	Infiltration Rate (f) (m/sec)	Driving Head of Water (m)
TP01 Test 1	0.39	0.75	Upper Tunbridge Wells Sand	1.91×10^{-4}	-
TP01 Test 2	0.37	0.75	Upper Tunbridge Wells Sand	1.26×10^{-4}	-
TP01 Test 3	0.37	0.75	Upper Tunbridge Wells Sand	1.21×10^{-4}	-
WS04	2.00	3.00	Upper Tunbridge Wells Sand	4.62×10^{-8}	2.5

The value 'f' is equivalent to the soil infiltration coefficient 'q' quoted in the Construction Industry Research and Information Association (CIRIA) Report 156.

The results from the infiltration tests should be provided to engineers responsible for the design of the drainage system. Attention is drawn to the highly variable infiltration rates recorded at the test locations.

To comply with building regulations¹⁰, point discharging infiltration systems (conventional ring or trench soakaways) are required to be constructed a minimum of 5.0m away from proposed or existing buildings.

The infiltration testing conducted in the borehole and trial pit is intended to provide calculated soil infiltration rates to assist in the preliminary design of infiltration systems at the site. However, it should be noted that Regulators/Local Authorities may require further testing to be undertaken at a later stage in accordance with the BRE365 guidance. This guidance states the testing should be carried out at the locations and depths of the proposed soakaways, which will not be known until preliminary drainage design has been undertaken. The guidance also states that "designers should note that the results of tests may be affected by seasonal factors. In the winter and spring, the soil moisture and groundwater level will be higher than in the summer. Testing under a worst-case basis should be undertaken"; often local authorities may insist that soakage testing to support detailed design of the drainage system is undertaken within defined periods of the year which can vary from authority to authority.

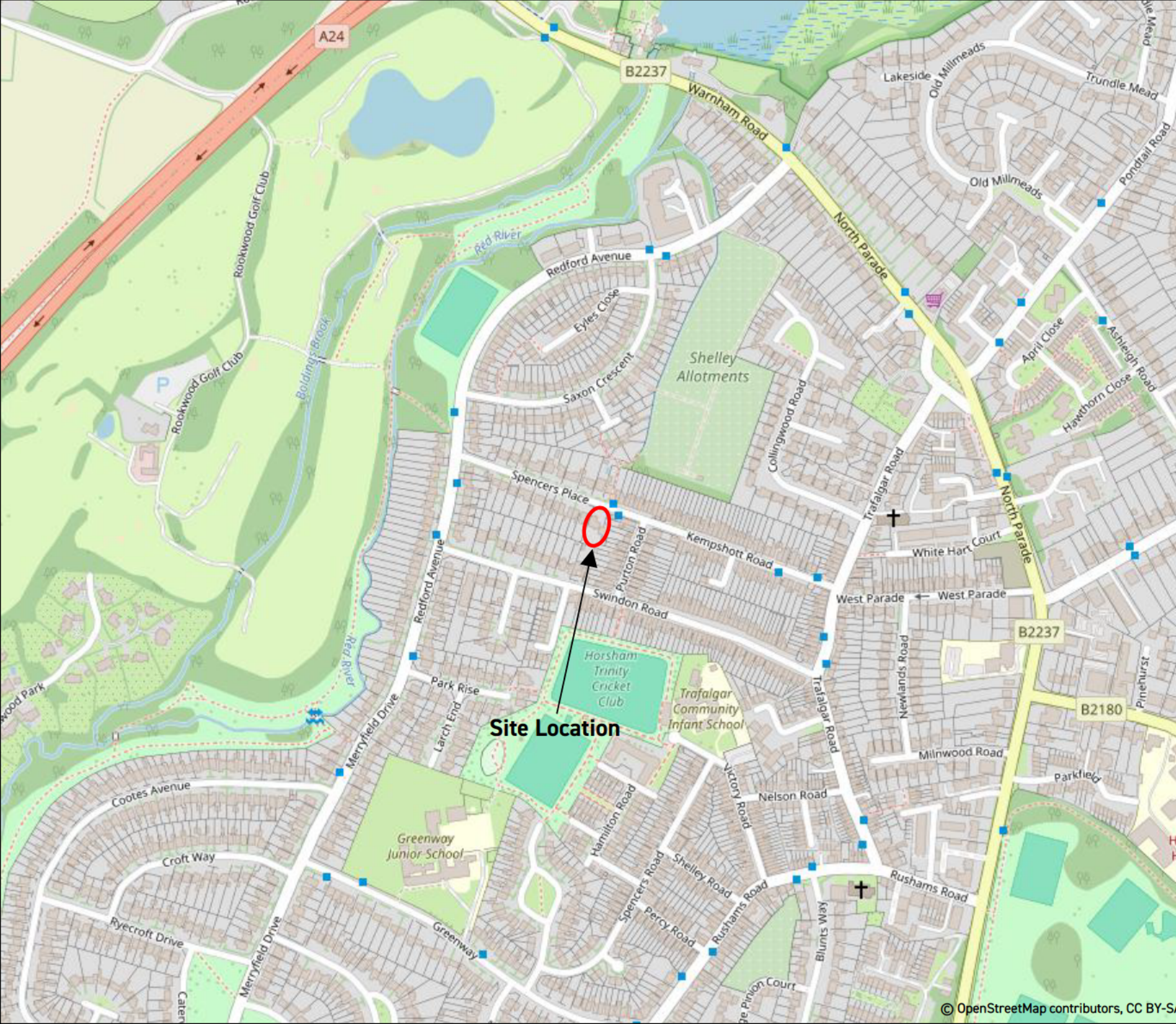
Monitoring of groundwater levels during the worst annual case (winter period) is often a requirement of Local Authorities and the BRE365 guidance suggests this should be undertaken prior to finalising design of infiltration systems.

We recommend that designers contact the local authority to establish whether additional soakage testing and/or groundwater monitoring is required.

¹⁰ The Building Regulations 2010; Part H; Drainage and Waste Disposal

FIGURES

- Figure 1 Site Location Plan
- Figure 2 Site Plan



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Site

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Horsham
West Sussex

Project Ref

P17434

Figure No

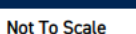
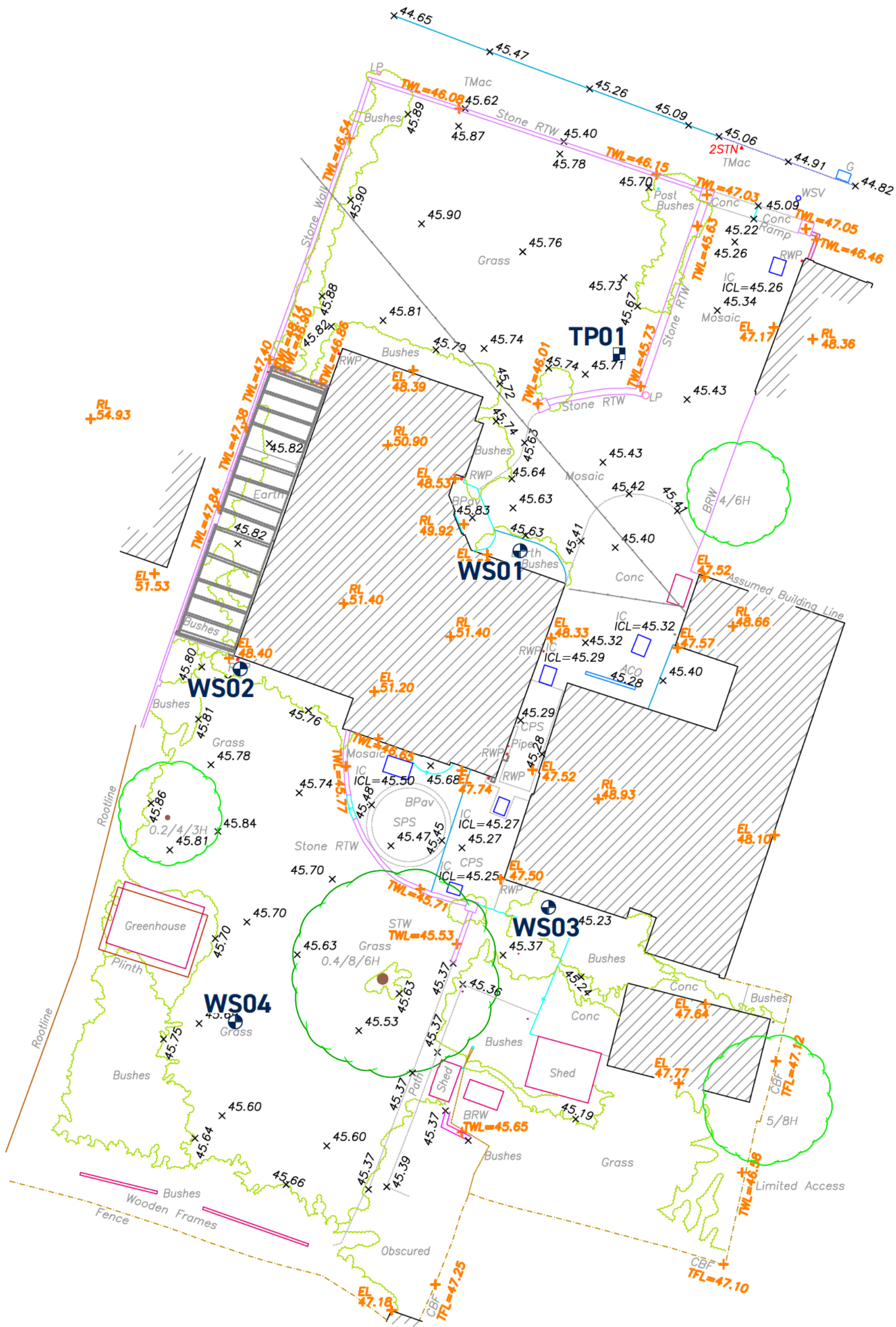
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Drawing Title

Site Location Plan

Scale

Not To Scale

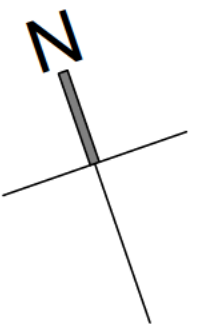
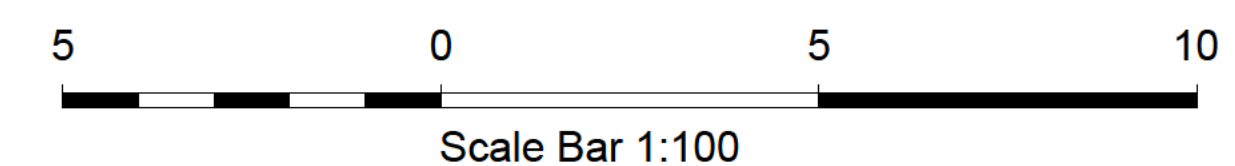
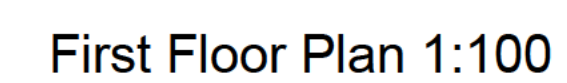
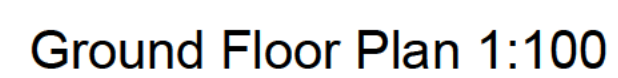


APPENDIX A

Proposed Development Layout

- DO NOT SCALE OFF THIS DRAWING EXCEPT FOR PLANNING PURPOSES
- CHECK ALL DIMENSIONS ON SITE BEFORE ANY WORK IS COMMENCED
- ALL GOODS MATERIALS AND WORKMANSHIP MUST CONFORM WITH CURRENT BUILDING REGULATIONS, BRITISH STANDARDS AND CODES OF PRACTICE
- COPYRIGHT OF THIS DRAWING IS RETAINED BY THE ARCHITECT AND IT MUST NOT BE REPRODUCED WITHOUT WRITTEN CONSENT

First Floor Area - 133.7m²
Ground Floor Area - 200.4m²
(Including Garage @ 48.3m²)
Total Area - 334.1m²



A	31.01.25	BH	Planning Issue
REV	DATE	BY	AMENDMENT
folkes architects The Old Forge 5 Church Street Horsham West Sussex RH12 4JA t: 01903 886629 info@folkesarchitects.co.uk			
CLIENT Mr & Mrs Clarkson			
JOB TITLE The Maples Spencers Place Horsham West Sussex RH12 2EZ			
DRAWING TITLE Ground & First Floor Plan As Proposed			
DRAWING STATUS Planning Issue NOT FOR CONSTRUCTION USE UNLESS STATED AS 'CONSTRUCTION'			
DATE	SCALE	DRAWN BY	BH
Oct 2024	1:100	CHECKED BY	EC
JOB NO.	DRAWING NO.	REVISION	
24051	2.02	/	

- DO NOT SCALE OFF THIS DRAWING EXCEPT FOR PLANNING PURPOSES
- CHECK ALL DIMENSIONS ON SITE BEFORE ANY WORK IS COMMENCED
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JOB NO. 24051	DRAWING NO. 2.04	REVISION /
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NOTES

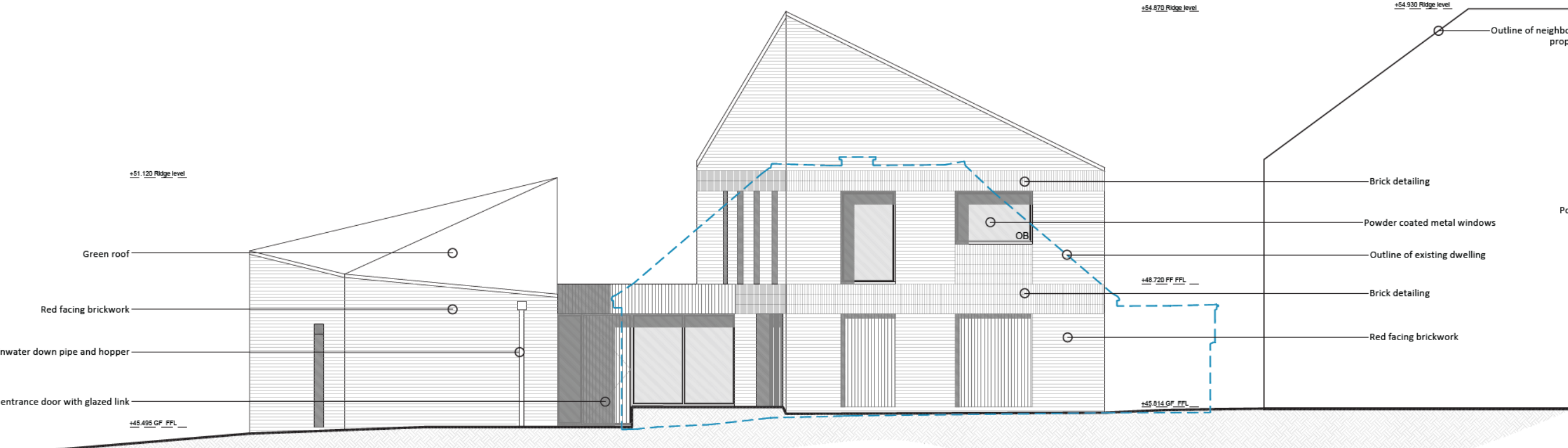
- DO NOT SCALE OFF THIS DRAWING EXCEPT FOR PLANNING PURPOSES
- CHECK ALL DIMENSIONS ON SITE BEFORE ANY WORK IS COMMENCED
- ALL GOODS MATERIALS AND WORKMANSHIP MUST CONFORM WITH CURRENT BUILDING REGULATIONS, BRITISH STANDARDS AND CODES OF PRACTICE
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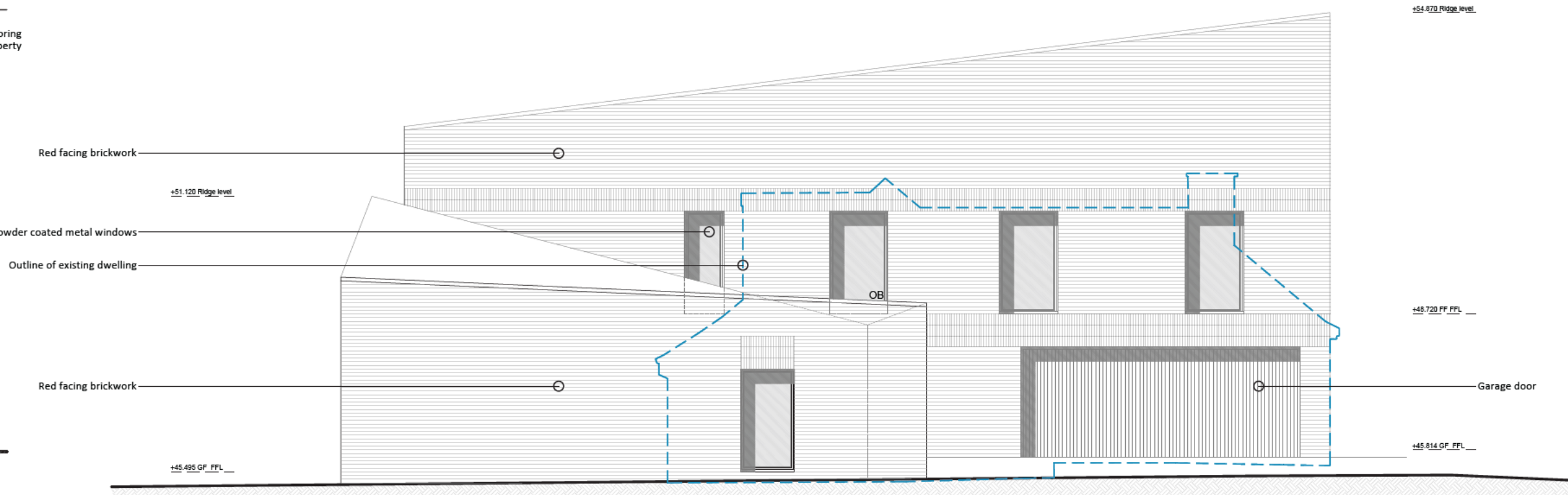
Inset panels on the north facade to be a vertical composite slatted cladding by Ecoscape or similar manufacturer. Colour to match window, door frames and metal profiles



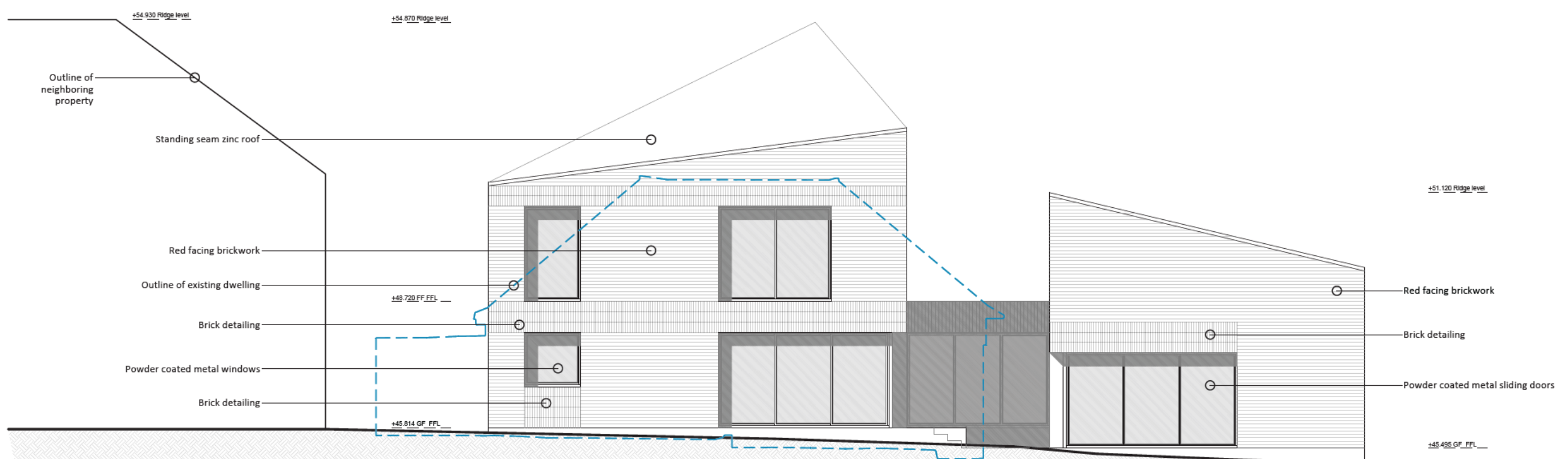
Precedent image giving an idea of the material contrast between the inset panels and brickwork.



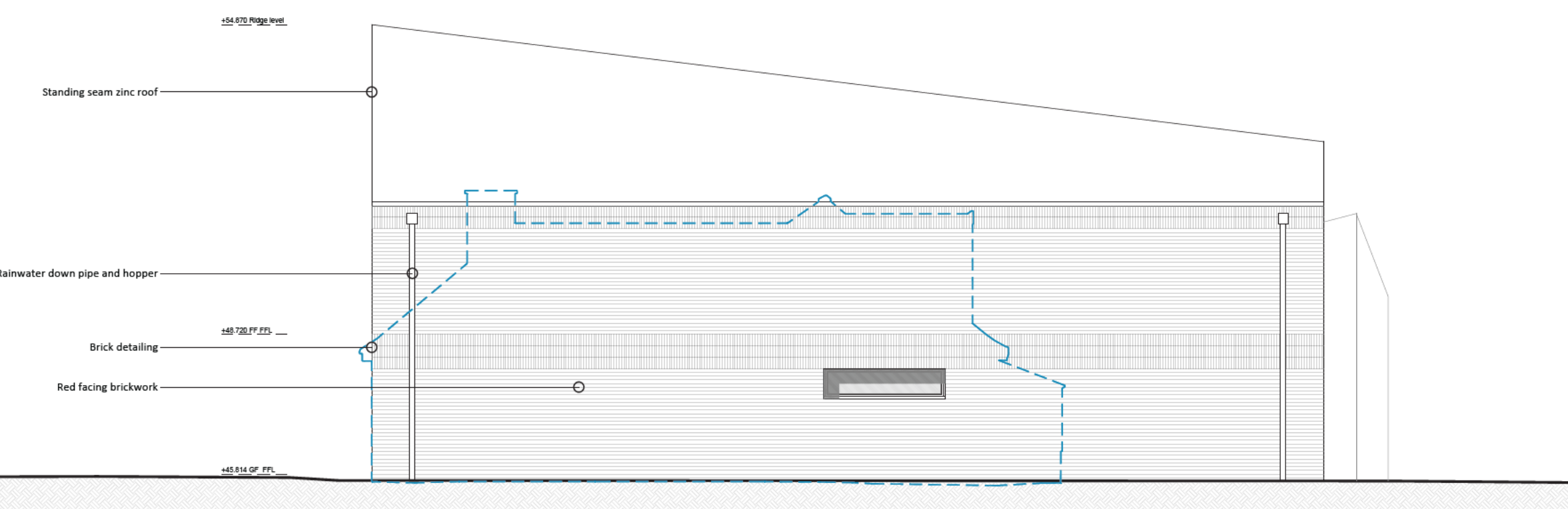
North Elevation 1:100



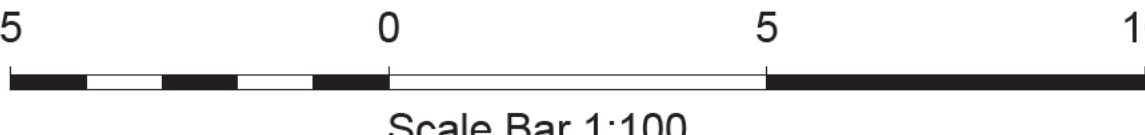
East Elevation 1:100



South Elevation 1:100



West Elevation 1:100



REV	DATE	BY	AMENDMENT
B	30.06.25	BH	Inset panels added
A	31.01.25	BH	Planning Issue

folkes architects

t 01783 888029
info@folkesarchitects.co.uk

The Old Forge
6 Church Street
Horsham
West Sussex
RH12 2EZ

CLIENT
Mr & Mrs Clarkson

JOB TITLE
**The Maples
Spencers Place
Horsham
West Sussex
RH12 2EZ**

DRAWING TITLE
**Elevations Sheet 1
As Proposed**

DRAWING STATUS
Planning Issue

NOT FOR CONSTRUCTION USE UNLESS STATED AS 'CONSTRUCTION'

DATE	SCALE	DRAWN BY
Oct 2024	1:100	BH
		CHECKED BY
		EC

JOB NO.	DRAWING NO.	REVISION
24051	2.03	/

APPENDIX B

Explanatory Notes

Exploratory Hole Records

DPSH-B Dynamic Probe Records

EXPLANATORY NOTES

Symbols and abbreviations on Exploratory Hole Records

Samples

U	'Undisturbed' Sample: - 100mm diameter by 450mm long. The number of blows to drive in the sampling tube is shown after the test index letter in the SPT column.
L	Liner sample cut to length indicated.
D	Disturbed Sample
B	Bulk Disturbed Sample
W	Water Sample
ES	Environmental Suite (on older records may be referenced J T)

In Situ Testing

SPT	Standard penetration test (SPT): Using the split spoon sampler.
SPT(C)	Standard Penetration Test (SPT): Using a solid cone instead of the sampler – conducted usually in coarse grained soils or weak rocks.
HV	Shear Vane Test: Undrained shear strength (cohesion).
PP	Hand penetrometer Test: Undrained shear strength (cohesion).
P	Perth Penetrometer Test: Number of blows for 300mm penetration shown under remarks section.

Excavation Method

CP	Cable Percussion Borehole
RC/RO	Rotary Cored Borehole/Rotary Open Hole Borehole
WLS	Dynamic Sampler Borehole using windowless sampler tubes
WS	Dynamic Sampler Borehole using window sampler tubes
TP	Trial Pit excavated using mechanic excavator
HP	Trial Pit excavated using hand tools
HA	Hand Auger borehole

Soil Description

Description and classification of soils has been carried out using as a general basis the British Standard Geotechnical investigation and testing – Identification and classification of soil, Part 1 Identification and description (BS EN ISO 14688-1) and Part 2 Principles of classification (BS EN 14688-2) as well as the BS5930 code of Practice for Ground Investigations.

Rock Description

Description and classification of rocks has been carried out using as a general basis the British Standard Geotechnical investigation and testing – Identification and classification of rock, Part 1 Identification and classification (BS EN ISO 14689-1) as well as the BS5930 code of Practice for Ground Investigations. TCR – Total Core Recovery, SCR – Solid Core Recovery, RQD – Rock Quality Designation, NI – Non Intact, If – indicative fracture spacing (min/ave/max), FI – Fracture Index.

Chalk Description

Chalk description is based on BS EN ISO 14688, BS EN ISO 14689 and BS5930. The classification of chalk generally follows the guidance offered by the Construction Industry Research and Information Association (CIRIA) C574, 'Engineering in Chalk'. This is based on assessment of chalk density, discontinuity and aperture spacing, and the proportion of intact chalk to silt of chalk.

In Situ Strength Testing (where undertaken)

Standard penetration testing (SPT) carried out in accordance with BS EN ISO 22476-3:2005.

Continuous dynamic probe testing conducted using a super heavy DPSH-B (As defined by BS EN ISO 22476-2:2005) probing geometry. The DPSH-B configuration is similar to that of the standard penetration test (SPT); the main differences being that the tip comprises a 90° cone, the driving rods are lighter than those used for SPT testing and the blow counts are recorded over 100mm increments rather than 300mm, as is the case for the SPT.

Perth penetrometer tests carried out in accordance with Australian Standard AS 1289:6.3.3-1997, Method of Testing Soils for Engineering Purposes; no equivalent European or British Standard having been published to date.

Undrained shear strength determinations made in-situ using a Geonor hand shear vane or a hand penetrometer.

Testing to determine the in-situ California Bearing Ratio (CBR) of soils conducted at shallow depths using a hand-held Transport Research Laboratory (TRL) cone penetrometer.



Dynamic (Windowless) Sampler

WS01
Sheet 1 of 1

Hole Type WLS	Easting	Northing	Ground Level (m)	Scale 1:25
Project Name 3 The Maples, Spencers Place, Horsham	Project No. P17434	Start Date 2025-10-14	End Date 2025-10-14	

Client	Consultant	Contractor
--------	------------	------------

Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m) (thickness)	Strata		
		Depth (m)	Type/ Ref	Results			Legend	Description	
								MADE GROUND: Dark brown slightly gravelly clay. Gravel is subangular to subrounded fine to coarse brick, flint, sandstone and charcoal-like material.	
		0.50	D			0.40 (0.20)		MADE GROUND/REWORKED: Brown clay.	0.5
		0.80	PP	110 (kPa)		0.60		Stiff yellow brown and orange brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse sandstone. [Upper Tunbridge Wells Sand]	
		0.90	D						
		1.00	HV	>130 (kPa)				becoming red brown mottled below 1.00m depth. (1.00m)	1.0
		1.20	D						
		1.30	PP	110 (kPa)					
		1.50	PP	225 (kPa)				becoming very stiff and with occasional bands of gravel below 1.50m depth. (1.50m)	1.5
		1.75	D						
		1.80	PP	225 (kPa)		(2.40)			
		2.00	HV	>130 (kPa)					2.0
		2.40	D						
		2.50	PP	>225 (kPa)					2.5
		2.95	D						
		3.00	HV	>130 (kPa)		3.00		End of Borehole at 3.00m	3.0
									3.5
									4.0
									4.5
									5.0

Remarks Borehole dry on completion.	Method, Plant, Stability, Dimensions 0.00 - 3.00m WLS Borehole stable on completion.	Logger GRD
--	--	---------------

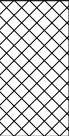


Dynamic (Windowless) Sampler

WS02
Sheet 1 of 1

Hole Type WLS	Easting	Northing	Ground Level (m)	Scale 1:25
Project Name 3 The Maples, Spencers Place, Horsham	Project No. P17434	Start Date 2025-10-14	End Date 2025-10-14	

Client	Consultant	Contractor
--------	------------	------------

Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m) (thickness)	Strata		
		Depth (m)	Type/ Ref	Results			Legend	Description	
								Topsoil over, MADE GROUND: Brown slightly gravelly clay. Gravel is subangular to subrounded fine to coarse brick, flint and charcoal-like material.	
		0.50 0.50	PP D	160 (kPa)		0.45		Stiff brown, light brown, yellow brown and orange brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse sandstone. [Upper Tunbridge Wells Sand]	0.5
		0.80 0.90 1.00	PP D HV	125 (kPa) >130 (kPa)				becoming very stiff below 1.00m depth. (1.00m)	1.0
		1.30 1.30 1.50	PP D PP	225 (kPa) >225 (kPa)					1.5
		1.70 1.80	D PP	>225 (kPa)		(2.55)			
		2.00 2.10	HV D	>130 (kPa)				with occasional bands of gravel below 2.00m depth. (2.00m)	2.0
		2.30 2.50	PP PP	>225 (kPa) >225 (kPa)					2.5
		2.80 2.80 3.00	PP D HV	>225 (kPa) >130 (kPa)		3.00		End of Borehole at 3.00m	3.0
									3.5
									4.0
									4.5
									5.0

Remarks Borehole dry on completion.	Method, Plant, Stability, Dimensions 0.00 - 3.00m WLS Borehole stable on completion.	Logger GRD
--	--	---------------



Dynamic (Windowless) Sampler

WS03
Sheet 1 of 1

Hole Type WLS	Easting	Northing	Ground Level (m)	Scale 1:25
Project Name 3 The Maples, Spencers Place, Horsham	Project No. P17434	Start Date 2025-10-14	End Date 2025-10-14	

Client	Consultant	Contractor
--------	------------	------------

Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m) (thickness)	Strata		
		Depth (m)	Type/ Ref	Results			Legend	Description	
						(0.06) 0.06		Block paving.	
						(0.24)		MADE GROUND: Black sandy subangular to subrounded fine to coarse gravel of concrete, crystalline rock, flint and brick	
						0.30		MADE GROUND: Black slightly gravelly clay. Gravel is subangular to subrounded fine to coarse flint, brick and charcoal-like material.	0.5
		0.70	D			(0.70)			
						1.00		MADE GROUND/REWORKED: Blue grey mottled orange brown clay with occasional organic material.	1.0
		1.20	D			(0.40)			
		1.50	PP	185 (kPa)		1.40		Very stiff red brown, light brown, yellow brown, brown and light grey slightly gravelly CLAY with occasional bands of gravel. Gravel is subangular to subrounded fine to coarse sandstone. [Upper Tunbridge Wells Sand]	1.5
		1.80	PP	>225 (kPa)					
		1.90	D						
		2.00	HV	>130 (kPa)		(1.10)			2.0
		2.20	PP	>225 (kPa)					
		2.20	D						
		2.40	PP	>225 (kPa)					
		2.45	D						
		2.50	HV	>130 (kPa)		2.50			2.5
								End of Borehole at 2.50m	
									3.0
									3.5
									4.0
									4.5
									5.0

Remarks No further progress below 2.50m depth- too hard/dense. Borehole dry on completion.	Method, Plant, Stability, Dimensions 0.00 - 2.50m WLS Borehole stable on completion.	Logger GRD
--	--	---------------



Dynamic (Windowless) Sampler

WS04

Sheet 1 of 1

Hole Type WLS	Easting	Northing	Ground Level (m)	Scale 1:25
Project Name 3 The Maples, Spencers Place, Horsham	Project No. P17434	Start Date 2025-10-14	End Date 2025-10-14	

Client	Consultant	Contractor
--------	------------	------------

Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m) (thickness)	Strata		
		Depth (m)	Type/ Ref	Results			Legend	Description	
						(0.15)		Topsoil.	
		0.30	D			0.15		MADE GROUND: Brown silty clay with rare subangular to subrounded fine to coarse gravel of charcoal-like material.	
		0.50	PP	140 (kPa)		(0.25)			
		0.60	D			0.40		Stiff light brown, orange brown and yellow brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse sandstone. [Upper Tunbridge Wells Sand]	0.5
		0.80	PP	>225 (kPa)					
		1.00	HV	>130 (kPa)					1.0
		1.10	D						
		1.30	PP	150 (kPa)					
		1.50	PP	>225 (kPa)				becoming very stiff below 1.40m depth. (1.40m)	1.5
		1.80	PP	>225 (kPa)		(2.60)			
		1.80	D						
		2.00	HV	>130 (kPa)					2.0
		2.30	PP	>225 (kPa)					
		2.30	D					with occasional red brown and frequent brown mottling and occasional bands of gravel below 2.50m depth. (2.50m)	2.5
		2.80	PP	>225 (kPa)					
		2.90	D						
		3.00	HV	>130 (kPa)		3.00		End of Borehole at 3.00m	3.0
									3.5
									4.0
									4.5
									5.0

Remarks Borehole dry on completion.	Method, Plant, Stability, Dimensions 0.00 - 3.00m WLS Borehole cased to 2.00m depth. Borehole stable on completion.	Logger GRD
--	---	---------------



Hand Pit

TP01
Sheet 1 of 1

Hole Type HP	Easting	Northing	Ground Level (m)	Scale 1:25
Project Name 3 The Maples, Spencers Place, Horsham	Project No. P17434	Start Date 2025-10-14	End Date 2025-10-14	

Client	Consultant	Contractor
--------	------------	------------

Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m) (thickness)	Strata		
		Depth (m)	Type/ Ref	Results			Legend	Description	
		0.60	D			(0.15)		Topsoil.	
						0.15			
						(0.25)		MADE GROUND: Brown slightly gravelly clay. Gravel is subangular to subrounded fine to coarse brick, sandstone, charcoal-like material and glass.	
						0.40		Brown and light brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse sandstone and ironstone.	0.5
						(0.35)		[Upper Tunbridge Wells Sand]	
						0.75		End of Trial Pit at 0.75m	
									1.0
									1.5
									2.0
									2.5
									3.0
									3.5
									4.0
									4.5
									5.0

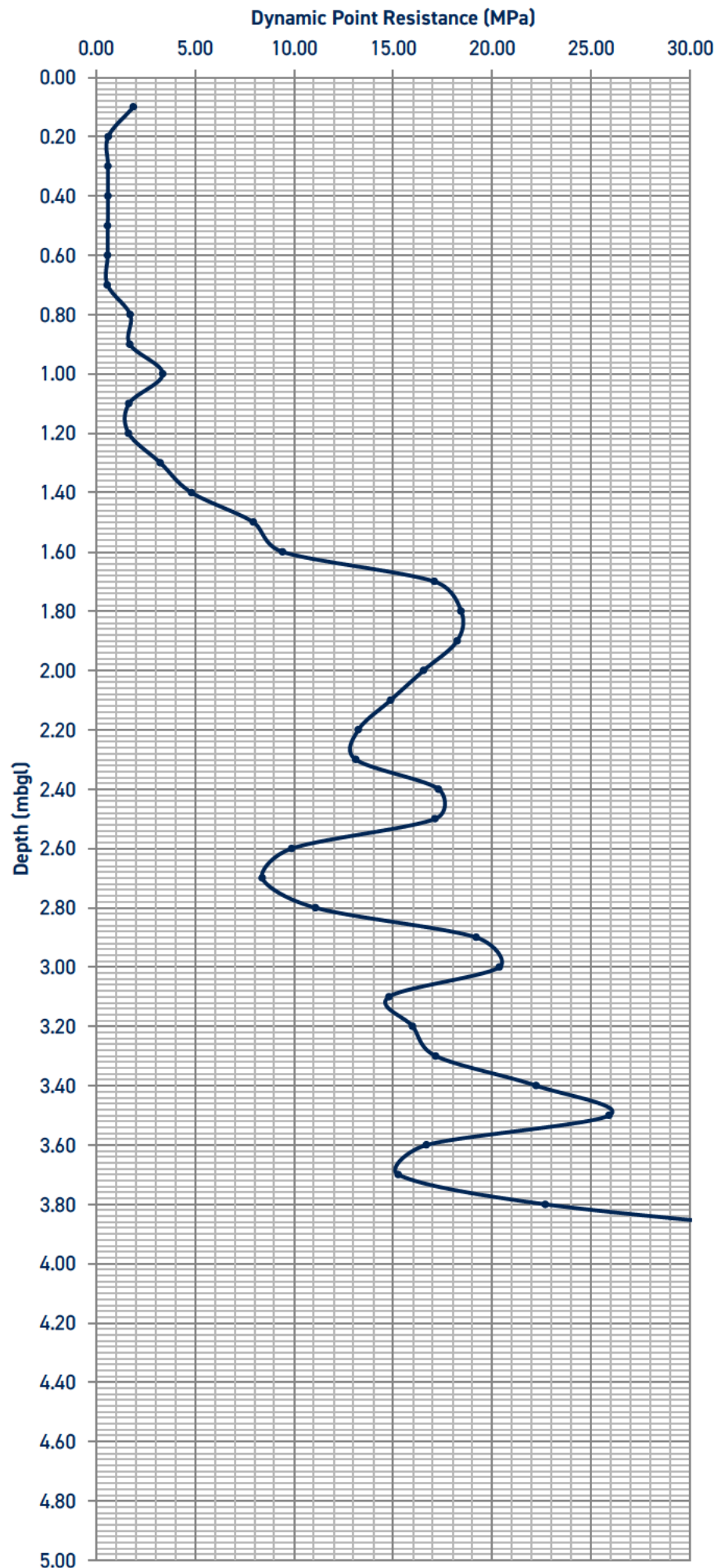
Remarks Trial pit dry on completion.	Method, Plant, Stability, Dimensions 0.00 - 0.75m HP Trial pit stable on completion. L = 0.31m W = 0.30m	Logger GRD
---	--	---------------

Site: 3 The Maples, Spencers Place, Horsham, West Sussex

Project Ref: P17434

Test Location Reference WS01

Depth (mbgl)	Blows (per 100mm)	Average Penetration per Blow (m)	Unit Point Resistance (MPa)	Dynamic Point Resistance (MPa)
0.10	1	0.10	1.94	1.89
0.20	0.33	0.30	0.64	0.61
0.30	0.33	0.30	0.64	0.61
0.40	0.33	0.30	0.64	0.60
0.50	0.33	0.30	0.64	0.59
0.60	0.33	0.30	0.64	0.58
0.70	0.33	0.30	0.64	0.58
0.80	1	0.10	1.94	1.73
0.90	1	0.10	1.94	1.70
1.00	2	0.05	3.89	3.37
1.10	1	0.10	1.94	1.66
1.20	1	0.10	1.94	1.64
1.30	2	0.05	3.89	3.25
1.40	3	0.03	5.83	4.82
1.50	5	0.02	9.72	7.94
1.60	6	0.02	11.66	9.43
1.70	11	0.01	21.38	17.09
1.80	12	0.01	23.32	18.44
1.90	12	0.01	23.32	18.24
2.00	11	0.01	21.38	16.54
2.10	10	0.01	19.44	14.88
2.20	9	0.01	17.49	13.25
2.30	9	0.01	17.49	13.11
2.40	12	0.01	23.32	17.30
2.50	12	0.01	23.32	17.13
2.60	7	0.01	13.60	9.89
2.70	6	0.02	11.66	8.39
2.80	8	0.01	15.55	11.08
2.90	14	0.01	27.21	19.20
3.00	15	0.01	29.15	20.38
3.10	11	0.01	21.38	14.80
3.20	12	0.01	23.32	15.99
3.30	13	0.01	25.27	17.16
3.40	17	0.01	33.04	22.23
3.50	20	0.01	38.87	25.91
3.60	13	0.01	25.27	16.69
3.70	12	0.01	23.32	15.27
3.80	18	0.01	34.98	22.70
3.90	30	0.00	58.31	37.49
4.00				
4.10				
4.20				
4.30				
4.40				
4.50				
4.60				
4.70				
4.80				
4.90				
5.00				



Notes:
No further progress below 3.90m depth - Hammer bouncing.

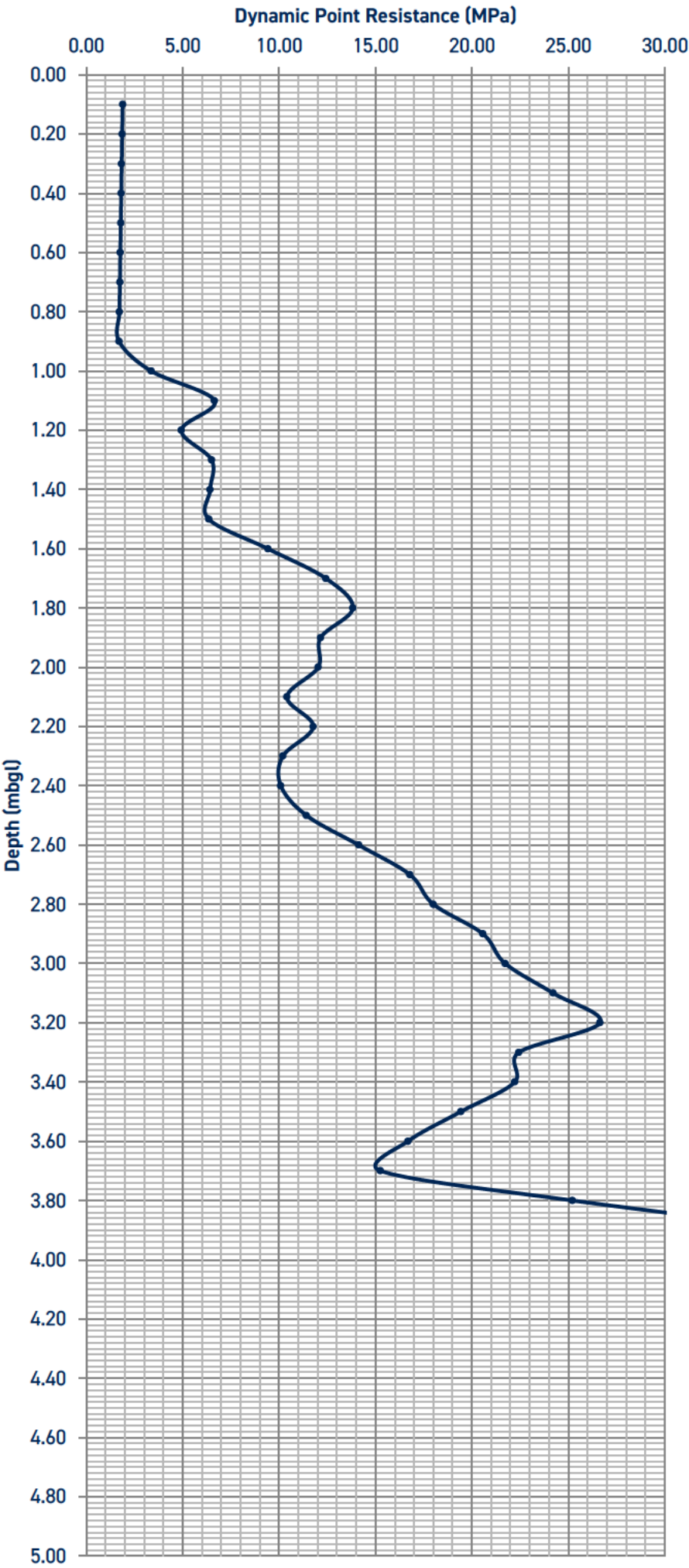
Hammer Mass	63.5 kg
Fall Height	0.76 m
Cone Area	0.0019 m ²
E _{theor}	473 J
Energy Ratio	0.78
Anvil Mass	1 kg
Rod Mass	8.79 kg/m

Site: 3 The Maples, Spencers Place, Horsham, West Sussex

Project Ref: P17434

Test Location Reference	WS02
-------------------------	------

Depth (mbgl)	Blows (per 100mm)	Average Penetration per Blow (m)	Unit Point Resistance (MPa)	Dynamic Point Resistance (MPa)
0.10	1	0.10	1.94	1.89
0.20	1	0.10	1.94	1.86
0.30	1	0.10	1.94	1.84
0.40	1	0.10	1.94	1.81
0.50	1	0.10	1.94	1.79
0.60	1	0.10	1.94	1.77
0.70	1	0.10	1.94	1.75
0.80	1	0.10	1.94	1.73
0.90	1	0.10	1.94	1.70
1.00	2	0.05	3.89	3.37
1.10	4	0.03	7.77	6.66
1.20	3	0.03	5.83	4.93
1.30	4	0.03	7.77	6.50
1.40	4	0.03	7.77	6.43
1.50	4	0.03	7.77	6.36
1.60	6	0.02	11.66	9.43
1.70	8	0.01	15.55	12.43
1.80	9	0.01	17.49	13.83
1.90	8	0.01	15.55	12.16
2.00	8	0.01	15.55	12.03
2.10	7	0.01	13.60	10.42
2.20	8	0.01	15.55	11.78
2.30	7	0.01	13.60	10.20
2.40	7	0.01	13.60	10.09
2.50	8	0.01	15.55	11.42
2.60	10	0.01	19.44	14.13
2.70	12	0.01	23.32	16.79
2.80	13	0.01	25.27	18.01
2.90	15	0.01	29.15	20.57
3.00	16	0.01	31.10	21.73
3.10	18	0.01	34.98	24.22
3.20	20	0.01	38.87	26.65
3.30	17	0.01	33.04	22.44
3.40	17	0.01	33.04	22.23
3.50	15	0.01	29.15	19.44
3.60	13	0.01	25.27	16.69
3.70	12	0.01	23.32	15.27
3.80	20	0.01	38.87	25.22
3.90	30	0.00	58.31	37.49
4.00				
4.10				
4.20				
4.30				
4.40				
4.50				
4.60				
4.70				
4.80				
4.90				
5.00				



Notes:
No further progress below 3.90m depth - Hammer bouncing.

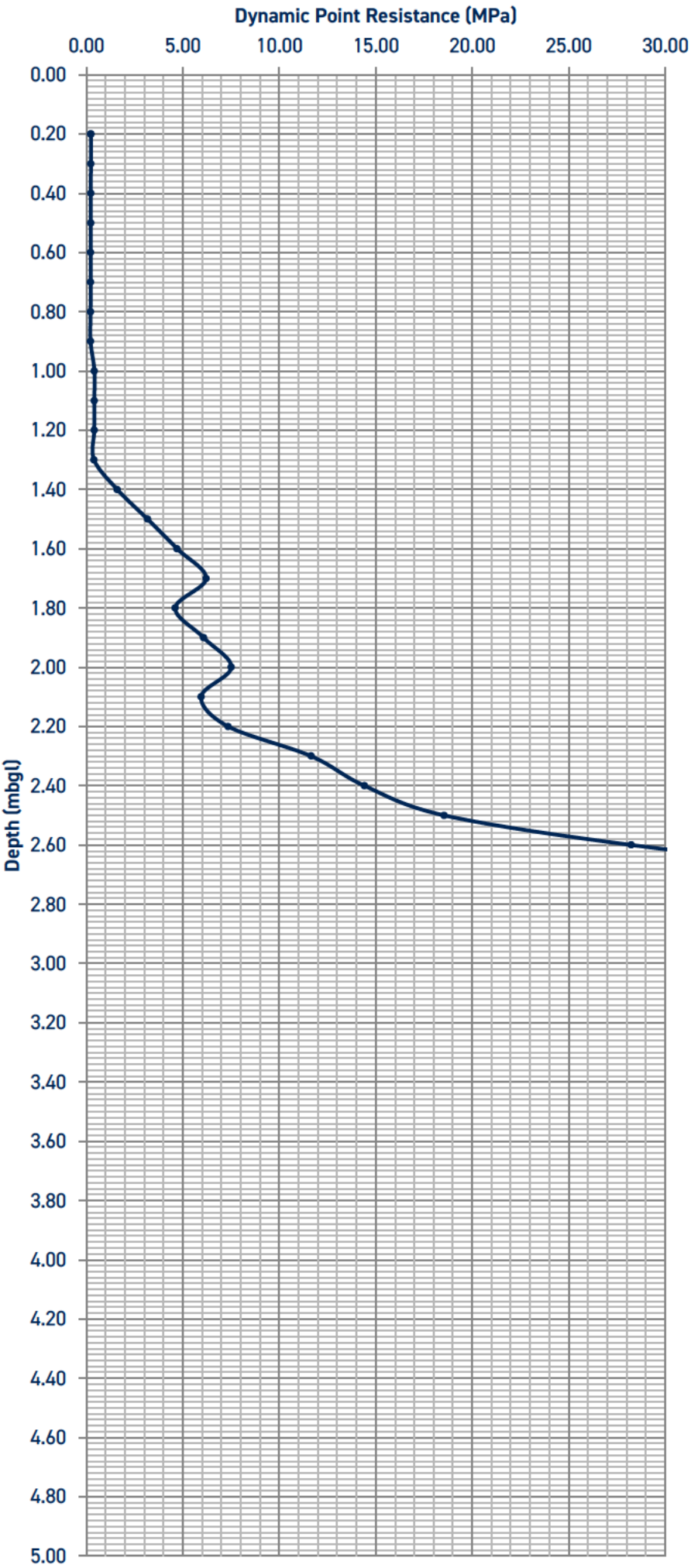
Hammer Mass	63.5 kg
Fall Height	0.76 m
Cone Area	0.0019 m ²
E _{theor}	473 J
Energy Ratio	0.78
Anvil Mass	1 kg
Rod Mass	8.79 kg/m

Site: 3 The Maples, Spencers Place, Horsham, West Sussex

Project Ref: P17434

Test Location Reference	WS03
-------------------------	------

Depth (mbgl)	Blows (per 100mm)	Average Penetration per Blow (m)	Unit Point Resistance (MPa)	Dynamic Point Resistance (MPa)
0.10				
0.20	0.13	0.77	0.25	0.24
0.30	0.13	0.77	0.25	0.24
0.40	0.13	0.77	0.25	0.24
0.50	0.13	0.77	0.25	0.23
0.60	0.13	0.77	0.25	0.23
0.70	0.13	0.77	0.25	0.23
0.80	0.13	0.77	0.25	0.22
0.90	0.13	0.77	0.25	0.22
1.00	0.25	0.40	0.49	0.42
1.10	0.25	0.40	0.49	0.42
1.20	0.25	0.40	0.49	0.41
1.30	0.25	0.40	0.49	0.41
1.40	1	0.10	1.94	1.61
1.50	2	0.05	3.89	3.18
1.60	3	0.03	5.83	4.71
1.70	4	0.03	7.77	6.21
1.80	3	0.03	5.83	4.61
1.90	4	0.03	7.77	6.08
2.00	5	0.02	9.72	7.52
2.10	4	0.03	7.77	5.95
2.20	5	0.02	9.72	7.36
2.30	8	0.01	15.55	11.66
2.40	10	0.01	19.44	14.42
2.50	13	0.01	25.27	18.56
2.60	20	0.01	38.87	28.26
2.70	30	0.00	58.31	41.97
2.80				
2.90				
3.00				
3.10				
3.20				
3.30				
3.40				
3.50				
3.60				
3.70				
3.80				
3.90				
4.00				
4.10				
4.20				
4.30				
4.40				
4.50				
4.60				
4.70				
4.80				
4.90				
5.00				



Notes:
No further progress below 2.70m depth - Hammer bouncing.

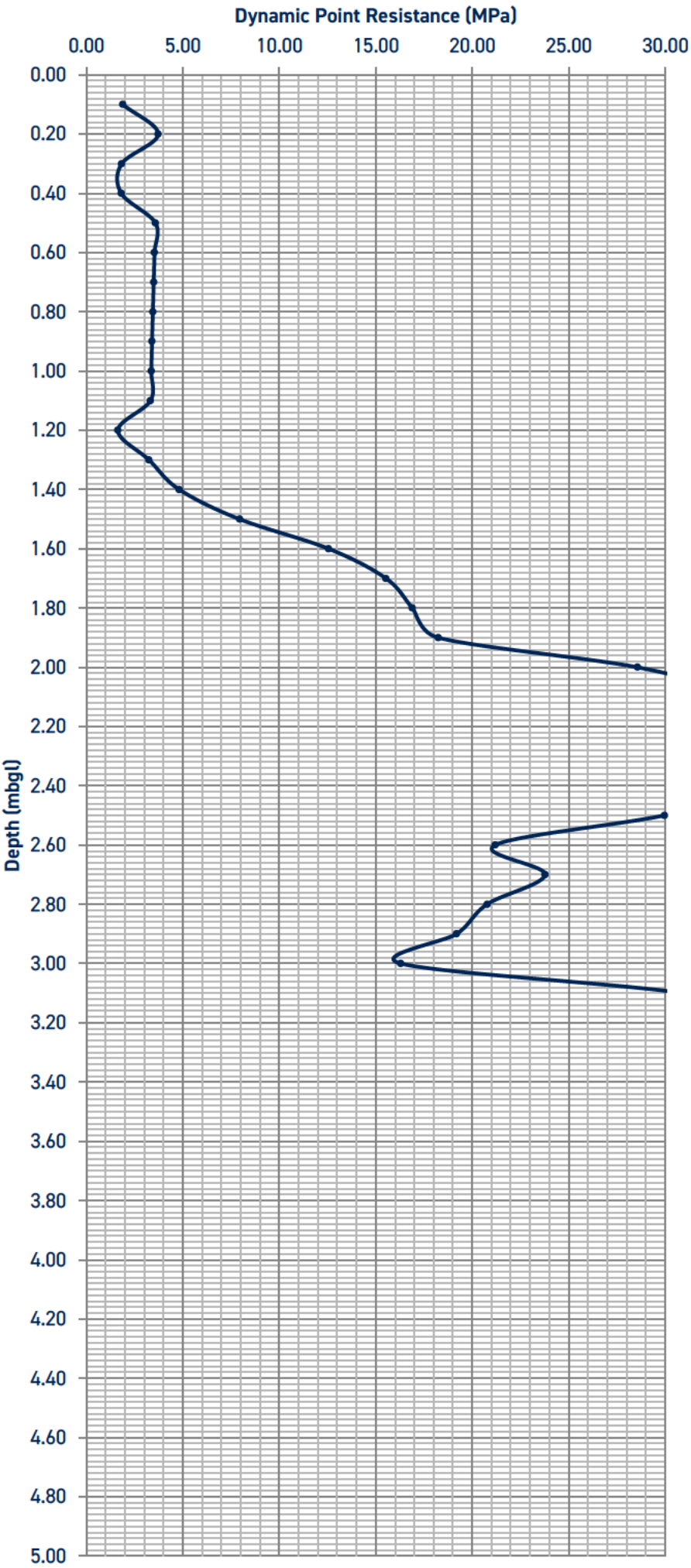
Hammer Mass	63.5 kg
Fall Height	0.76 m
Cone Area	0.0019 m ²
E _{theor}	473 J
Energy Ratio	0.78
Anvil Mass	1 kg
Rod Mass	8.79 kg/m

Site: 3 The Maples, Spencers Place, Horsham, West Sussex

Project Ref: P17434

Test Location Reference WS04

Depth (mbgl)	Blows (per 100mm)	Average Penetration per Blow (m)	Unit Point Resistance (MPa)	Dynamic Point Resistance (MPa)
0.10	1	0.10	1.94	1.89
0.20	2	0.05	3.89	3.73
0.30	1	0.10	1.94	1.84
0.40	1	0.10	1.94	1.81
0.50	2	0.05	3.89	3.58
0.60	2	0.05	3.89	3.54
0.70	2	0.05	3.89	3.49
0.80	2	0.05	3.89	3.45
0.90	2	0.05	3.89	3.41
1.00	2	0.05	3.89	3.37
1.10	2	0.05	3.89	3.33
1.20	1	0.10	1.94	1.64
1.30	2	0.05	3.89	3.25
1.40	3	0.03	5.83	4.82
1.50	5	0.02	9.72	7.94
1.60	8	0.01	15.55	12.57
1.70	10	0.01	19.44	15.54
1.80	11	0.01	21.38	16.90
1.90	12	0.01	23.32	18.24
2.00	19	0.01	36.93	28.57
2.10	23	0.00	44.70	34.22
2.20	26	0.00	50.53	38.28
2.30	27	0.00	52.48	39.34
2.40	25	0.00	48.59	36.05
2.50	21	0.00	40.81	29.98
2.60	15	0.01	29.15	21.20
2.70	17	0.01	33.04	23.78
2.80	15	0.01	29.15	20.78
2.90	14	0.01	27.21	19.20
3.00	12	0.01	23.32	16.30
3.10	23	0.00	44.70	30.94
3.20	28	0.00	54.42	37.31
3.30	30	0.00	58.31	39.60
3.40				
3.50				
3.60				
3.70				
3.80				
3.90				
4.00				
4.10				
4.20				
4.30				
4.40				
4.50				
4.60				
4.70				
4.80				
4.90				
5.00				



Notes:
No further progress below 3.30m depth - Hammer bouncing.

Hammer Mass	63.5 kg
Fall Height	0.76 m
Cone Area	0.0019 m ²
E _{theor}	473 J
Energy Ratio	0.78
Anvil Mass	1 kg
Rod Mass	8.79 kg/m

APPENDIX C

Geotechnical Laboratory Test Results

Site: 3 The Maples, Spencers Place, Horsham, West Sussex

Project Ref: P17434

[illegible]

Test Method: Classification Tests BS1377: Part 2: 1990: Method 4.4, 5.3 and 5.4

Sheet No. 1

* Consistency index based on natural moisture content and not the equivalent moisture content.

APPENDIX D

Aggressivity To Concrete Assessment

Borehole Infiltration Test Results

Trial Pit In Situ Infiltration Test Results

Site: 3 The Maples, Spencers Place, Horsham, West Sussex

Project Ref: P17434

Chemical Laboratory Test Results

[illegible]

Notes: Chemical testing was undertaken by an external laboratory with recognised (UKAS and MCERTS) accreditation for quality control. Testing scheduled in line with the BRE Special Digest 1:2005 Concrete in Aggressive Ground Suites A-D and as such some determinands were not required to be tested.

Assessment of the Chemical Analysis of the Soil

Ground Condition	Natural Ground Conditions
Groundwater Condition	Mobile Groundwater Conditions
Pyrite Soil Condition	Soils present beneath the site are not expected to contain pyrite

	Characteristic Value	Design Sulfate Class	ACEC Classification
pH	5.8	-	-
Water Soluble Sulphate (mg/l as SO ₄) *	300	DS-1	AC-1
Total Potential Sulphate (TPS % SO ₄)	N/A - Non Pyrite Soil Present	-	-
Magnesium (mg/l) *	N/A - Natural Ground Conditions	-	-
Water Soluble Sulphate including mineral acids (mg/l as SO ₄) *	N/A - Natural Ground Conditions	-	-

Notes: * Characteristic value rounded to nearest 100.

The aggressivity of the soils to concrete has been assessed in accordance with guidance published by the BRE Special Digest 1:2005 Concrete in Aggressive Ground.

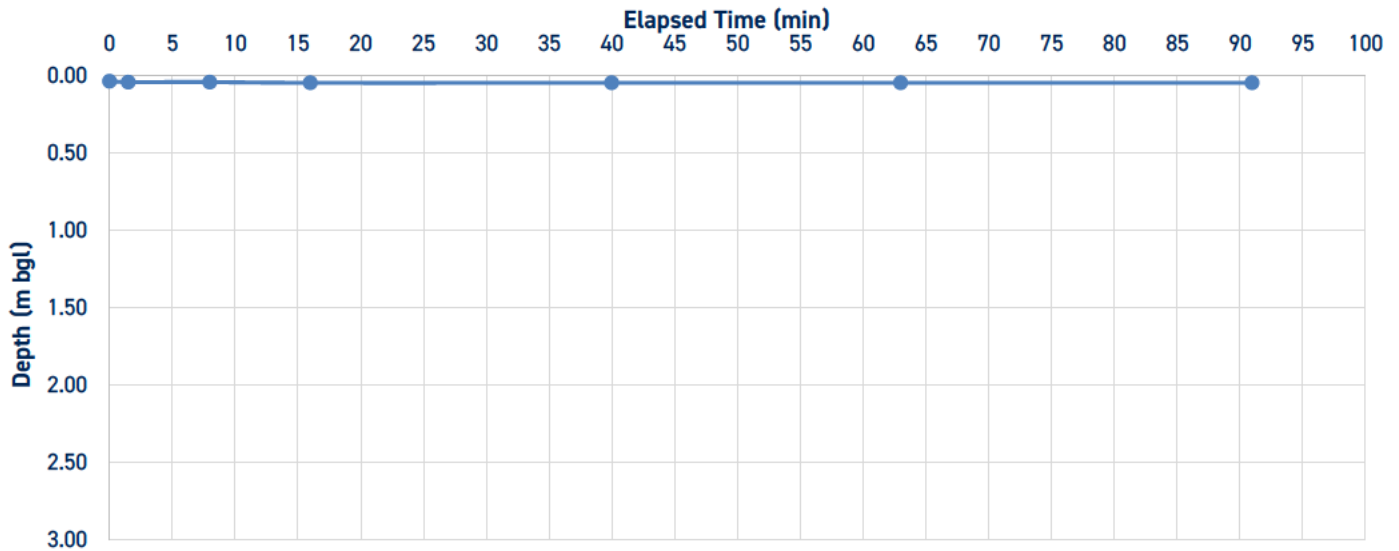
Site: 3 The Maples, Spencers Place, Horsham, West Sussex

Project Ref: P17434

Test Location Reference **WS04**

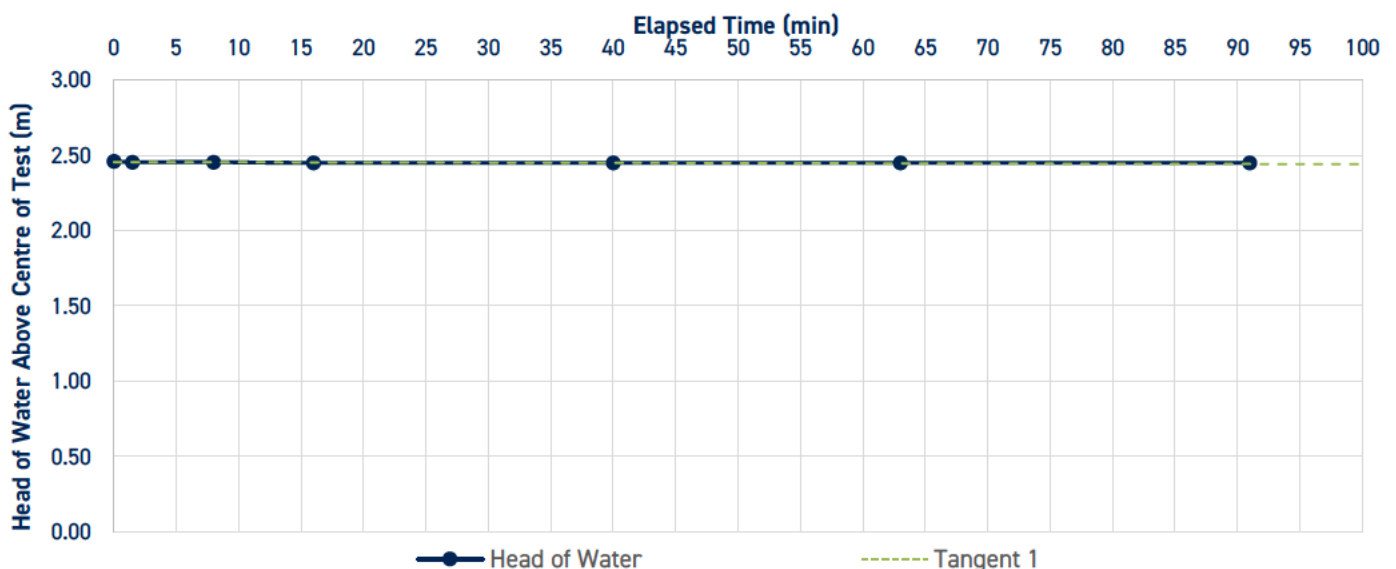
Test Number **1**

Casing Depth 2.00 m bgl
Borehole Depth 3.00 m bgl
Casing Diameter 0.105 m
Average Borehole Diameter 0.079 m



Test Results

Length of Test Zone	1.00 m	L
Depth to Center of Test Zone	2.50 m	X
Water level at start of test	0.04 m	
Water level at end of test	0.05 m	
Duration of test	91 min	
Average Depth Of Water	2.96 m	
Average Drained Area	0.74 m ²	
Volume of Water Lost	0.00 m ³	
Driving Head	2.5 m	
Infiltration rate	4.62E-08 m/sec	
Calculation method:	Calculated in accordance with The Soakaway Design Guide, published by Kent County Council, July 2000.	



Site: 3 The Maples, Spencers Place, Horsham, West Sussex

Project Ref: P17434

Test Location Reference	TP01
Test Number	1

Width of Pit	0.31 m	W
Length of Pit	0.30 m	L
Depth of Pit	0.75 m	D
Pit type	Open	

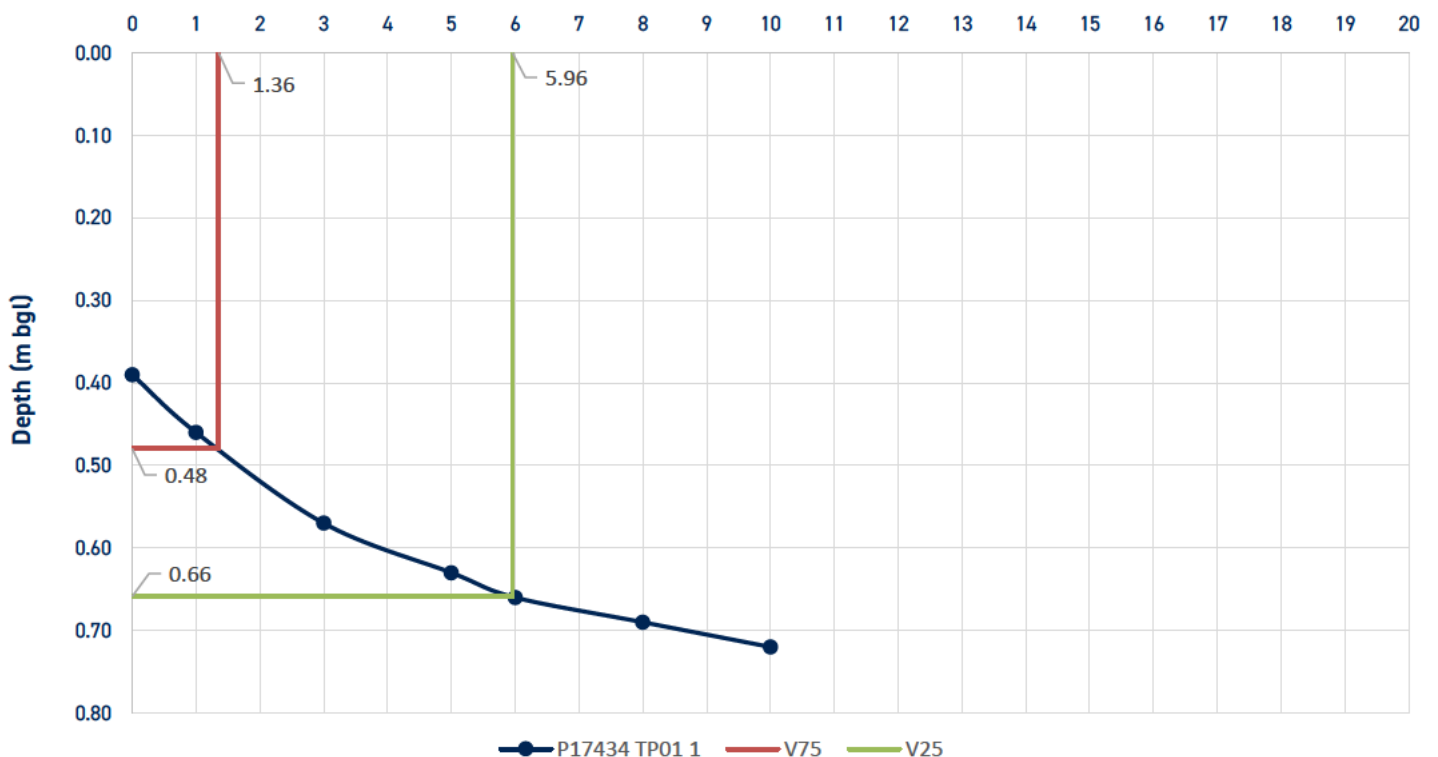
Volume of water introduced into pit	0.032 m ³	
Initial head of water	0.36 m	h_o
Water level at start of test	0.39 m	
Water level at end of test	0.72 m	
Volume of water discharged from pit	0.030 m ³	
Duration of test	10 min	
Average soaked surface area	0.32 m ²	
Time for water level to fall to 75% of initial head	1.36 min	t_{p75}
Time for water level to fall to 25% of initial head	5.96 min	t_{p25}
Depth to water at 75% of initial head	0.48 m	d_{75}
Depth to water at 25% of initial head	0.66 m	d_{25}
Time for the water level to fall from 75% to 25% of initial head	4.60 min	t_{p75-25}
Effective storage volume of water in the soakage trial pit between 75% and 25% of initial head	0.016 m ³	V_{p75-25}
Internal surface area of the soakage trial pit up to 50% of initial head and including the base area	0.30 m ²	a_{s50}

Infiltration rate

1.91E-04 m/sec f

Calculation method: BRE 365

Elapsed Time (min)



Site: 3 The Maples, Spencers Place, Horsham, West Sussex

Project Ref: P17434

Test Location Reference	TP01
Test Number	2

Width of Pit	0.31 m	W
Length of Pit	0.30 m	L
Depth of Pit	0.75 m	D
Pit type	Open	

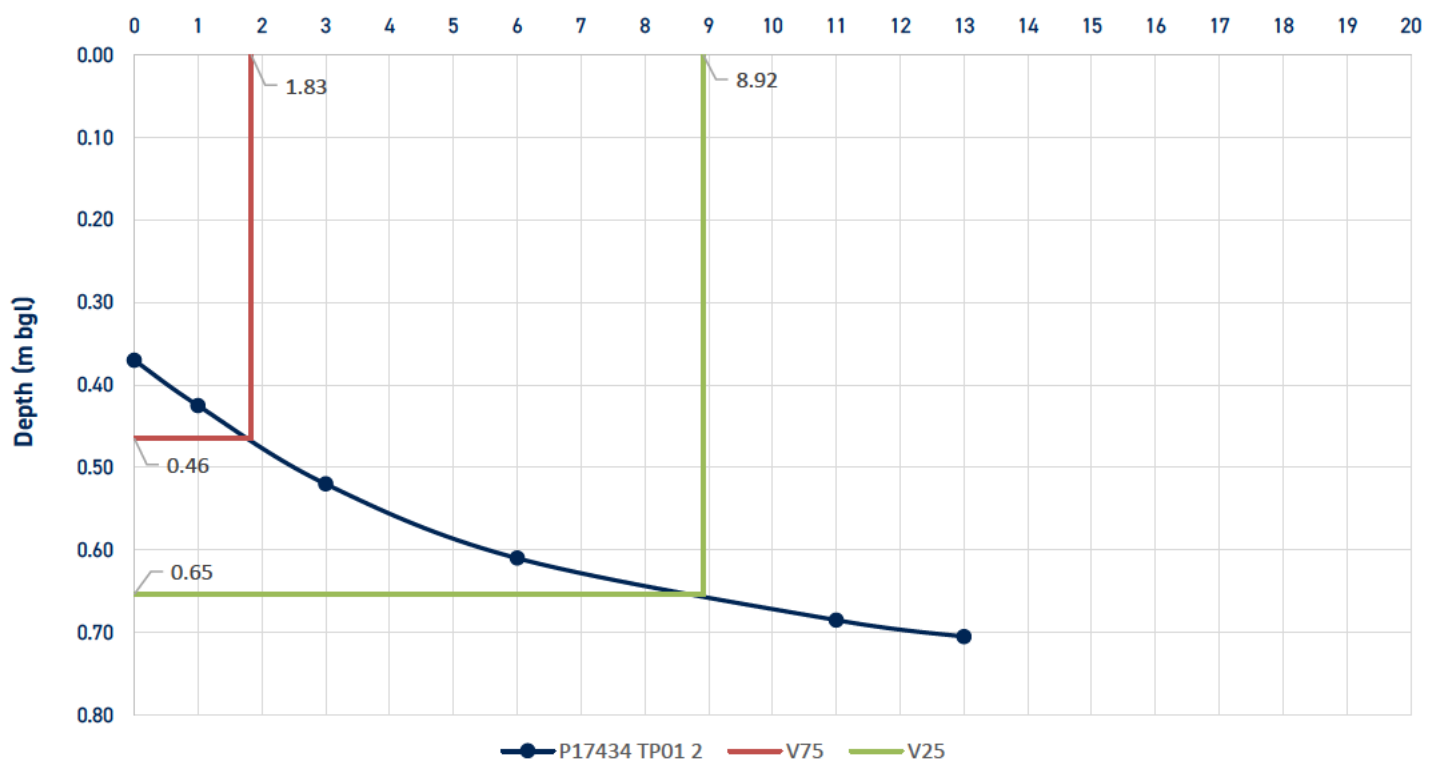
Volume of water introduced into pit	0.034 m ³	
Initial head of water	0.38 m	h_o
Water level at start of test	0.37 m	
Water level at end of test	0.71 m	
Volume of water discharged from pit	0.030 m ³	
Duration of test	13 min	
Average soaked surface area	0.34 m ²	
Time for water level to fall to 75% of initial head	1.83 min	t_{p75}
Time for water level to fall to 25% of initial head	8.92 min	t_{p25}
Depth to water at 75% of initial head	0.46 m	d_{75}
Depth to water at 25% of initial head	0.65 m	d_{25}
Time for the water level to fall from 75% to 25% of initial head	7.08 min	t_{p75-25}
Effective storage volume of water in the soakage trial pit between 75% and 25% of initial head	0.017 m ³	V_{p75-25}
Internal surface area of the soakage trial pit up to 50% of initial head and including the base area	0.32 m ²	a_{s50}

Infiltration rate

1.26E-04 m/sec f

Calculation method: BRE 365

Elapsed Time (min)



Site: 3 The Maples, Spencers Place, Horsham, West Sussex

Project Ref: P17434

Test Location Reference	TP01
Test Number	3

Width of Pit	0.31 m	W
Length of Pit	0.30 m	L
Depth of Pit	0.75 m	D
Pit type	Open	

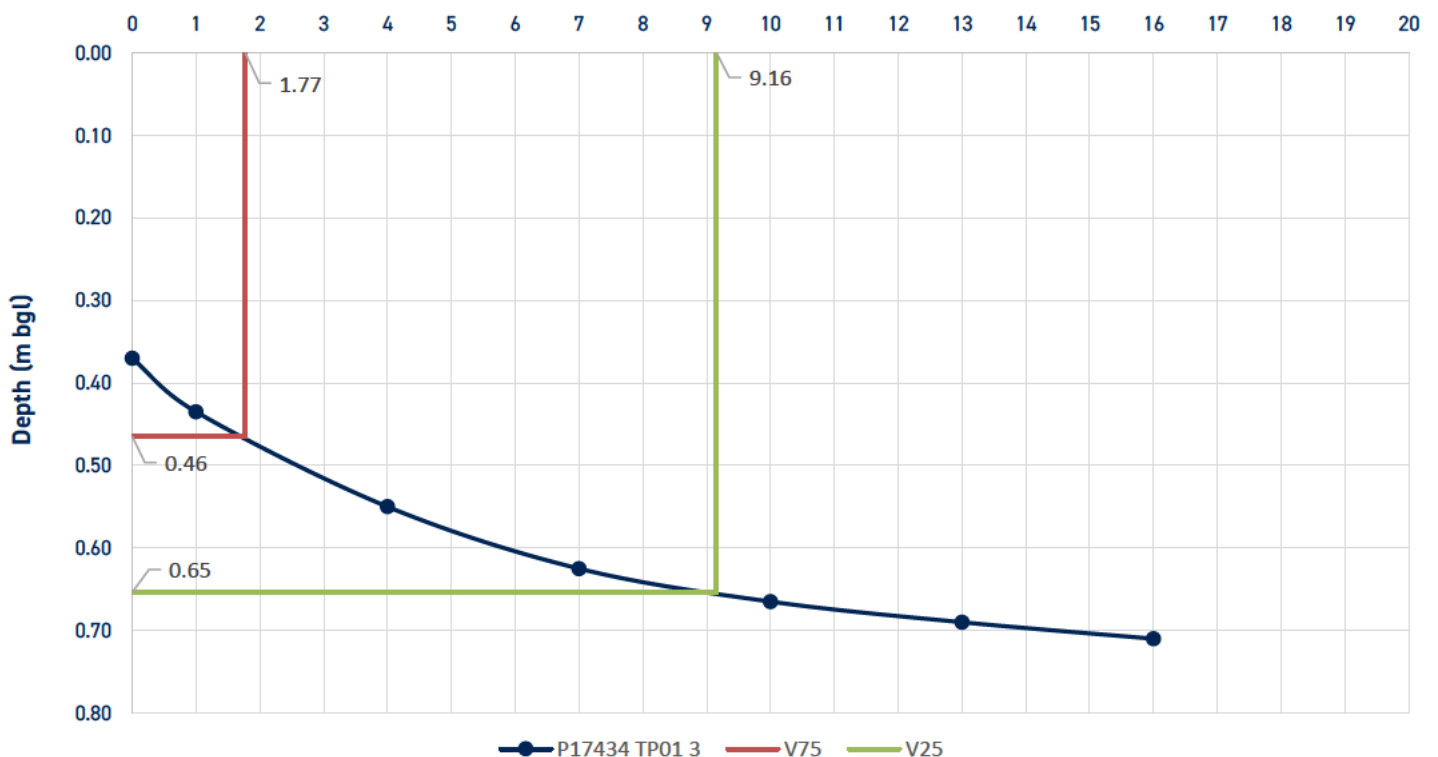
Volume of water introduced into pit	0.034 m ³	
Initial head of water	0.38 m	h_o
Water level at start of test	0.37 m	
Water level at end of test	0.71 m	
Volume of water discharged from pit	0.031 m ³	
Duration of test	16 min	
Average soaked surface area	0.34 m ²	
Time for water level to fall to 75% of initial head	1.77 min	t_{p75}
Time for water level to fall to 25% of initial head	9.16 min	t_{p25}
Depth to water at 75% of initial head	0.46 m	d_{75}
Depth to water at 25% of initial head	0.65 m	d_{25}
Time for the water level to fall from 75% to 25% of initial head	7.38 min	t_{p75-25}
Effective storage volume of water in the soakage trial pit between 75% and 25% of initial head	0.017 m ³	V_{p75-25}
Internal surface area of the soakage trial pit up to 50% of initial head and including the base area	0.32 m ²	a_{s50}

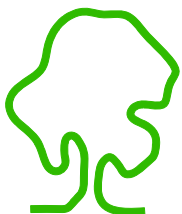
Infiltration rate

1.21E-04 m/sec f

Calculation method: BRE 365

Elapsed Time (min)





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