FLOOD RISK ASSESSMENT & SuDS REPORT FOR LAND SOUTH OF HAMMERWOOD ROAD, ASHURST WOOD, WEST SUSSEX, RH19 3RX

DOCUMENT NUMBER: C3655-R1-REV-DRAFT

PREPARED BY

Nimbus ENGINEERING CONSULTANTS

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APPENDICES

1. SITE DETAILS

Site Name	Land South of Hammerwood Road
Site Address	Land South of Hammerwood Road, Ashurst Wood, West Sussex, RH19 3RX
Purpose of Development	Residential
Existing Land Use	Brownfield
County	West Sussex County Council
Country	England
Local Planning Authority	Mid Sussex District Council

1.1 Site Location

A location plan of the project site is provided within Appendix A.

1.2 Proposed Development

The proposal involves the erection of 12 dwellings, together with associated amenity space, car parking and landscaping.

1.3 Geology of The Area

According to the British Geological Survey, there are no superficial deposits information available at the site. The bedrock at the area consists of mudstone and is part of the Atherfield Clay formation, as shown in Figure 1 overleaf.

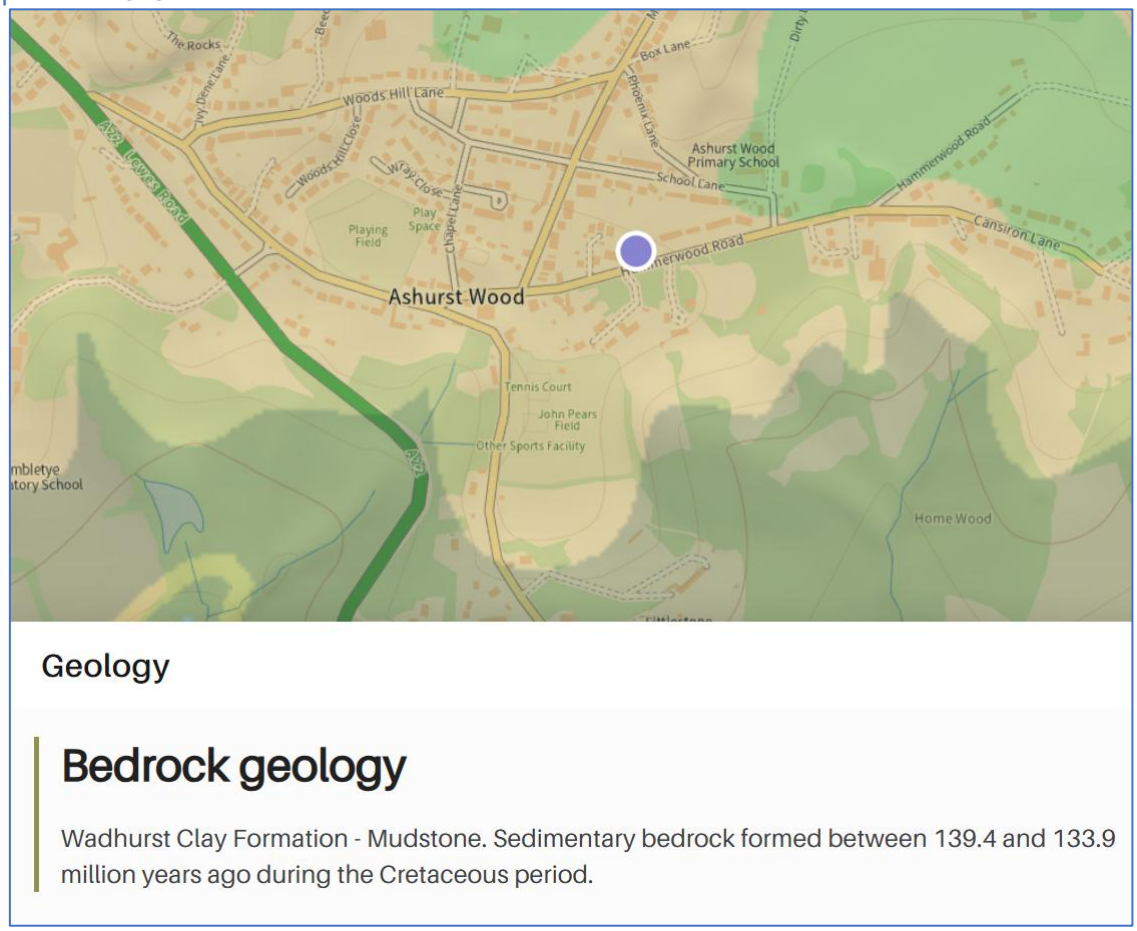


Figure 1 - Bedrock at the site. (Source: British Geological Society Website (contains British Geological Survey materials © NERC2025).

2. PLANNING POLICIES

2.1 National Planning Policies

The report has been written in conjunction with the following National planning policies:

- National Planning Policy Framework (December 2024)
- National Planning Practice Guidance Suite (August 2022)
- CIRIA SUDS manual (C753)

2.2 Local Planning Policy

The report has been written in conjunction with the following local planning policies:

- SFRA Level 1 and Level 2 for Mid Sussex District Council;

3. FLOOD RISK

The possible causes of flooding set out in NPPF are considered in this section in relation to flood risk to the site itself and the effects of the development of the site on the flood risk elsewhere.

3.1 Flood Zones

The Environment Agency has developed a flood risk map which shows the relative risk of flooding for different return periods. Flood zones assume that no defences are present and so where these do exist, they are only indicative of the potential for flooding.

The Environment Agency's Flood Map for Planning (Rivers and Sea), shown within Figure 2 overleaf, indicates the site is in Flood Zone 1 and is not at risk of flooding from rivers, or the sea.

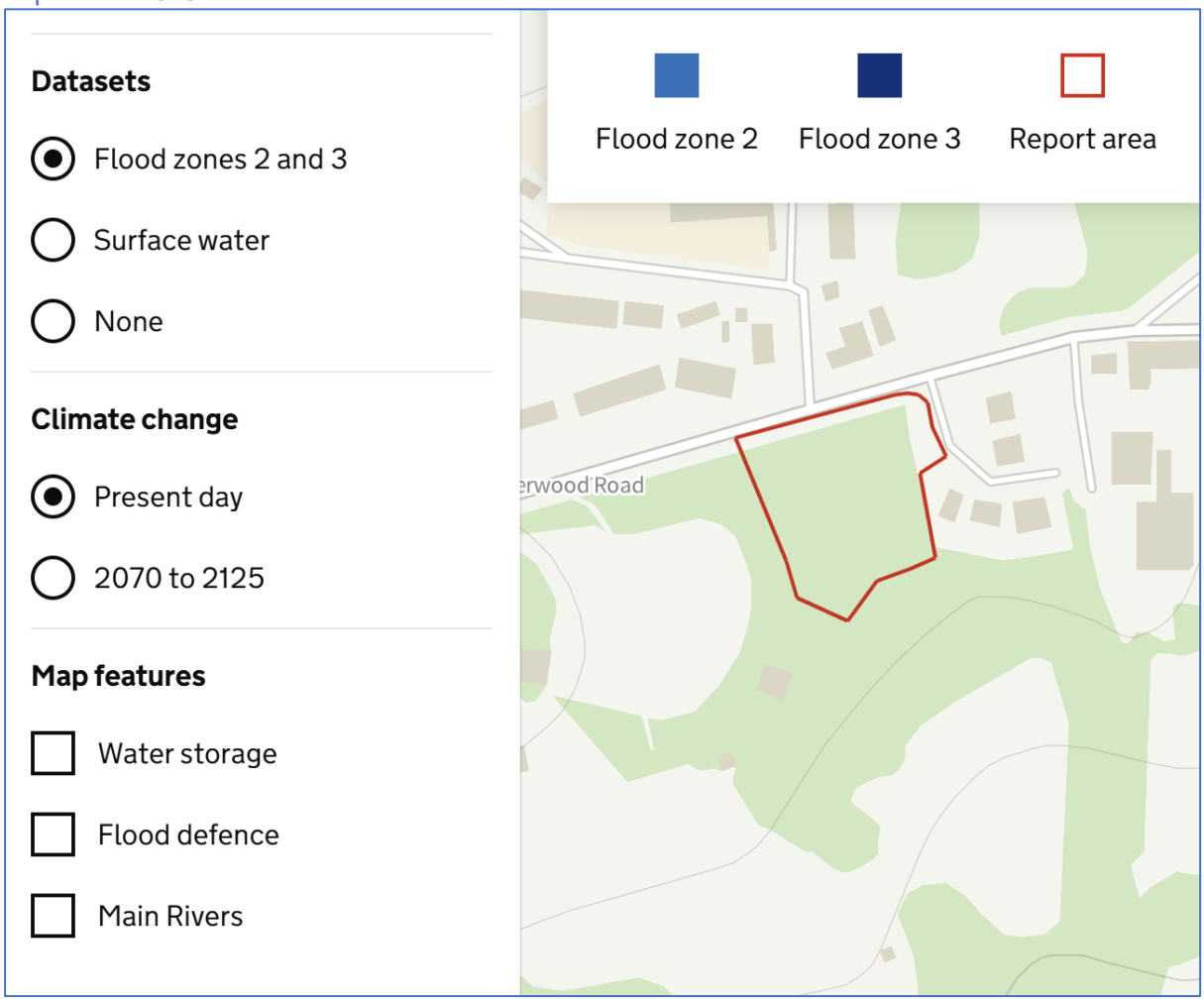


Figure 2 – Environment Agency Flood Map for flooding extent from rivers and sea for the proposed development

3.2 Flooding from Land (Overland Flow)

The proposed development site is at a very low risk of surface water flooding, as can be seen in the Environmental Agency's flood map within Figure 3 overleaf.

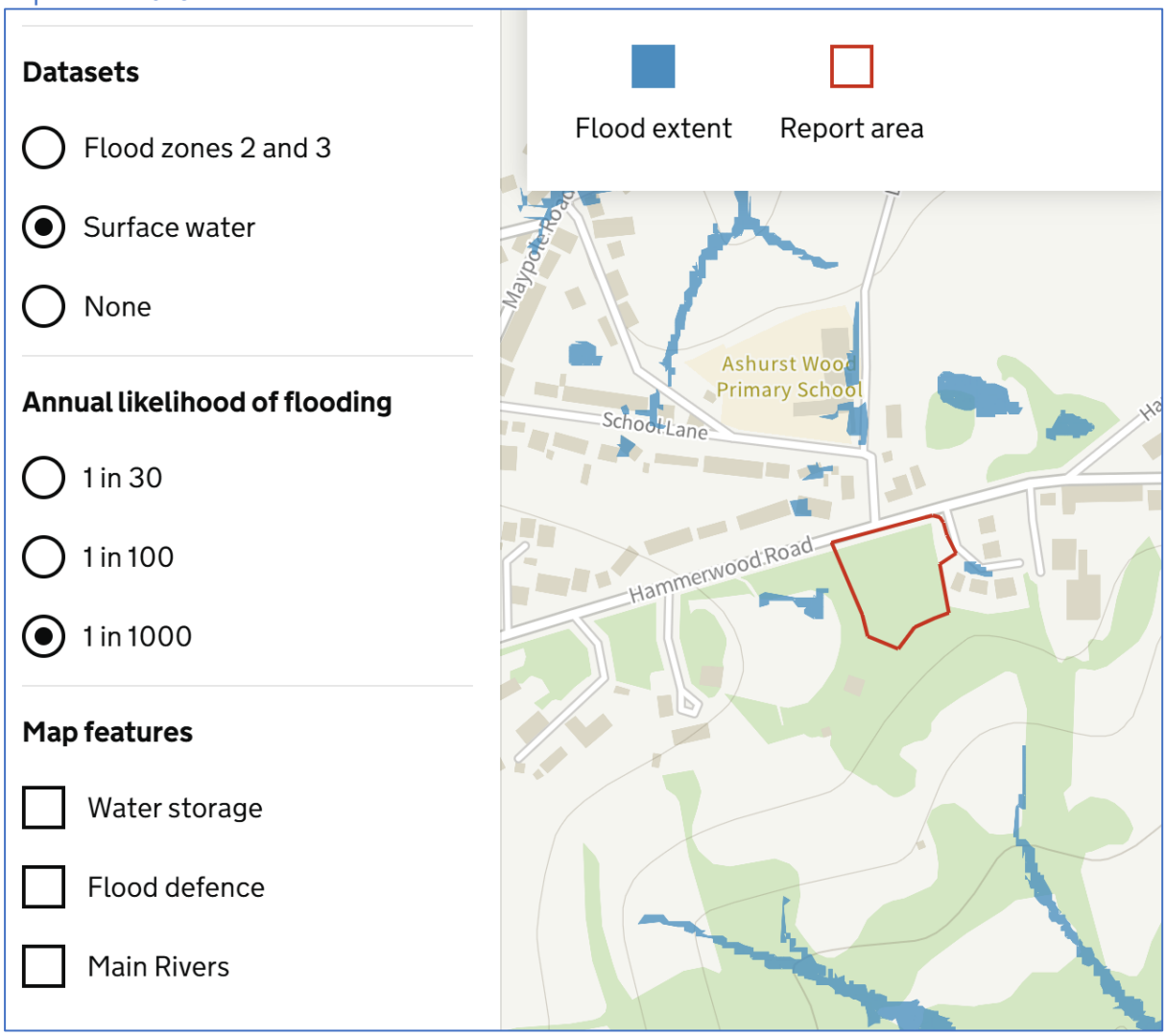


Figure 3 – Environment Agency Flood Map for 1:1000 surface water flooding for the proposed development

The surface water run off produced as a result of these development proposals will be dealt with through the use of Sustainable Urban Drainage Systems, which follow the SuDS hierarchy and therefore will reduce flood risk in the area.

3.3 Flooding from Groundwater

The Environment Agency's website confirms that groundwater flooding is unlikely at this proposed development site.

3.4 Flooding from Sewers

The existing site is greenfield, therefore there have been no incidents of sewer flooding at this site.

3.5 Flooding from Reservoirs, Canals or Other Artificial Sources

The Environment Agency's website, confirms that the site is not at risk of any reservoir flooding.

4. SUSTAINABLE URBAN DRAINAGE SYSTEMS

The total site area is 2368m^2, and the impermeable areas of the site prior to development are 715m^2. Following the development at this site, the impermeable areas have increased to 1567m^2, prior to any mitigation by using Sustainable Urban Drainage Systems (SuDS).

Pre and post development surface water runoff calculations showing the peak flow rate leaving the site, can be found within Appendix B.

Surface water arising from a developed site should, as far as practicable, be managed in a sustainable manner to mimic the surface water flows arising from the site prior to the proposed development, while reducing the flood risk to the site itself and elsewhere, taking climate change into account.

Reducing the rate of surface water discharge from Urban Sites is one of the most effective ways of reducing and managing flood risk.

Traditional piped surface water systems work by removing the surface water from our developments as quickly as possible, however this can cause various adverse impacts:

- Increased downstream flooding, and sudden rises in flow rates and water levels in local water courses.

- Reduction in groundwater levels dry weather flows in watercourses.

- Reduce amenity and adversely affect biodiversity due to the surface water run-off containing contaminants such as oil, organic matter and toxic materials.

SuDS are defined as a sequence of management principles and control structures designed to drain surface water in a more sustainable fashion than conventional piped drainage techniques. SuDS should utilise the environmental, ecological and social benefits.

These include:

- Protection and enhancement of water quality – As well as providing on-site attenuation, SuDS treat the water, resulting in an improved quality of water leaving the site. This is achieved when the water passes through the fine soils and the roots of specially selected plants, pollutants washed of the hard landscaping by rainfall will be safely removed before the water reaches the natural water course.

- A sympathetic approach to the environmental setting by providing the opportunities to create habitats for flora and fauna in urban watercourses and open spaces.

- Meeting the amenity and social needs of the local community and residents in the creation of attractive green spaces.

The various types of SuDS include:

Permeable paving	
Soakaways;	
Swales and basins;	
Bioretention/ rain gardens;	
Green roofs and rainwater re-use;	
Infiltration trenches and filter drains	
Ponds and wetlands	

Preferably a combination of these techniques should be used as part of the surface water management train, and it is important for all stakeholders; such as developers, architects, landscape architects and engineers, to work together at the planning stage in order to determine a feasible solution.

The SuDS management train is shown in Figure 4 below, this has been followed when proposing the proposed Sustainable Urban Drainage Systems for this site.

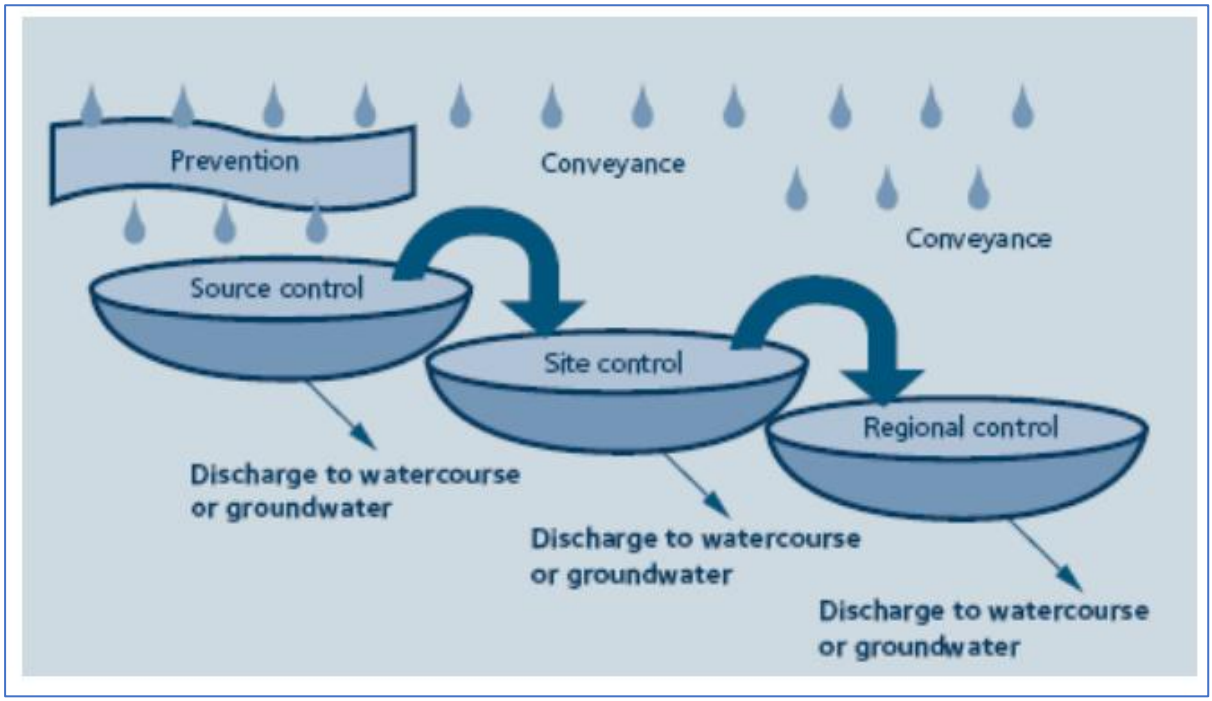


Figure 4 – SuDS Management Train

5. PROPOSED SuDS SOLUTION

In order to ensure that the SuDS management train has been followed, one wall mounted rainwater harvesting tank has been proposed for each dwelling, to encourage rainwater re-use. The proposed roofs are pitched, therefore green roofs are not viable, however we have proposed raingarden planters where feasible, to provide a level of treatment.

All proposed hardstanding areas will be formed of porous surfacing, with filter drains proposed to capture the surface water run off from all sloped areas.

The preferred method of dealing with remaining surface water from the above SuDS components would be to treat and deal with it at source using soakaways, therefore a BRE365 Percolation test will be carried out to confirm this.

5. TIMESCALE AND MAINTENANCE OF DRAINAGE WORKS

All drainage works shall be completed prior to first occupation and there shall be no adoption of any of the drainage works within the site, a management company will be formed and will be responsible to oversee the long-term maintenance of the communal drains. A Management & Maintenance Plan can also be found within Appendix A.

The following outline maintenance strategy sets out recommended timescales for maintenance of the proposed drainage works, in line with CIRIA SuDS Design Guide:

- Regular inspection will comprise the inspection and cleaning of catchment, gutters, filters and tanks to reduce the likelihood of contamination, this is recommended to be carried out every 3 to 6 months.

- The catchpit chamber and flow controls should be checked and cleaned every 3 months for the accumulation of debris/ silt, in order to ensure that there are no blockages.

The following table outlines the maintenance requirements for the rainwater harvesting systems:

Maintenance schedule	Required action	Typical Frequency
Regular maintenance	Inspection of the tank for debris and sediment build-up, inlets/outlets/withdraw devices, overflow areas, pumps, filters	Annually (and following poor performance)
	Cleaning of tank, inlets, outlets, gutters. Withdrawal devices and roof drain filters of silts and other debris	Annually (and following poor performance)
Occasional maintenance	Cleaning and/ or replacement of any filters	Three monthly (or as required)
Remedial actions	Repair of overflow erosion damage or damage to tank	As required
	Pump repairs	As required

Table 1: Operation and maintenance requirement for RWH systems.

The following table outlines the maintenance requirements for a soakaway:

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

Table 2: Operation and maintenance requirements for soakaways.

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Pipe inlets to the raingarden planters should be checked every month and especially after an extreme rainstorm to ensure that there are no blockages.	Monthly
	Periodic inspections & removal of debris or other items that represent blockage risks particularly in vicinity of the inlet to the raingarden planters	Monthly
	Weeding, cutting of plants and removal of any dead plants to ensure that the system works effectively	Every three months
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockages by sediment, algae or other matter: remove and replace surface infiltration medium as necessary.	Annually
Remedial actions	Repair inlets, outlets, overflows	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that the are in good condition and operating as designed	Annually

Table 3: Operation and maintenance requirement for rainwater garden planters

6. FOUL WATER DRAINAGE

The proposed foul water drainage from the site will discharge via gravity to the southern foul water sewer in Yewhurst Close.

7. CONCLUSIONS

The site is at very low risk from flooding from tidal, fluvial, sewer, groundwater and reservoir flooding.

The proposals will not impact on any known flood flow route or flood storage area.

A suitable Sustainable Urban Drainage systems solution has been proposed which follows the SuDS hierarchy.

A foul drainage strategy that conveys the foul water from the site via gravity has also been proposed.

APPENDIX A – DRAWINGS

Note:
Tree protection barrier to be relocated to allow construction of proposed footpath

MH CL 126.47
MH CL 126.73
MH CL 126.59
Title WSX425532
Title WSX425532
Title WSX425532

T1 T2 T3 T4 T5 T6 T7 T8 T9 T10 T11 T12 T13 T14 T15 T16 T17 T18 T19 T20 T21 T22 T23 T25 T26 T27 T28 T29 T31 T32 T33 T34 T35 T36 T37 T38 T39 T40 T41 T42 T43 T44 T45 T46 T47 T48 T49 T50 T51 T52 T53 T54 T55

G1 G2 G3 G4

Metres
0 5 10
Scale

Indicative
N

Tree Categories

Root protection area (RPA)
99
Tree number as recorded on Survey Schedule
Tree canopy
Coloured symbol indicating BS category as shown below

Underlined tree tags denote tree located by eye

Category A tree
BS5837 2012

Category B tree
BS5837 2012

Category C tree
BS5837 2012

Category U tree
BS5837 2012

Arboricultural Strategy

Tree to be retained
Colour reference in accordance with the categories defined by BS:5837

Tree to be removed
Colour reference in accordance with the categories defined by BS:5837

G1/H1
Tree group/hedge to be retained
Colour reference in accordance with the categories defined above

G1
Tree group or part of tree group to be removed
Colour reference in accordance with the categories defined above

Line along which Tree Protection Barrier should be installed. Refer to accompanying report for specification

Area of hard surface to be installed following a 'no dig' method of construction

Area where additional ground protection will be required. Refer to the accompanying report for details.

Area of existing hard surface to remain in situ and used as a sub base for the proposed re-surfacing

CANOPYCONSULTANCY

Project	Land at Hammerwood Road, Ashurst Wood
Drawing	Tree Protection Plan
Date	23.09.25
Ref	22-1450-TPP
Drawn	NT
Checked	DR
Client	Virtue Land Ltd
Scale	1:200@A2

Address: Butlers Dene Cottage, Butlers Dene Road, Woldingham, Surrey CR3 7HD **Tel:** 07775 686588 **Email:** admin@canopyconsultancy.com **Web:** www.canopyconsultancy.com

Hammerwood Road

Yewhurst Close

1 3br
2 3br
3 3br
4 3br
5 2br
6 2br
7 2br
8 2 br
9 4br
10 4br
11 4br
12 4br

cyc

0 5 10 15 20 25 m

Scale 1:200 at A1

N

Note: Levels are indicative and approximate. Final levels may vary according to construction and local conditions.

MEASURES SCARFE

ARCHITECTS

Project
Land at Hammerwood Road RH19 3RX (2025)

Client
Turnbull Land Ltd

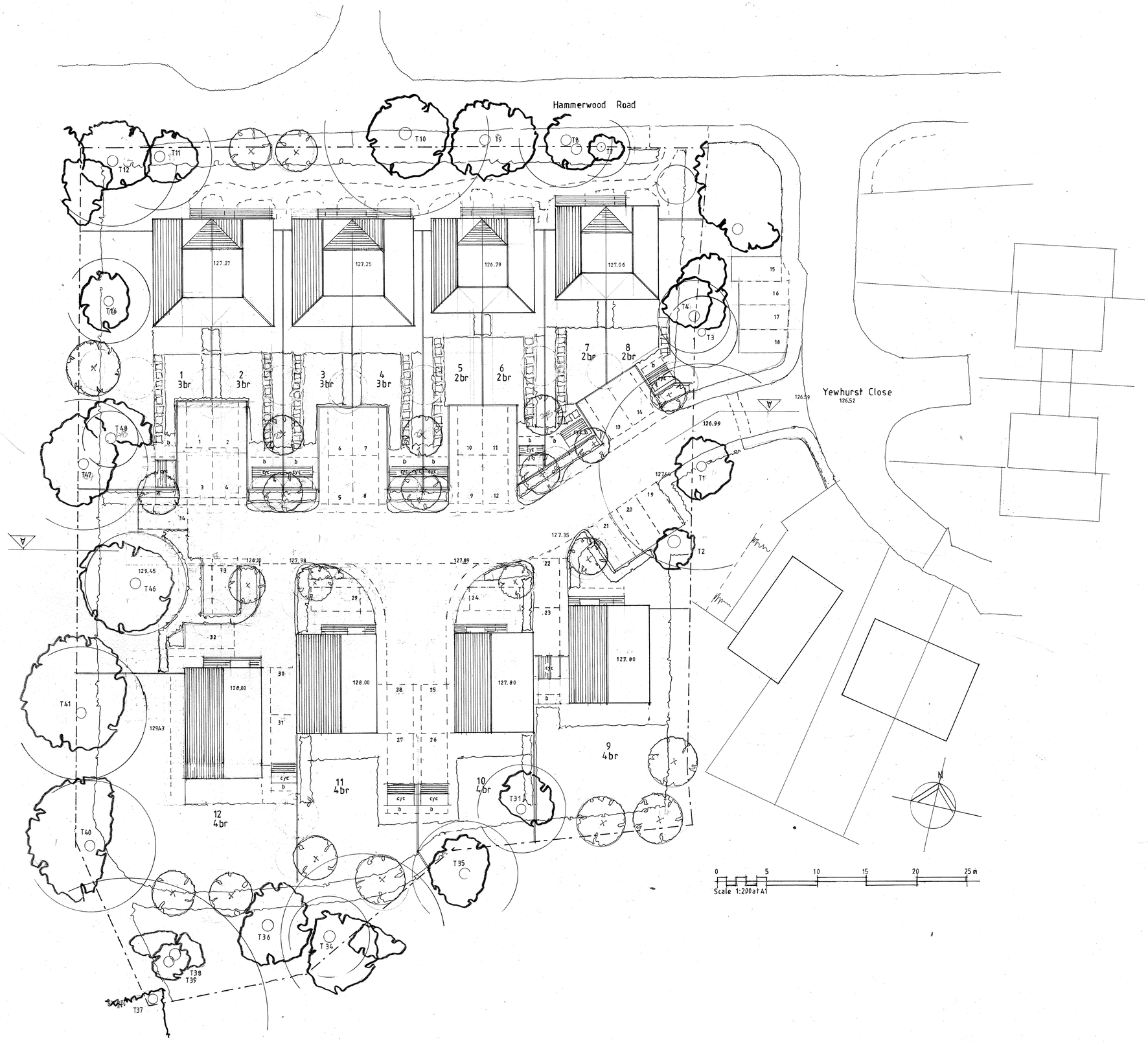
Title
Site layout

Scale
1:200@A1

Date
September 2025

Drawing Number
923:1181/PL100

68 Kings Road
Teddington
Middlesex TW11 0QE
Tel 020 8943 4767
Email: richard@measuresscarfe.co.uk
Mobile 07989 485 105



Note:
Levels added and are indicative and approximate and maybe subject to change

Note: Levels are indicative and approximate. Final levels may vary according to construction and local conditions.

MEASURES SCARFE
ARCHITECTS

Project
Land at Hammerwood Road RH19 3RX (2025)

Client
Virtue Land Ltd

Title
Site layout

Scale
1:200@A1

Date
July 2025

Drawing Number
923:1181/PL100

68 Kings Road
Teddington
Middlesex TW11 0QE
Tel 020 8943 4767
Email: richard@measuresscarfe.co.uk
Mobile 07989 485 105

Topographical Survey Legend

Hedge
Undergrowth
Tree
Bush
Building
Glass Building
Open Building
Telephone line
Power line
Banking
Contour line 64
Survey Station H5
Gate
Level 115.28
Ordnance Survey Benchmark OSBM
Foul Drainage 150mm FW MH CL 117.10 IL 116.75
Storm Drainage 100mm SW MH CL 117.10 IL 116.75

Abbreviations

Animal Sett	Sett
Air Valve	AV
Borehole	BH
Bus Stop	BS
Cover Level	CL
Earth Rod	ER
Electricity Pole	EP
Fire Hydrant	FH
Inspection Cover	IC
Invert Level	IL
Lamp Post	LP
Manhole	MH
Marker	MK
Name Plate	RNP
Power Pole	PP
Rain water Pipe	RWP
Road Sign	RS
Rodding Eye	RE
Reinforced Steel Joint	RSJ
Soil Vent Pipe	SVP
Stop Valve	SV
Survey Station	STN
Telegraph Pole	TP
Tree Stump	Stump
Trial Hole	TH
Unable To Lift	UTL
Vent Pipe	VP
Water Valve	WV

Metres
0 5 10
Scale

Notes

All trees are identified where possible. Species, spread, height and girth are indicative only.

Drainage has been surveyed where found, and traced where possible.

Eaves and ridge heights of surrounding buildings have been surveyed where possible.

Ordnance Survey Digital Data added and shown in orange, pen colour 30.

Red line taken from scanned image of Title WSX425532 and based on a "best fit" basis

Tree Schedule

1	Cypress	d=0.8	h=12
2	Birch	multibole	h=12
3	Birch	d=0.3	h=12
4	Birch	d=0.3	h=12
5	Birch	d=0.4	h=12
6	Birch	d=0.4	h=12
7	Laurel	d=0.3	h=10
8	Laurel	d=0.15	h=10
9	Laurel	d=0.25	h=10
10	Laurel	d=0.5	h=10
11	Unknown	d=0.4	h=10
12	Laurel	multibole	h=10
13	Holly	d=0.4	h=10
14	Unknown	multibole	h=10
15	Laurel	d=0.3	h=10
16	Birch	d=0.2	h=10
17	Laurel	d=0.1	h=10
18	Laurel	d=0.15	h=5
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20	Laurel	multibole	h=8
21	Laurel	multibole	h=8
22	Unknown	multibole	h=10
23	Maple	d=0.15	h=8
24	Laurel	d=0.2	h=8
25	Oak	d=0.15	h=8
26	Oak	d=0.25	h=10
27	Unknown	d=0.2	h=8
28	Silver birch	d=0.2	h=8
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30	Oak	d=0.15	h=8
31	Oak	d=0.35	h=10
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33	Laurel	multibole	h=8
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36	Beech	d=0.2	h=8
37	Beech	d=0.2	h=8
38	Beech	d=0.2	h=8
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50	Laurel	multibole	h=8
51	Laurel	multibole	h=8
52	Laurel	d=0.1	h=8
53	Holly	d=0.15	h=8
54	Laurel	d=0.15	h=8
55	Birch	d=0.4	h=10
56	Laurel	multibole	h=8
57	Laurel	multibole	h=8
58	Laurel	multibole	h=8
59	Beech	d=0.3	h=8
60	Laurel	multibole	h=8
61	Laurel	d=0.3	h=8
62	Silver birch	d=0.3	h=10
63	Laurel	d=0.3	h=8
64	Birch	d=0.2	h=10
65	Holly	d=0.25	h=8
66	Laurel	multibole	h=8
67	Maple	d=0.2	h=10
68	Oak	d=0.7	h=15
69	Laurel	d=0.2	h=8
70	Laurel	d=0.2	h=8
71	Laurel	d=0.2	h=8
72	Yew	d=0.2	h=10
73	Laurel	d=0.25	h=8
74	Laurel	multibole	h=8
75	Laurel	multibole	h=8
76	Silver birch	d=0.4	h=10
77	Cypress	d=0.5	h=12
78	Holly	d=0.2	h=8
79	Laurel	d=0.2	h=8
80	Birch	multibole	h=10
81	Birch	multibole	h=10
82	Beech	d=0.2	h=12
83	Beech	multibole	h=12
84	Laurel	d=0.2	h=8
85	Unknown	d=0.8	h=12
86	Unknown	d=0.4	h=12
87	Unknown	d=0.5	h=12
88	Unknown	d=0.3	h=12
89	Unknown	d=0.5	h=12
90	Ash	d=0.2	h=10
91	Ash	d=0.2	h=10
92	Ash	d=0.15	h=10
93	Hawthorn	d=0.5	h=8
94	Silver birch	multibole	h=8
95	Silver birch	d=0.2	h=10
96	Laurel	d=0.2	h=10
97	Oak	d=0.4	h=12
98	Oak	d=0.3	h=12
99	Oak	d=0.15	h=8
100	Oak	d=0.15	h=8
101	Laurel	d=0.1	h=8
102	Laurel	multibole	h=8
103	Laurel	d=0.1	h=8
104	Laurel	d=0.1	h=8
105	Birch	d=0.5	h=8
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111	Birch	multibole	h=8
112	Birch	multibole	h=8
113	Birch	multibole	h=8
114	Beech	multibole	h=10
115	Unknown	multibole	h=8
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118	Birch	d=0.1	h=8
119	Birch	multibole	h=8
120	Laurel	d=0.15	h=8
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122	Laurel	d=0.15	h=8
123	Laurel	d=0.15	h=8
124	Laurel	d=0.15	h=8
125	Laurel	d=0.15	h=8
126	Laurel	d=0.15	h=8
127	Cypress	d= 1	h=12
128	Cypress	d=0.3	h=12
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131	Laurel	d=0.15	h=8
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133	Unknown	d=0.4	h=8
134	Laurel	d=0.15	h=8
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136	Laurel	multibole	h=8
137	Laurel	d=0.25	h=10
138	Laurel	d=0.25	h=10
139	Laurel	d=0.25	h=10
140	Laurel	multibole	h=10
141	Cypress	d=0.2	h=12
142	Beech	d=0.3	h=10
143	Beech	d=0.3	h=10
144	Laurel	d=0.2	h=10
145	Laurel	d=0.2	h=10
146	Laurel	d=0.2	h=10
147	Laurel	d=0.2	h=10
148	Maple	multibole	h=10
149	Laurel	multibole	h=12
150	Laurel	d=0.2	h=10
151	Ash	d=0.4	h=12
152	Laurel	d=0.2	h=8
153	Ash	d=0.4	h=12
154	Laurel	multibole	h=8

Survey control

Stn	Easting	Northing	Height
H1	542244.011	136639.659	128.785
H2	542339.021	136666.267	126.884
H3	542412.769	136677.623	126.889
H4	542401.702	136664.722	126.837
H5	542336.588	136651.938	127.012
H6	542344.669	136649.926	127.253
H7	542355.820	136649.882	126.986
H8	542361.046	136643.224	127.079
H9	542356.962	136636.204	127.378
H10	542344.828	136637.343	129.343
H11	542351.364	136625.846	129.523
H12	542355.797	136610.825	129.304
H13	542363.522	136606.688	128.216
H14	542363.626	136593.949	128.716
H15	542373.174	136582.611	128.082
H16	542359.562	136576.921	128.755
H17	542377.532	136600.011	127.976
H18	542386.995	136596.979	127.918
H19	542395.699	136592.625	127.340
H20	542407.665	136601.462	127.106
H21	542373.960	136607.388	127.856
H22	542385.346	136622.114	127.745
H23	542396.556	136621.491	127.468
H24	542386.718	136636.201	127.294
H25	542391.231	136641.161	126.768
H26	542387.105	136651.105	126.750
H27	542387.139	136663.601	126.586
H28	542379.136	136664.546	126.564
H29	542376.206	136673.352	126.612
H30	542371.777	136664.335	126.503
H31	542373.740	136655.034	126.735
H32	542365.184	136649.898	126.965

HOOK SURVEY
Land & Building Surveyors
www.hooksurvey.com

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Dartford, Kent
DA2 7ER
Email - mail@hooksurvey.com
Tel - 01322 277221

Midlands Office
42 Hanson Avenue
Shipston-on-Stour
Warwickshire
CV36 4HS
Email - midlands@hooksurvey.com
Tel - 01608 523118

www.hooksurvey.com

Project :
Land at Hammerwood Road
Ashurst, East Grinstead RH19 3RX

Client :
Turnbull Land

Drawing title :
Topographical Survey

Job No. :	Dwg No. :	Revision :
S22/8940	S22/8940/01	-
Scale : 1:200	Date: July 2022	Drawn by : W.M.

Grid & Levels related to :
Ordnance Survey (OSGB36) coordinate system and level data defined by Geoid model OSTN15, based around 3 survey stations with a scale factor of 1.00000