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Flood Risk Assessment

Proposed Residential Development at

Land at Beechlands Road, Medstead

On behalf of

Bargate Homes

April 2024

Document History and Status

Project Number 23066

Date	Version	Prepared By	Reviewed By	Approved By
28 June 2019	DRAFT 1.0	Martin Kempshall CEng MICE	Steve Doughty Director	Stuart Magowan IEng MICE
27 Sept 2019	1.1	Martin Kempshall CEng MICE	Stuart Magowan IEng MICE	Stuart Magowan IEng MICE
12 Nov 2019	1.2	Martin Kempshall CEng MICE	Stuart Magowan IEng MICE	Stuart Magowan IEng MICE
12 April 2024	2.0	Steve Doughty Director	Stuart Magowan IEng MICE	Stuart Magowan IEng MICE
24 April 2024	2.1	Sonya Macandrew BEng GMICE	Steve Doughty Director	Steve Doughty Director
29 April 2024	2.2	Sonya Macandrew BEng GMICE	Stuart Magowan IEng MICE	Stuart Magowan IEng MICE

CONTENTS

1 Non Technical Summary

1.1 This Flood Risk Assessment has been undertaken in accordance with the National Planning Policy Framework on behalf of Bargate Homes in support of an Outline Planning Application for the construction of up to 70 residential dwellings with associated access roads, car parking and landscaping on land at Beechlands Road, Medstead, Alton, Hampshire.

1.2 This Assessment is to be read in conjunction with all planning, architectural and other reports that accompany the Outline Planning Application for the proposed development.

1.3 The site is located in Flood Zone 1.

1.4 The proposed development will incorporate a sustainable drainage system which will discharge surface water by infiltration to ground and provide storage for all storm return periods up to and including the 1:100 year rainfall event with an allowance for climate change.

1.5 Foul water will be discharged in part via gravity and in part via a pumped system to the existing public foul sewer located beneath Boyneswood Lane to the south of the site.

1.6 This report concludes that the site is not at risk of flooding from tidal or fluvial sources or groundwater and is not a significant risk of flooding from overland flows.

1.7 In terms of flood risk the proposed development is suitable at this location.

2 Planning Policy Context

2.1 National Planning Policy Framework

2.1.1 With regard to planning and flood risk the National Planning Policy Framework states that *'when determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment.*

Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:

Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:

a) *within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;*

b) *the development is appropriately flood resistant and resilient, such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment;*

c) *it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;*

d) *any residual risk can be safely managed; and*

e) *safe access and escape routes are included where appropriate, as part of an agreed emergency plan.'*

2.1.2 With regard to major developments the NPPF states that *'major developments should incorporate sustainable drainage systems unless there is clear evidence that this would be inappropriate. The systems used should:*

a) *take account of advice from the lead local flood authority;*

b) *have appropriate proposed minimum operational standards;*

c) *have maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development; and*

d) *where possible, provide multifunctional benefits.'*

2.1.3 Major development is defined as follows:

'For housing, development where 10 or more homes will be provided, or the site has an area of 0.5 hectares or more. For non-residential development it means

additional floorspace of 1,000m^2 or more, or a site of 1 hectare or more, or as otherwise provided in the Town and Country Planning (Development Management Procedure) (England) Order 2015.'

2.1 Non Technical Standards for SuDS

2.1.1 The Non Technical Standards for SuDS dated March 2015 are intended to be used in conjunction with the National Planning Policy Framework.

2.1.2 **Non Statutory Standard S7** states that *'the drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur on any part of the site for a 1 in 30 year rainfall event.'*

2.1.3 **Non Statutory Standard S8** states that *'the drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur during a 1 in 100 year rainfall event in any part of: a building (including a basement); or in any utility plant susceptible to water (e.g. pumping station or electricity substation) within the development.'*

2.2 Lead Local Flood Authority

2.2.1 Hampshire County Council became a Lead Local Flood Authority under the Flood and Water Management Act 2010 and was given a series of new responsibilities to coordinate the management of local flood risk.

2.2.2 As part of their role Hampshire County Council has commissioned and produced the following documents:

- Preliminary Flood Risk Assessment - April 2011
- Local Flood Risk Management Strategy - October 2020

The above documents have been reviewed in the preparation of this report.

2.3 East Hampshire District Council

2.3.1 East Hampshire District Council has commissioned and produced the following document:

- East Hampshire Level 1 Strategic Flood Risk Assessment - May 2022

2.3.2 The Strategic Flood Risk Assessment has been reviewed in the preparation of this report.

2.4 Partnership for South Hampshire (PfSH)

2.4.1 PfSH is a partnership of Hampshire County Council, the Unitary Authorities of Portsmouth, Southampton and the Isle of Wight and district authorities of Eastleigh, East Hampshire, Fareham, Gosport, Havant, New Forest, Test Valley and Winchester.

2.4.2 PfSH produced a Strategic Flood Risk Assessment dated December 2007 which was updated in February 2016 and has been reviewed in the preparation of this report.

2.5 Local Planning Policy

2.5.1 The East Hampshire Local Plan Joint Core Strategy was adopted by East Hampshire District Council on 8 May 2014.

2.5.2 The new East Hampshire Local Plan Documents consist of three parts:

- Local Plan Part 1 Joint Core Strategy was adopted in May 2014
- Local Plan Part 2 Housing and Employment Allocations was adopted in April 2016
- Local Plan Part 3 is yet to be finalised and adopted by East Hampshire District Council and is presently undergoing consultation.

2.5.3 The following policy is of specific relevance to this Flood Risk Assessment:

Policy CP25 Flood Risk Development of the adopted Joint Core Strategy states *'in areas at risk of flooding, now and in the future, as identified on the latest Environment Agency flood risk maps and the Council's Strategic Flood Risk Assessment will be permitted provided that:*

a) It meets the sequential and exception test (where required) as outlined in Government guidance;

b) A site specific flood risk assessment demonstrates that the development including the access will be safe without increasing flooding elsewhere and where possible, will reduce flood risk overall;

c) The scheme incorporates flood protection, flood resilience and resistance measures appropriate to the character and biodiversity of the area and the specific requirements of the site;

d) Appropriate flood warning and evacuation plans are in place

e) New site drainage systems are designed taking account of events which exceed the normal design standard.

All development will be required to ensure that there is no net increase in surface water runoff. Priority will be given to incorporating SUDs (sic) (Sustainable Drainage Systems) to manage surface water drainage, unless it can be demonstrated that SUDs (sic) are not appropriate. Where SUDs (sic) are provided, arrangements must be put in place for their whole life management and maintenance.

Specific areas in the District which overlay the Chalk geology can be prone to groundwater flooding as shown on the Council's Strategic Flood Risk Assessment maps. Rivers in East Hampshire which are sourced in the chalk area are the River Meon, River Wey and Lavant Stream and thus groundwater fed. Development should be avoided in areas at risk from, susceptible to, or have a history of groundwater flooding. If this is not possible then the development should be designed to incorporate flood resistance and resilience measures.'

3 Existing Site

3.1 Site Location

3.1.1 The development site is located on land west of Beechlands Road, Medstead, Alton at Ordnance Survey reference SU 667 357. The nearest postcode is GU34 5EQ.

Image 1: Site Location

3.1.2 The site is bounded to the east and northwest by residential dwellings, the southwest by Stoney Lane and open fields, and the southeast by Boyneswood Lane.

3.1.3 A copy of the site location plan is located in Appendix 1 at the rear of this report.

3.2 Site Description

3.2.1 The site is approximately 3.3ha in area and currently comprises undeveloped agricultural grazing land.

3.2.2 Existing ground levels are highest at the southeast corner of the site at approximately 208m AOD. The site falls towards its northwest boundary to a level of approximately 194m AOD.

3.2.3 A copy of the existing site layout plan is located in Appendix 2 at the rear of this report.

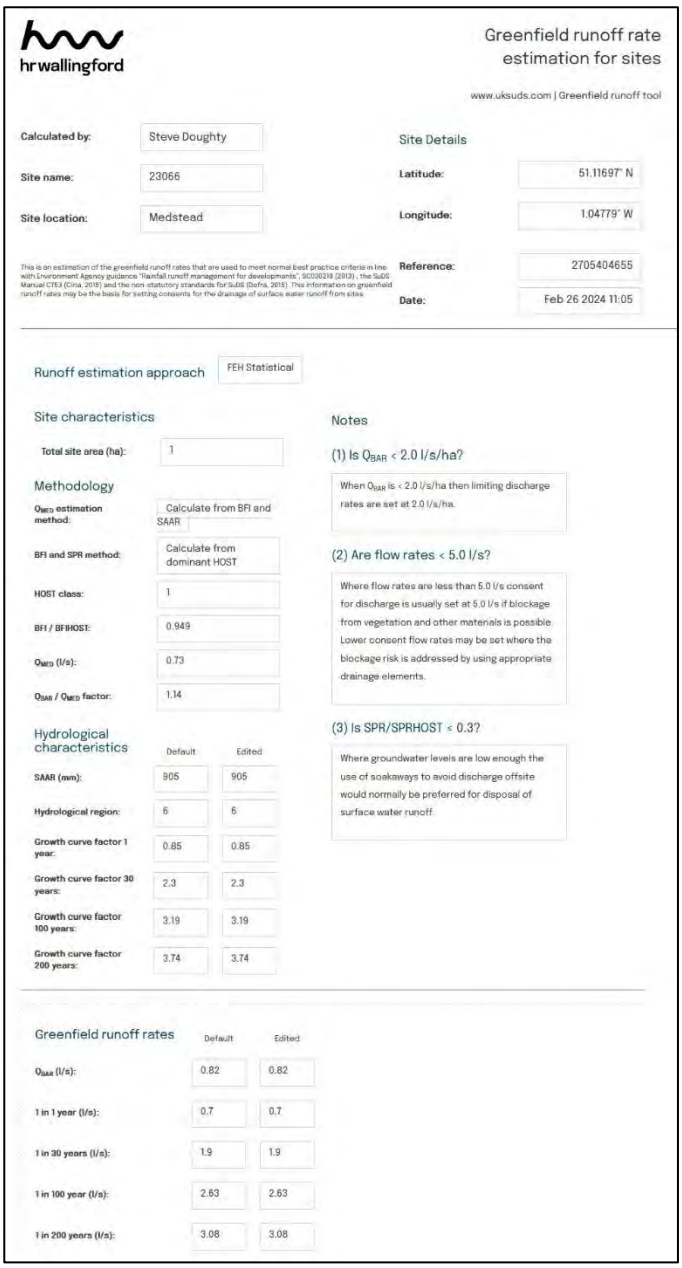
3.3 Existing Drainage

3.3.1 The site currently has no positive surface water or foul water drainage infrastructure.

3.3.2 Rainfall on the site currently discharges in part to ground and in part overland as a greenfield runoff to Stoney Lane to the northwest and Boyneswood Lane to the south.

3.3.3 Pre-developed greenfield runoff rates have been established using the HR Wallingford tool for Greenfield runoff estimation based on the FEH Statistical method for rainfall estimation.

3.3.4 The Hydrology of Soil Type (HOST) has been confirmed by the National Soil Resources Institute at Cranfield University as soil type 1 which is classified as *'Free draining permeable soils on chalk and chalky substrates with relatively high permeability and moderate storage capacity.'*



hr wallingford

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Steve Doughty
Site name:	23066
Site location:	Medstead

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.

Site Details

Latitude:	51.11697° N
Longitude:	1.04779° W
Reference:	2705404655
Date:	Feb 26 2024 11:05

Runoff estimation approach: FEH Statistical

Site characteristics

Total site area (ha):	1

Methodology

Q_{MED} estimation method:	Calculate from BFI and SAAR
BFI and SPR method:	Calculate from dominant HOST
HOST class:	1
BFI / BFIHOST:	0.949
Q_{MED} (l/s):	0.73
Q_{BAR} / Q_{MED} factor:	1.14

Hydrological characteristics

	Default	Edited
SAAR (mm):	905	905
Hydrological region:	6	6
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Growth curve factor 200 years:	3.74	3.74

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited
Q_{BAR} (l/s):	0.82	0.82
1 in 1 year (l/s):	0.7	0.7
1 in 30 years (l/s):	1.9	1.9
1 in 100 year (l/s):	2.63	2.63
1 in 200 years (l/s):	3.08	3.08

Image 2: Greenfield Runoff Calculation

3.3.5 The pre-developed greenfield runoff rates are as follows:

- Q_{bar} 0.82 l/s/ha
- 1:30 year 1.90 l/s/ha
- 1:100 year 2.63 l/s/ha

3.3.6 There is a 150mm diameter foul public sewer located beneath Boyneswood Lane to the south of the site.

3.3.7 A copy of the sewer records is located in Appendix 3 at the rear of this report.

3.4 Geology and Groundwater

3.4.1 British Geological Survey maps and borehole information indicates that the locality of the is underlain by superficial clay and flint formation to an approximate depth of 5.5m overlying chalk bedrock.

3.4.2 Site investigation undertaken by Wilson Bailey in September 2015 on the development site immediately east of the site on the eastern site of Beechlands Road identified clay between 1m and 5m below ground level overlaying the chalk substrata.

3.4.3 Infiltraion rates for the neighbouring site to the east were undertaken at a depth of 4.5m below ground level and identified a soakage rate within the chalk substrata of $4.5x10^{-5}$ m/s.

3.4.4 Groundwater was not encountered within borehole data hosted on the British Geological Survey website which was completed to depths of up to 17m.

3.4.5 The online “Magic Map” available from Defra confirms that the site is located above a Principal Aquifer classified as having an intermediate to high vulnerability.

3.4.6 A copy of the available geological borehole data and extracts from the local site investigation is located in Appendix 4 at the rear of this report.

4 Flood Zone, and Flood History

4.1 Tidal Flood Zone

4.1.1 The Environment Agency online mapping confirms that the site is located in Flood Zone 1 and is not at risk of flooding from rivers or the sea from anything less extreme than a 1:1,000 year flood event.

4.2 Fluvial Flood Zone

4.2.1 The Environment Agency online mapping confirms that the site is located in Flood Zone 1 and is not at risk of fluvial flooding from anything less extreme than a 1:1,000 year flood event.

4.3 Flood History

4.3.1 Environment Agency

4.3.1.1 The Environment Agency online map of historic flood incidents does not identify any historic incidents of flooding affecting the site or its immediate vicinity.

4.3.2 Hampshire County Council

4.3.2.1 Neither the Preliminary Flood Risk Assessment dated April 2011 nor the Local Flood Risk Management Strategy dated October 2020 identify any specific flood incidents in the immediate vicinity of the site.

4.3.3 East Hampshire District Council

4.3.3.1 Figure 7A of the East Hampshire Level 1 Strategic Flood Risk Assessment dated May 2022 does not identify any historic flood incidents in the immediate vicinity of the site. The nearest historic recorded flood event is located over 500m east of the site on Lymington Bottom Road.

4.3.4 Copies of the available flood maps are located in Appendix 5 at the rear of this report.

5 Flooding Potential

5.1 Tidal Flooding

5.1.1 The site is located approximately 35km from the coast and is not at risk of tidal flooding.

5.2 Fluvial Flooding

5.2.1 The area of the proposed site is within Flood Zone 1 and is not at risk of fluvial flooding from anything less extreme than a 1:1,000 year flood event.

5.3 Groundwater Flooding

5.3.1 The British Geological Survey borehole log information records show that groundwater was not encountered within the local borehole data which was completed to depths of up to 17m.

5.3.2 There are no records of groundwater flooding identified within Hampshire County Council's Preliminary Flood Risk Assessment dated April 2011 or in their Local Flood Risk Management Strategy dated October 2020, nor in the Strategic Flood Risk Assessment dated December 2007 and updated in 2016 published by The Partnership for Urban South Hampshire.

5.3.3 Figure 4A of the East Hampshire Level 1 Strategic Flood Risk Assessment identifies the site as having limited potential for groundwater flooding to occur.

5.4 Overland Flow

5.4.1 The Environment Agency maps identify parts of the site to be at low risk of flooding from overland surface water flows.

5.4.2 The locations identified are minimal and estimated as being below 300mm in depth.

5.4.3 The flood mapping contained within Figure 10A of the East Hampshire SFRA also identifies the site as being at low risk of surface water flooding, which generally align with the Environment Agency surface water mapping.

5.5 Flood Routing

5.5.1 The natural route for flood waters to dissipate from the northern section of the site is towards Stoney Lane and from the southern section of the site is towards Boyneswood Lane.

5.5.2 There is no associated flood risk to the downstream catchment area.

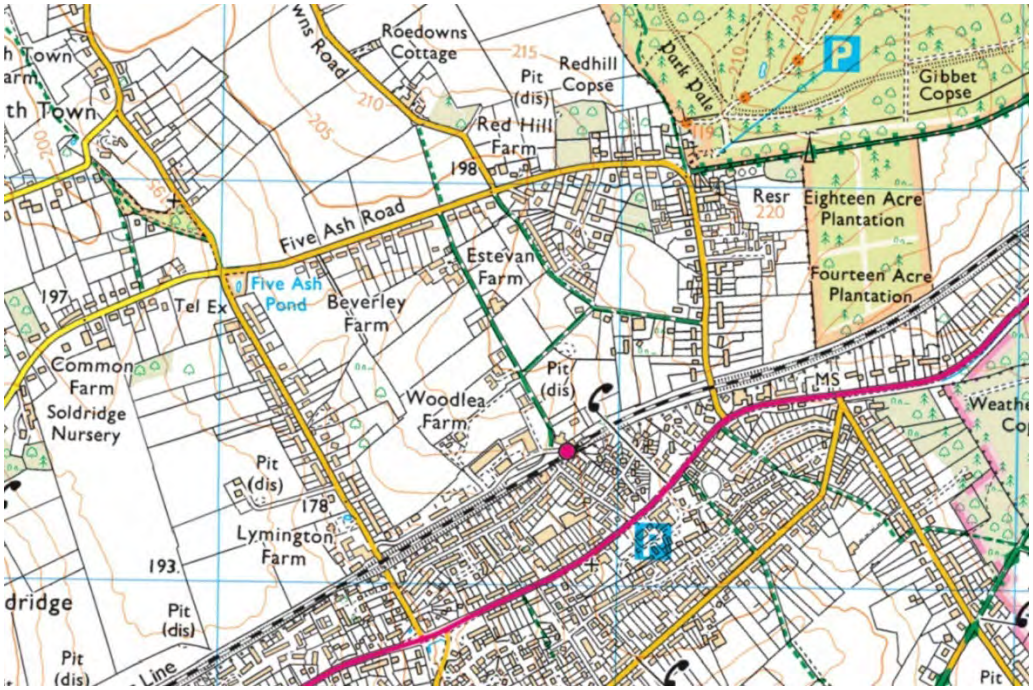


Image 3: Local Topography

6 Development Proposals

6.1 Description

6.1.1 The development proposals are for the construction of up to 70 residential dwellings resulting in a gross density of 21.3 dwellings per hectare together with associated access roads, car parking and landscaping and approximately 0.35ha of public open space.

6.1.2 The estimated impermeable areas of the various positively drained elements of the development are summarised as follows:

- Roof Areas 5,104m^2
- Access Road 7,051m^2
- Private Drives 3,325m^2

6.1.3 Copies of the outline proposed site layout plan and estimated positively drained areas plan are located in Appendix 6 at the rear of this report.

6.2 Surface Water Drainage

6.2.1 CIRIA report C753 The SuDS Manual-v6 provides guidance on surface water drainage. The aim for surface water runoff is to match greenfield runoff rates and volumes where reasonably achievable.

6.2.2 For surface water discharge, the drainage hierarchy notes the following list of drainage options in order of preference:

1 Infiltration to ground

2 Discharge to a watercourse

3 Discharge to a surface water sewer

4 Discharge to a foul water sewer

6.2.3 The proposed surface water drainage strategy will be based on infiltration to ground within the chalk substrata which is typically between 1 and 5m below ground level.

6.2.4 Preliminary calculations have been prepared based on an assumed infiltration rate of 4.5x10^{-5} m/s as identified within the chalk substrata on the site immediately to the east on the eastern side of Beechlands Road.

6.2.5 Site specific infiltration testing to BRE Digest 365 will be required to inform the detailed design.

6.2.6 An additional 10% of roof area has been included within the calculations to account for potential future urban creep amounting to a total potential impermeable site area of approximately 15,990m^2.

6.2.7 A trench soakaway backfilled with a 30% voided stone will be constructed along the centreline of the onsite highways and intersecting the chalk substrata.

6.2.8 The trench will accept surface water from all positively drained areas of the site and will be sized with sufficient storage to accommodate a 1:100 year storm event including an additional 45% to account for the predicted effects of future climate change.

6.2.9 Impermeable baffles will be required at suitable lengths to ensure that surface water cannot wholly migrate to the lowest points of the site but is contained in suitably sized areas along the onsite highways as it infiltrates to ground.

6.2.10 The drainage proposals will be confirmed at detailed design stage subject to further site investigations and infiltration testing.

6.3 Foul Drainage

6.3.1 Foul water will be discharged in part via gravity and in part via a pumped system to the recently installed 150mm diameter public foul sewer located beneath Boyneswood Lane to the south of the site.

6.3.2 A copy of the preliminary drainage strategy plan together with calculations is located in Appendix 7 at the rear of this report.

6.4 Water Quality

6.4.1 The proposed development is for residential use. In accordance with CIRIA SuDS Manual 2015 (Report C753), the pollution hazard level for this type of development is classified as between very low and low depending on the use / area of the site.

6.4.2 The surface water scheme will include mitigation to ensure that surface water is suitably treated and any pollution risk adequately managed prior to discharge.

6.4.3 Table 26.2 in Chapter 26 of CIRIA report C753 The SuDS Manual provides Pollution Hazard Indices for varying land types. Those of relevance to the development proposals are as follows:

Land Use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydrocarbons
Residential roofs	Very Low	0.2	0.2	0.05
Individual property driveways, residential car park, low-traffic roads	Low	0.5	0.4	0.4

Table 1: Pollution Hazard Indices

6.4.4 Where multiple drainage components are used in series the individual mitigation index of secondary and tertiary components is lowered by 50% due to reduced performance associated with primary treatment.

SuDS Type	Total suspended solids (TSS)	Metals	Hydrocarbons
Permeable pavement	0.7	0.6	0.7
Soakaway with 300mm minimum depth underlying soil drainage media (at 50%)	0.2	0.2	0.2
Total Provision	**0.9**	**0.8**	**0.9**

Table 2: Pollution Mitigation Provision

6.4.5 An outline drainage maintenance schedule is located in Appendix 8 at the rear of this report.

7 Safe Development

7.1 Flood Zone Compatibility

7.1.1 The site and its wider area are in Flood Zone 1 and will remain so for the foreseeable future.

7.1.2 With reference to Annex 3 of the National Planning Policy Framework and Table 2 of the Government Guidance on Flood Risk and Coastal Change at https://www.gov.uk/guidance/flood-risk-and-coastal-change:

- Annex 3: Flood Risk Vulnerability Classification

  Residential development is classified as More Vulnerable.

- Table 2: Flood Risk Vulnerability and Flood Zone Compatibility

  More Vulnerable development is considered appropriate in Flood Zones 1 and 2.

7.2 Risk to Others

7.2.1 The proposed surface water drainage system will be designed to current standards incorporating SuDS elements providing treatment, attenuation and storage which will minimise runoff leaving the site during times of heavy rain.

7.2.2 Allowance has been made for a 45% increase in rainfall intensities which accords with the latest figures published by the Environment Agency and with the requirements under the National Planning Policy Framework.

7.2.3 The proposed drainage system will incorporate sufficient treatment prior to final discharge thus mitigating the risk of pollution from the site.

7.2.4 The preliminary surface water drainage design ensures that runoff from the proposed development will be discharged by infiltration to ground and the greenfield runoff rates will therefore be reduced.

7.2.5 Sewerage undertakers have an obligation to upgrade the existing networks if a connection to an equivalent or larger sized public sewer is technically achievable.

7.2.6 The residual risk of sewer flooding from this development for the foreseeable future is therefore negligible.

8 Conclusions

8.1 The site is located within Flood Zone 1 and is not at risk of flooding from tidal or fluvial sources or from groundwater.

8.2 The Environment Agency maps identify parts of the site to be at low risk of flooding from overland surface water. The locations identified are however minimal and with an inherently low vulnerability the proposed development is not at significant risk.

8.3 There are no historic records of flooding from any source affecting the site or its immediate area.

8.4 A suitable SuDS drainage system is proposed which accords with the requirements of national and local policy.

8.5 Preliminary calculations indicate that surface water runoff generated by the proposed development can be attenuated on site for all rainfall events up to the 1:100 year event including an allowance for climate change.

8.6 Water quality improvement will be provided to mitigate against any risk to any receiving waterbody.

8.7 Foul water will be discharged in part via gravity and in part via a pumped system to the existing public foul sewer located beneath Boyneswood Lane to the south of the site.

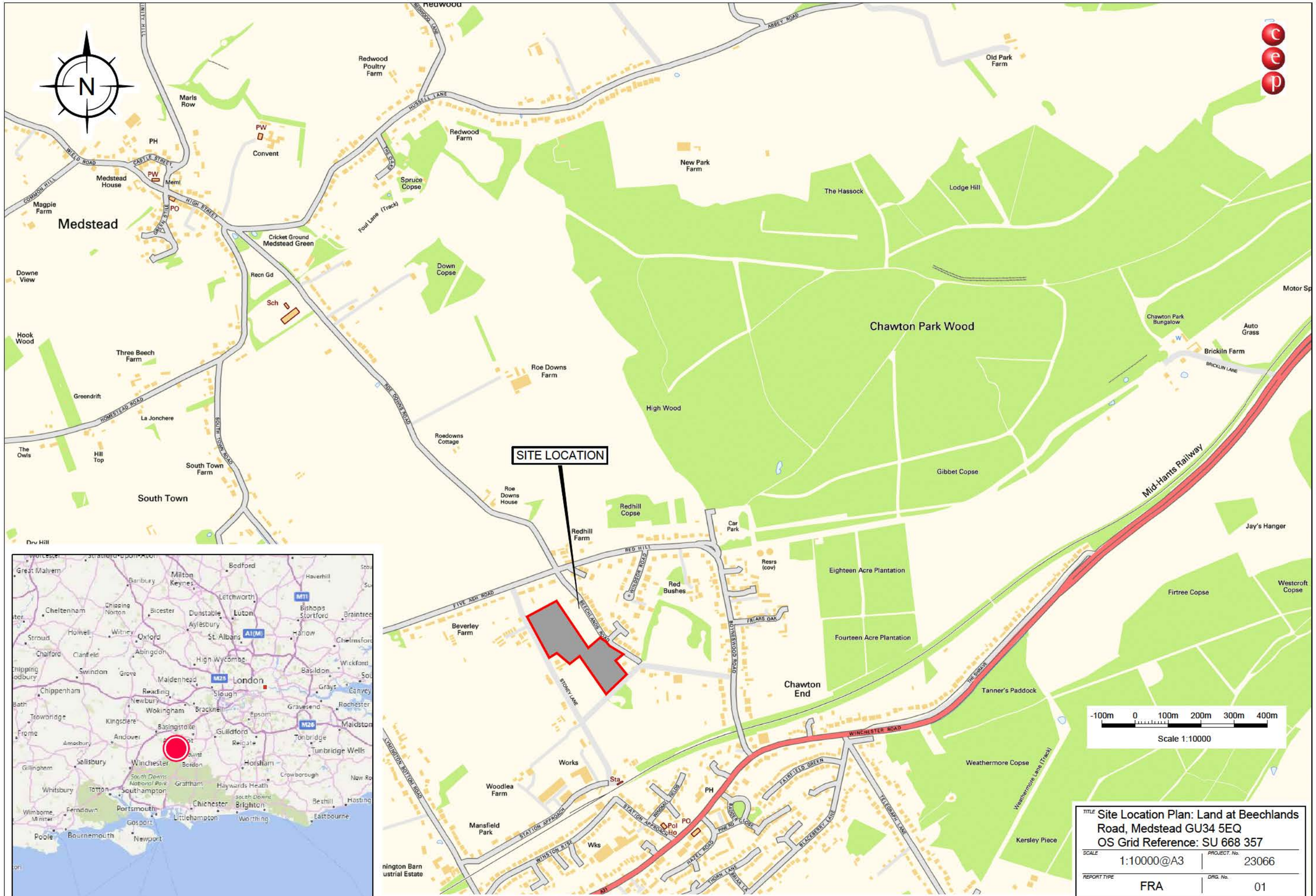
8.8 In terms of flood risk planning the proposed development is safe and will manage surface water from all rainfall events up to the 100 year plus climate change event so as not to increase flood risk elsewhere.

8.9 The development proposals are suitable at this location.

9 List of Appendices, Images and Tables

Appendix 1

Site Location Plan



TITLE: Site Location Plan: Land at Beechlands Road, Medstead GU34 5EQ
OS Grid Reference: SU 668 357

SCALE	PROJECT. No.
1:10000@A3	23066
REPORT TYPE	DRG. No.
FRA	01

Appendix 2

Existing Site Layout Plan

TITLE
Existing Site Layout Plan

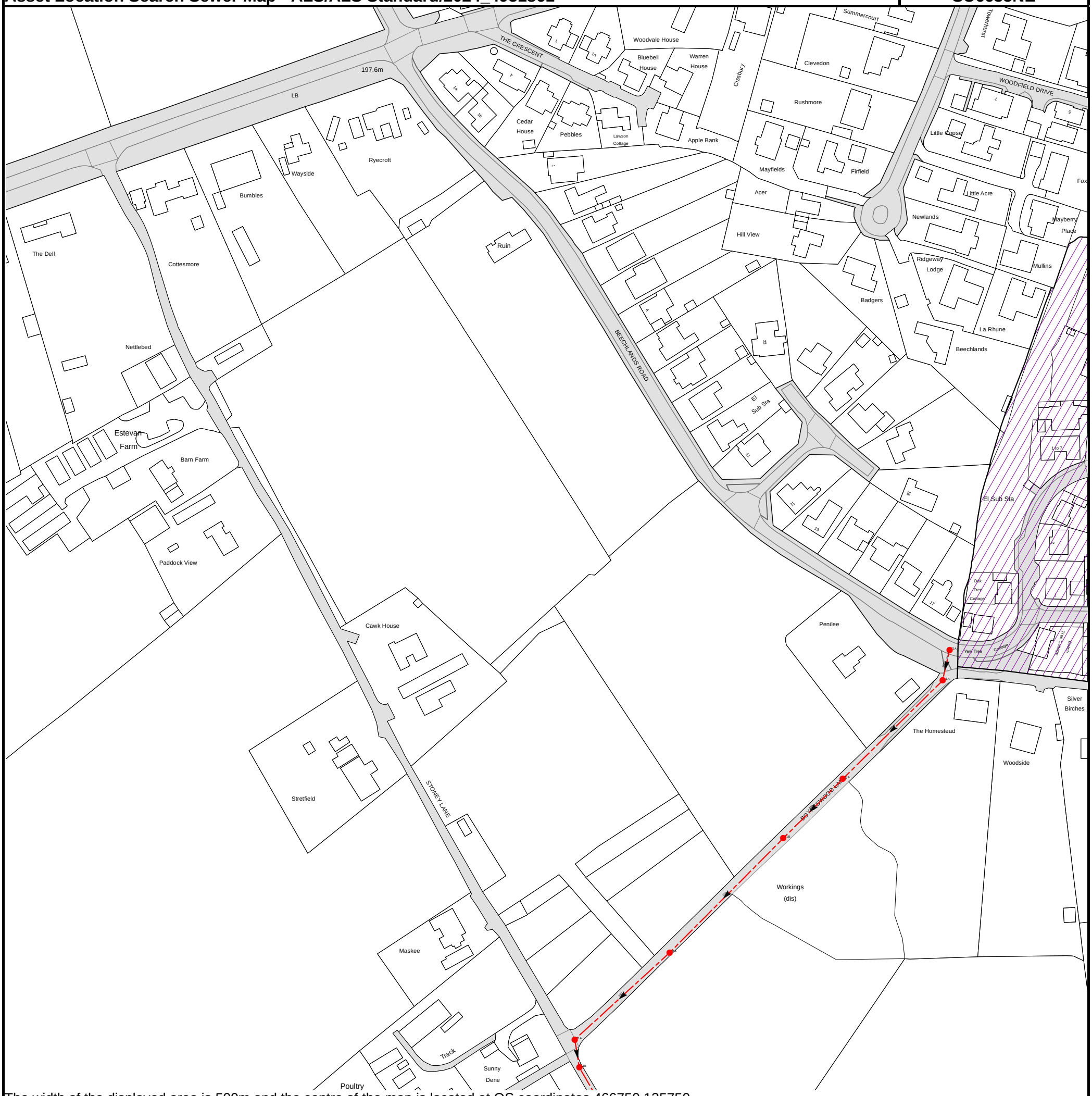
SCALE	PROJECT. No.
1:1250 @ A3	23066
REPORT TYPE	DRG. No.
FRA	02 A

Appendix 3

Sewer Records

Asset Location Search Sewer Map - ALS/ALS Standard/2024_4951861

SU6635NE



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 466750,135750

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

Based on the Ordnance Survey Map (2020) with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.

NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
751B	199.27	198.08
751A	199.61	198.21
851A	201.52	200.07
861B	204.49	202.91
861A	204.47	n/a
961A	209.2	207.77
971A	209.87	208.47

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

Foul Sewer: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.

Surface Water Sewer: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.

Combined Sewer: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.

- Storm Sewer
- Sludge Sewer
- Foul Trunk Sewer
- Surface Trunk Sewer
- Combined Trunk Sewer
- Foul Rising Main
- Surface Water Rising Main
- Combined Rising Main
- Vacuum
- Thames Water Proposed
- Vent Pipe
- Gallery

Other Sewer Types (Not operated and maintained by Thames Water)

- Sewer
- Culverted Watercourse
- Proposed
- Decommissioned Sewer
- Content of this drainage network is currently unknown
- Ownership of this drainage network is currently unknown

Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas

- Air Valve
- Meter
- Dam Chase
- Vent
- Fitting

Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

- Ancillary
- Drop Pipe
- Control Valve
- Weir

End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol. Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

- Inlet
- Outfall
- Undefined End

Other Symbols

Symbols used on maps which do not fall under other general categories.

- Change of Characteristic Indicator
- Public / Private Pumping Station
- Invert Level
- Summit

Areas

Lines denoting areas of underground surveys, etc.

- Agreement
- Chamber
- Operational Site

Ducts or Crossings

- Casement — Ducts may contain high voltage cables. Please check with Thames Water.
- Conduit Bridge
- Subway
- Tunnel

Notes:

1) All levels associated with the plans are to Ordnance Datum Newlyn.
2) All measurements on the plan are metric.
3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate the direction of flow.
4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.
5) 'na' or '0' on a manhole indicates that data is unavailable.
6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimeters. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement.

If you are unsure about any text or symbology, please contact Property Searches on 0800 009 4540.

Appendix 4

Geological Borehole Data and Extracts from Local Site Investigation


Redhill Copse
Roe Downs Rd
Red Hill
SU63NE29
Windsor Rd
Red Bushes Close
Woodfield Dr
The Crescent
Beechlands Rd
Five Ash Rd
Eighteen Acre Plantation
Friars Oak
Elderberry Way
Boyneswood Rd
Medstead
Stoney La
Mulberry Gardens
Boyneswood La
Fourteen Acre Plantation
Harfield Crescent
Holland Dr
Oakhurst Dr
Handyside Pl
Winchester Rd
SU63NE30
Fairfield Green
Medstead and
Four Marks
Miller Dr
Lymington Bottom Rd
Nelson Dr
Walkers Rd
SU63NE17
Ivatt Way
Rosings Grove
Four Marks
Pine Rd
Badger Close

British Geological Survey

HYDROGEOLOGY RESEARCH GROUP

ACC NO 45781

300

SU63/132

Form WR-38 (BGS)

BOREHOLE RECORD

THAMES EA

SU63 NE/29

A SITE DETAILS		
Borehole drilled for	OWNER : MR PRICE	
Location	MOUNTFIELD, MEDSTEAD GU34 5EE	
NGR (8 fig.)	SU 6704 3602	Please attach site plan
Ground Level (if known)		
Drilling Company		
Date of Drilling	Commenced PRE - 1936	Completed

B CONSTRUCTION DETAILS

Borehole Datum (if not ground level) _____ above / m below GL

WELL c 11' DEEP c 6' DIAMETER

(point from which all measurements of depth are taken e.g. flange, edge of chamber, etc.)

Borehole drilled diameter _____ mm from _____ to _____ m/depth

DEEPENED BY B/H. OF UNKNOWN DEPTH _____ mm from _____ to _____ m/depth

_____ mm from _____ to _____ m/depth

Casing material _____ diameter _____ mm from _____ to _____ m/depth
and type (e.g. if plain steel, plastic slotted)

_____ diameter _____ mm from _____ to _____ m/depth

_____ diameter _____ mm from _____ to _____ m/depth

_____ diameter _____ mm from _____ to _____ m/depth

Grouting details _____

Water struck at _____ m (depth below datum — mbd)

_____ m (depth below datum — mbd)

Rest water level on completion _____ mbd

C TEST PUMPING SUMMARY (Please supply full details on Forms WR-39)

Test Pumping Datum (if different from borehole datum) _____ m above / below borehole datum (mbd)

Pump Suction depth _____ mbd

Water Level (Start of Test) _____ mbd

Water Level (End of Test) _____ mbd

Pumping rate _____ m^3/d:l/s

for _____ days/hours

Recovery to _____ mbd in _____ mins: hrs: days
(from end of pumping)

Date(s) of measurements _____

Please supply chemical Analysis if available.

SU63/132

D STRATA LOG

Geological Classification (BGS only)	Description of strata	Thickness m	Depth m
	NOT KNOWN		

(continue on separate page if necessary

Other comments (e.g. gas encountered, saline water intercepted, etc.)
WELL/BOREHOLE IN USE FOR DOMESTIC PURPOSES (FEB 2006) NO FURTHER DETAILS KNOWN INFORMATION FROM THAMES EA.

FOR OFFICIAL USE ONLY

FILE	CONSENT NO.	NGS REF NO.
LIC NO.	PURPOSE	NRA REF NO.
DATE REC:	COPY TO:	ENTERED BY:

RECORD OF WELL

For Institute use only Licence No. NN.....

SU 63/90

300/470

At ....Four Marks OBH.....
.....No. 658.....
Town or Village ..FOUR MARKS.....
County .....HAMPSHIRE.....

EXACT SITE OF WELL

Six-inch National Grid sheet and reference .....SU 6631 3522 SU 63 NE/17
For ....Southern Water Authority.....
State whether owner, tenant, builder, contractor, consultant, etc.: ....owner.....
Address (if different from above) .....
.....

Level of ground surface above sea level (O.D.) .....585 3/4..... ft (....178.55.....m)

*DELETE AS NECESSARY

If well top is not at ground level state how far above:* below: .....ft (.....m)
SHAFT.....ft (.....m); diameter.....ft (.....m);
HEADINGS (please attach details—dimensions and directions)
BORE...261 1/2...ft (.....~~80~~ 79.7m); diameter: at top.....in (.....mm);
at bottom.....in (.....mm)
Full details of permanent lining tubes (position, length, inner and outer diameters, plain slotted etc.):
.....
.....
.....
.....

TEST CONDITIONS

Water struck at depths of .....ft (.....m) below well top
Rest level of water.....ft (.....m) above* below well top. Suction at..... ft (.....m)
Yield on..... hours'* days' test pumping at.....galls per ..... (..... l/s) with
depression to.....ft (.....m) below well top. Recovery to rest level in ..... mins* hours
Capacity of pump.....g.p.h. (.....l/s)
Date of measurements.....

NORMAL CONDITIONS

DESCRIPTION OF PERMANENT PUMPING EQUIPMENT:
Make and or type ..... Motive power.....
Capacity.....galls (.....m³) per hour. Suction at ..... ft (.....m)
below well top. Amount pumped.....galls (.....m³) per day. Estimated
consumption .....galls (.....m³) per week
Well made by ..... Date of sinking.....

ADDITIONAL NOTES ANALYSIS (please attach copy if available)

LOG OF STRATA OVERLEAF

in chalk

Received from ..Thames WA...
.....
.....
Date ..13-4-82.....
Observation well.....
Recorder.....
ER log .....
Site marked on

WR38: Borehole record form

Borehole record

Nicholls Boreholes

British Geological Survey

Environment Agency

Water Resources Act 1991 (as amended by the Water Act 2003)

A Site details

Borehole drilled for Mr Paul Woodley

Location ASSISI, The Shrave, Four Marks, GU34 5BJ

NGR (ten digits) SU67657 35438 Please attach site plan

Ground level (if known) _____ metres Above Ordnance Datum

Drilling company Nicholls Boreholes

Date drilling commenced 12/10/2016 (DD/MM/YYYY) Completed 12/10/2016 (DD/MM/YYYY)

B Construction details

Borehole datum (if not ground level) _____ metres (m). Please tick if this is above ☐ or below ☐ ground level.
(point from which all measurements of depth are taken, for example, flange, edge of chamber)

Borehole drilled diameter 200 mm from 0 to 17 m/depth
_____ mm from _____ to _____ m/depth
_____ mm from _____ to _____ m/depth
_____ mm from _____ to _____ m/depth

Casing material and type (for example, if plain steel, plastic slotted). Plain Plastic diameter 165 mm from 0 to 12 m/depth
Please record permanent casing details, not temporary casing.

Casing material Slotted Plastic diameter 165 mm from 12 to 17 m/depth
Casing material _____ diameter _____ mm from _____ to _____ m/depth
Casing material _____ diameter _____ mm from _____ to _____ m/depth

Grouting details _____

Water struck at 1. N/A m (depth below datum - mbd) 2. _____ m (mbd)
3. _____ m (mbd) 4. _____ m (mbd)

C Test pumping summary (Please supply full details on form WR39)

Test pumping datum (if different from borehole datum) _____ m. Please tick if this is above ☐ or below ☐ ground level.

Pump suction depth _____ mbd

Water level (start of test) _____ mbd

Water level (end of test) _____ mbd

Type of test (for example, bailer, step, constant rate) _____

Pumping rate _____ m^3/hour ☐ or litres/second ☐. Please tick as appropriate.

for days, _____ hours, mins _____

Recovery to _____ mbd in days, _____ hours, mins _____
(from end of pumping)

Date(s) of measurements Pump started (DD/MM/YYYY)

Pump stopped _____ (DD/MM/YYYY)

Please supply chemical analysis if available. If you have included this please tick this box ☐

WR38: Borehole record form

D Strata log

Geological classification (BGS only)	Description of strata	Thickness m	Depth (to base of strata) m
	Red clay and flint	5.5	5.5
	Chalk and flint	11.5	17

(continue on separate page if necessary)

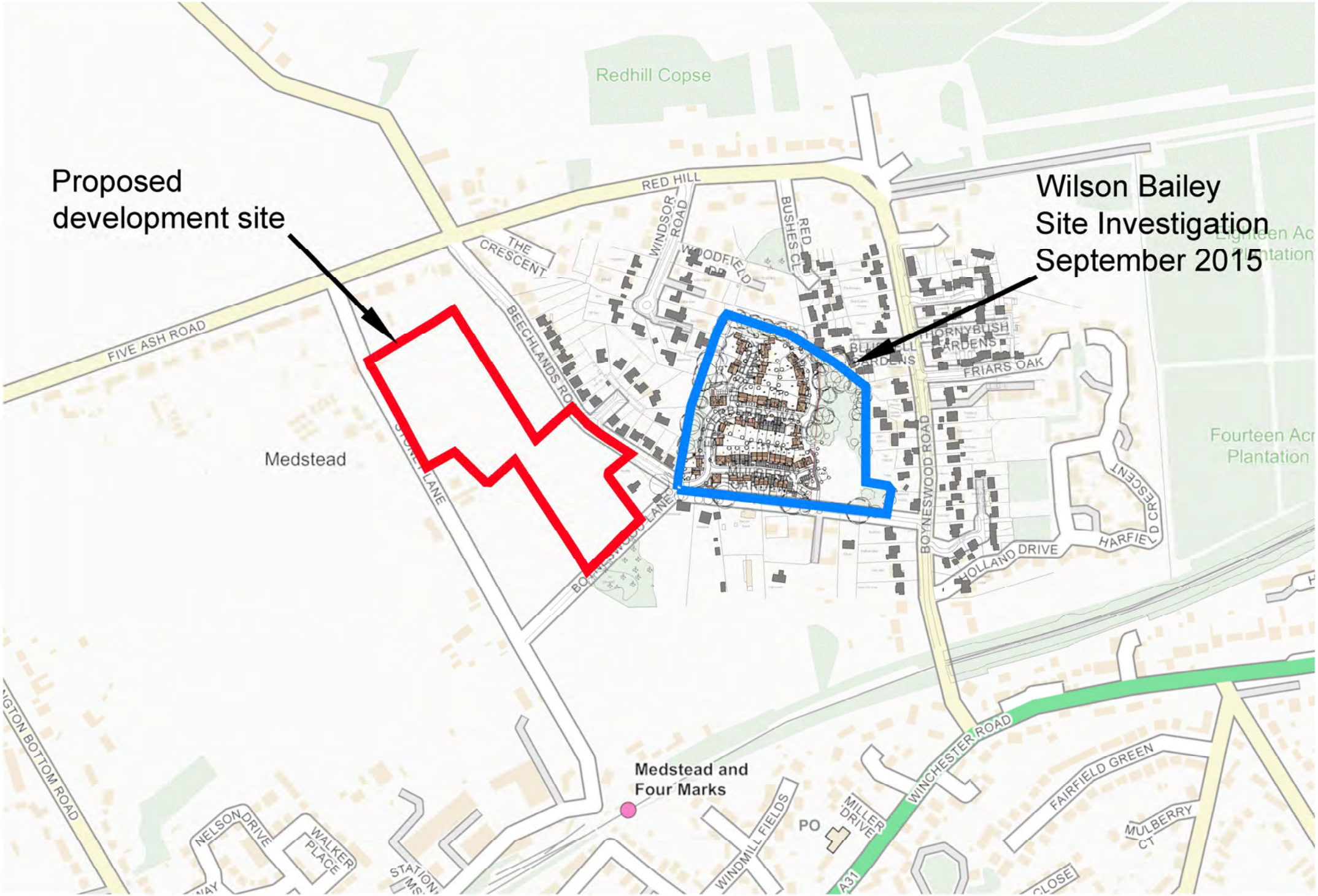
Other comments (for example, gas encountered, saline water intercepted)

E Completing this form

How long did it take you to fill in this form? _____

For Official use only

Date received (DD/MM/YYYY)	File	Consent number	BGS reference number
Accession number	Wellmaster number	SOBI number	NGR
LIC NO	Purpose		EA reference number
Copy number	Entered by		


Proposed development site
Wilson Bailey Site Investigation September 2015
Redhill Copse
RED HILL
FIVE ASH ROAD
THE CRESCENT
WINDSOR ROAD
WOODFIELD
RED BUSHES CL
BEECHLANDS RO
STONE LANE
Medstead
BOYNESWOOD LANE
BOYNESWOOD ROAD
THORNYBUSH GARDENS
FRIARS OAK
HOLLAND DRIVE
HARFIELD CRESCENT
Fourteen Acr Plantation
Medstead and Four Marks
PO
MILLER DRIVE
WINCHESTER ROAD
FAIRFIELD GREEN
MULBERRY CT
WINDMILL FIELDS
NELSON DRIVE
WALKER PLACE
A31

WILSON BAILEY
GEOTECHNICAL & ENVIRONMENTAL

Borehole No
BH1
Sheet 1 of 1

Project Name	Project No.	Co-ords: -	Hole Type
Boyneswood Lane Site	J15132		WLS
Location: Boyneswood, Medstead, Hampshire		Level: -	Scale 1:50
Client: Bargate Homes		Dates: 04/09/2015	Logged By DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.25			TOPSOIL
		0.50	D					Firm locally stiff reddish brown silty CLAY with occasional flint and chalk gravel and cobbles.
		1.00	D					
		1.50	D					
		2.00	D					
		2.45	D		2.40			
					2.50			Firm brown and dark brown silty sandy CLAY with occasional flint gravel
		3.00	D					Recovered as white CHALK
		3.50	D					
					4.00			End of Borehole at 4.00 m
			Type	Results				

Remarks: Groundwater not encountered. Standpipe installed with a response zone from 1.00m to 4.00m.

AGS

WILSON BAILEY
GEOTECHNICAL & ENVIRONMENTAL

Borehole No
BH2
Sheet 1 of 1

Project Name	Project No.	Co-ords: -	Hole Type
Boyneswood Lane Site	J15132		WLS
Location: Boyneswood, Medstead, Hampshire		Level: -	Scale 1:50
Client: Bargate Homes		Dates: 04/09/2015	Logged By DPB

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
		0.15	D		0.20			TOPSOIL
		0.50	D					Firm reddish brown sandy silty CLAY with occasional flint and chalk gravel
		1.00	D		1.10			Recovered as white CHALK
		1.50	D		2.00			End of Borehole at 2.00 m
			Type	Results				

Remarks: Groundwater not encoutered.

AGS

WILSON BAILEY
GEOTECHNICAL & ENVIRONMENTAL

Borehole No
BH3
Sheet 1 of 1

Project Name	Project No.	Co-ords: -	Hole Type
Boyneswood Lane Site	J15132		WLS
Location: Boyneswood, Medstead, Hampshire		Level: -	Scale 1:50
Client: Bargate Homes		Dates: 04/09/2015	Logged By DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.30			TOPSOIL
		0.50	D					Firm reddish brown sandy silty CLAY with occasional chalk gravel and flint cobbles
		1.00	SPT	N=2 (1,0/ 1,0,1,0)	1.10			
		1.00	D					Recovered as white CHALK
		1.50	D					
		2.00	SPT	N=15 (3,3/ 3,4,4,4)	2.00			End of Borehole at 2.00 m
			Type	Results				

1 2 3 4 5 6 7 8 9

Remarks: Groundwater not encounterd.

AGS

WILSON BAILEY
GEOTECHNICAL & ENVIRONMENTAL

Borehole No
BH4
Sheet 1 of 1

Project Name	Project No.	Co-ords: -	Hole Type
Boyneswood Lane Site	J15132		WLS
Location: Boyneswood, Medstead, Hampshire		Level: -	Scale 1:50
Client: Bargate Homes		Dates: 04/09/2015	Logged By DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.22			TOPSOIL
		0.50	D					Firm reddish orange-brown silty sandy CLAY with occasional flint cobbles
		1.00	D					
		1.50	D					
		2.00	D					
		2.50	D		2.50			Receovered as white CHALK
		3.00	D					
		3.50	D					
					4.00			End of Borehole at 4.00 m
			Type	Results				

Remarks: Groundwater not encountered.

AGS

WILSON BAILEY
GEOTECHNICAL & ENVIRONMENTAL

Borehole No
BH5
Sheet 1 of 1

Project Name	Project No.	Co-ords: -	Hole Type
Boyneswood Lane Site	J15132		WLS
Location: Boyneswood, Medstead, Hampshire		Level: -	Scale 1:50
Client: Bargate Homes		Dates: 04/09/2015	Logged By DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.15			TOPSOIL
		0.50	D					Firm reddish brown sandy silty CLAY with occasional chalk gravel
		1.00	SPT	N=4	0.90			Recovered as white CHALK
		1.00	D	(1,1/ 1,1,1,1)				
		1.50	D					
		2.00	SPT	N=11				
		2.00	D	(1,2/ 2,3,3,3)				
					2.50			End of Borehole at 2.50 m
			Type	Results				

1 2 3 4 5 6 7 8 9

Remarks: Groundwater not encountered.

AGS

WILSON BAILEY
GEOTECHNICAL & ENVIRONMENTAL

Borehole No
BH6
Sheet 1 of 1

Project Name	Project No.	Co-ords: -	Hole Type
Boyneswood Lane Site	J15132		WLS
Location: Boyneswood, Medstead, Hampshire		Level: -	Scale 1:50
Client: Bargate Homes		Dates: 04/09/2015	Logged By DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.30			TOPSOIL
		0.50	D					Firm reddish orange-brown silty sandy CLAY with occasional flint gravel
		1.00	D					
		1.50	D					
		2.00	D					
		2.50	D					
		3.00	D					
		3.50	D					
		4.00	D					
		4.50	D					
					5.00			End of Borehole at 5.00 m
			Type	Results				

1 2 3 4 5 6 7 8 9

Remarks: Groundwater not encountered

AGS

WILSON BAILEY
GEOTECHNICAL & ENVIRONMENTAL

Borehole No
BH7
Sheet 1 of 1

Project Name	Project No.	Co-ords: -	Hole Type
Boyneswood Lane Site	J15132		WLS
Location: Boyneswood, Medstead, Hampshire		Level: -	Scale 1:50
Client: Bargate Homes		Dates: 04/09/2015	Logged By DPB

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.30			MADE GROUND (reworked topsoil with gravel and possible organic / ash deposits)
		0.50	D					Firm dark brown and brown silty sandy CLAY
		1.00	D		1.00			End of Borehole at 1.00 m

1 2 3 4 5 6 7 8 9

Type Results

Remarks: Groundwater not encountered.

AGS

WILSON BAILEY
GEOTECHNICAL & ENVIRONMENTAL

Borehole No
BH8
Sheet 1 of 1

Project Name	Project No.	Co-ords: -	Hole Type
Boyneswood Lane Site	J15132		WLS
Location: Boyneswood, Medstead, Hampshire		Level: -	Scale 1:50
Client: Bargate Homes		Dates: 04/09/2015	Logged By DPB

Well	Water Strikes	Samples & In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.30			TOPSOIL
		0.50	D					Firm brown silty sandy CLAY
		1.00	D		1.00			End of Borehole at 1.00 m

Type	Results

Remarks: Groundwater not encountered.

AGS

WILSON BAILEY
GEOTECHNICAL & ENVIRONMENTAL

Borehole No
BH9
Sheet 1 of 1

Project Name	Project No.	Co-ords: -	Hole Type
Boyneswood Lane Site	J15132		WLS
Location: Boyneswood, Medstead, Hampshire		Level: -	Scale 1:50
Client: Bargate Homes		Dates: 04/09/2015	Logged By DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20			MADE GROUND (reworked topsoil with fine brick fragments)
		0.50	D					Firm reddish brown silty CLAY with occasional flint and chalk gravel
					0.80			
		1.00	SPT	N=4				Recovered as white CHALK
		1.00	D	(1,0/ 1,1,1,1)				
		1.50	D					
		2.00	SPT	N=9				
		2.00	D	(2,1/ 2,2,2,3)				
					2.50			End of Borehole at 2.50 m
			Type	Results				

Remarks: Groundwater not encountered.

AGS

WILSON BAILEY
GEOTECHNICAL & ENVIRONMENTAL

Borehole No
BH10
Sheet 1 of 1

Project Name	Project No.	Co-ords: -	Hole Type
Boyneswood Lane Site	J15132		WLS
Location: Boyneswood, Medstead, Hampshire		Level: -	Scale 1:50
Client: Bargate Homes		Dates: 04/09/2015	Logged By DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.40			MADE GROUND (rewoked topsoil)
		0.50	D					Firm reddish brown silty CLAY with abundant flint cobbles
		1.00	D					
		1.50	D					
		2.00	D					
					2.20			Recoverd as white CHALK
		2.50	D					
					3.00			End of Borehole at 3.00 m
			Type	Results				

Remarks: Groundwater not encountered.

AGS

WILSON BAILEY
GEOTECHNICAL & ENVIRONMENTAL

Borehole No
BH11
Sheet 1 of 1

Project Name	Project No.	Co-ords: -	Hole Type
Boyneswood Lane Site	J15132		WLS
Location: Boyneswood, Medstead, Hampshire		Level: -	Scale 1:50
Client: Bargate Homes		Dates: 04/09/2015	Logged By DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.30			TOPSOIL
		0.50	D					Firm reddish brown silty CLAY with flints
		1.00	SPT	N=5 (2,1/ 1,1,2,1)				
		1.00	D		1.20			Recovered as white CHALK
		1.50	D					
		2.00	D					
		2.50	D					
					3.00			End of Borehole at 3.00 m
			Type	Results				

1 2 3 4 5 6 7 8 9

Remarks: Groundwater not encountered,

AGS

WILSON BAILEY
GEOTECHNICAL & ENVIRONMENTAL

Borehole No
BH12
Sheet 1 of 1

Project Name	Project No.	Co-ords: -	Hole Type
Boyneswood Lane Site	J15132		WLS
Location: Boyneswood, Medstead, Hampshire		Level: -	Scale 1:50
Client: Bargate Homes		Dates: 04/09/2015	Logged By DPB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.50	D		0.40			MADE GROUND (reworked topsoil with occasional fine brick)
		1.00	D					Firm reddish brown silty CLAY with occasional flint
		1.50	D		1.70			Recovered as white CHALK
		2.00	D					
		2.50	D					
		3.00	D					
		3.50	D					
		4.00	D					
		4.50	D		5.00			End of Borehole at 5.00 m
			Type	Results				

1 2 3 4 5 6 7 8 9

Remarks: Groundwater not encounterd. Standpipe installed with a response zone from 1.00m to 5.00m.

AGS

WILSON BAILEY
GEOTECHNICAL & ENVIRONMENTAL

Carters Barn
Sherrington
Wiltshire
BA12 0SN

Borehole Soakage Test

Site Boyneswood Lane Site, Medstead, Four Marks

Client Bargate Homes Limited

Job Number J15132

Sheet 1/1

Date: 02 October 2015

Borehole No: 12

Test Data

Before start of test:

Borehole depth (m): 5.00
Casing depth (m): 1
Water level (m): dry

Time (mins)	Depth to Water (m)	Depth of Water (m)
0	0.80	4.20
2	2.51	2.49
5	3.15	1.85
15	3.30	1.70
30	3.53	1.47
45	3.76	1.24
60	4.20	0.80

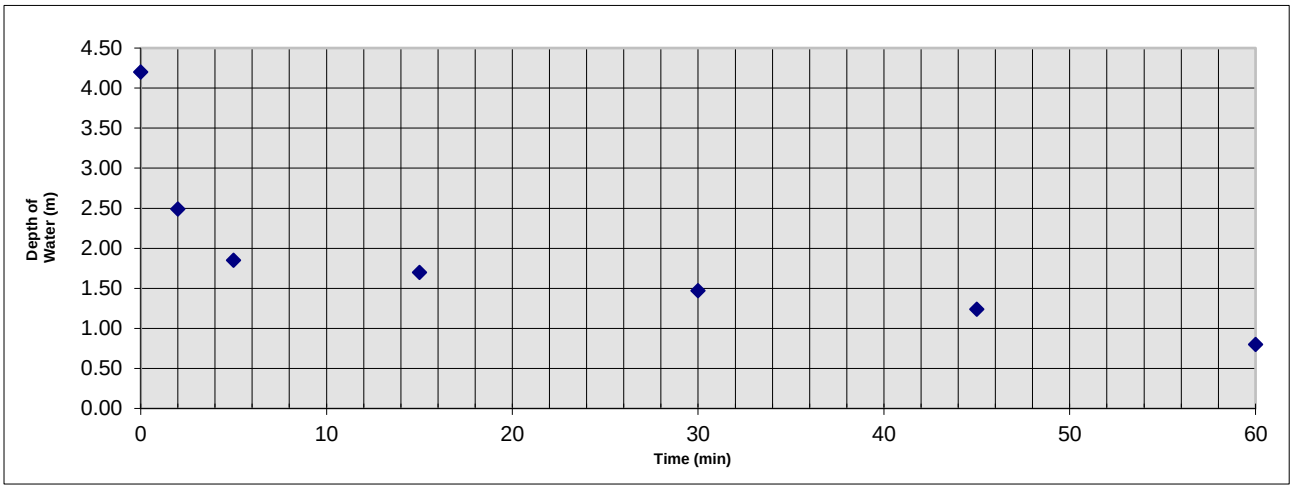
At end of test:

Borehole depth (m): 5.00
Casing depth (m): 1.00
Water level (m): 0.80

Soakage Calculation

Borehole Diameter (m)	0.8700	
Borehole Area (m)	0.5945	
Borehole Perimeter (m)	2.733	
From Plot:	D1 (m)	1.85
	D2 (m)	0.8
	T1 (min)	5
	T2 (min)	60
Soakage Volume (m^3)	0.624	
Soakage Area (m^2)	4.22	
Time (min)	55	

Soakage rate (m/sec)	4.49E-05
Soakage rate (m/day)	3.876351849



Remarks:

Appendix 5

Flood Maps

Flood map for planning

Your reference	Location (easting/northing)	Created
<Unspecified>	**466745/135743**	**23 Feb 2024 16:38**

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

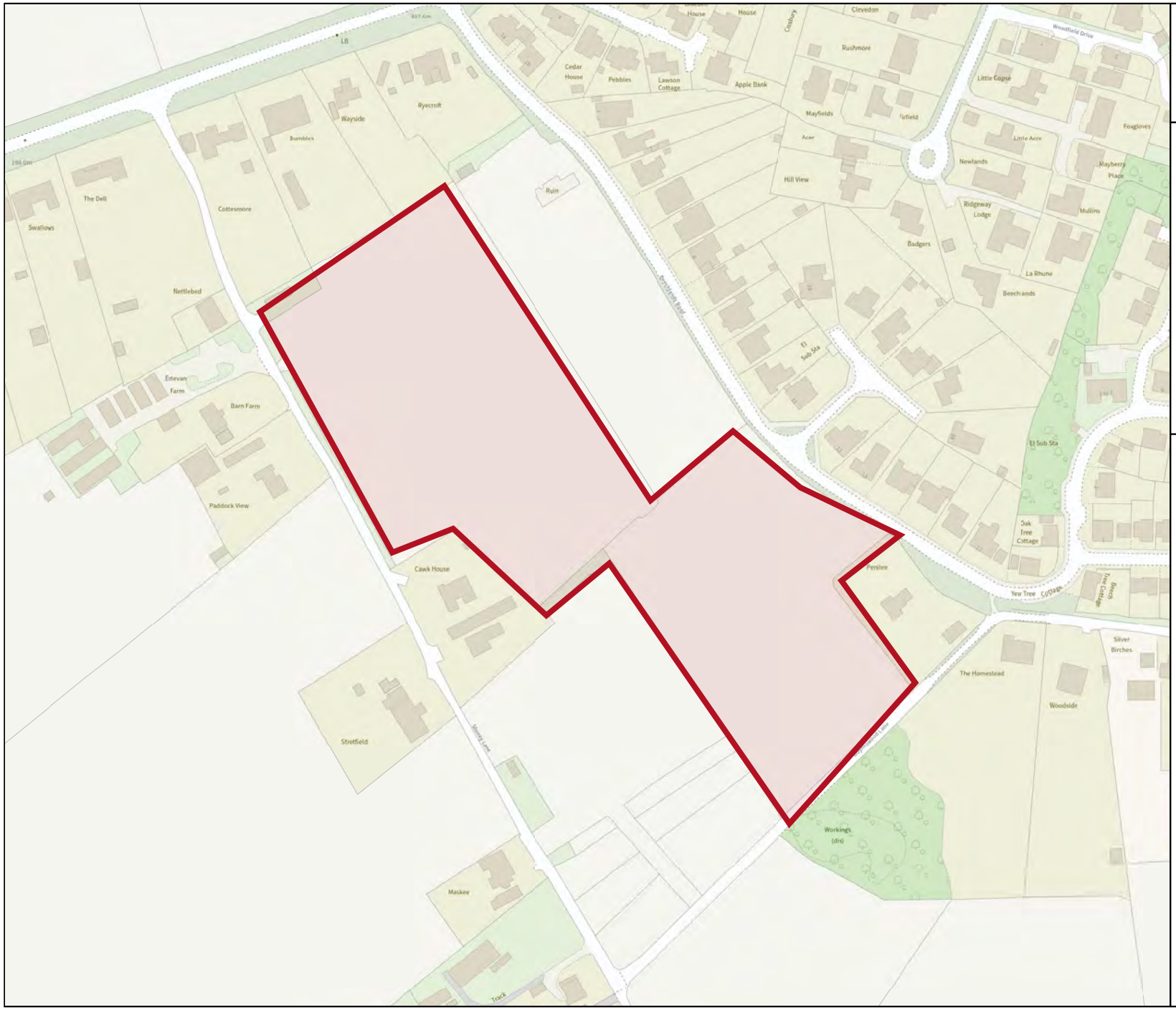
You will need to do a flood risk assessment if your site is **any of the following:**

- bigger that 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.



Environment Agency

Flood map for planning

Your reference
<Unspecified>

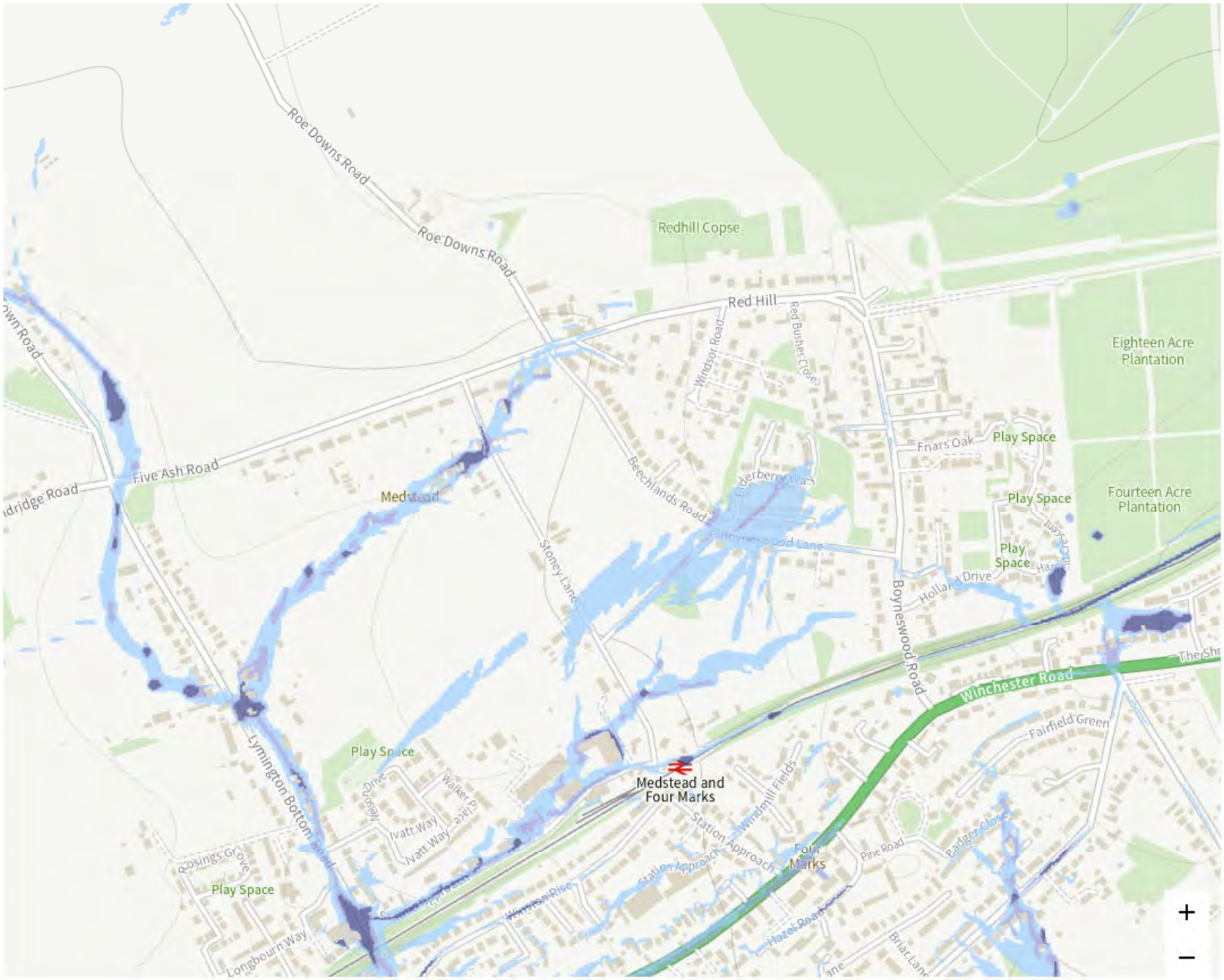
Location (easting/northing)
466745/135743

Scale
1:2500

Created
23 Feb 2024 16:38

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

0 20 40 60m



Key

Surface water

- (●) Extent
  - High risk: More than 3.3% chance each year
  - Medium risk: Between 1% and 3.3% chance each year
  - Low risk: Between 0.1% and 1% chance each year
- ( ) Depth
- ( ) Velocity

Rivers and the sea

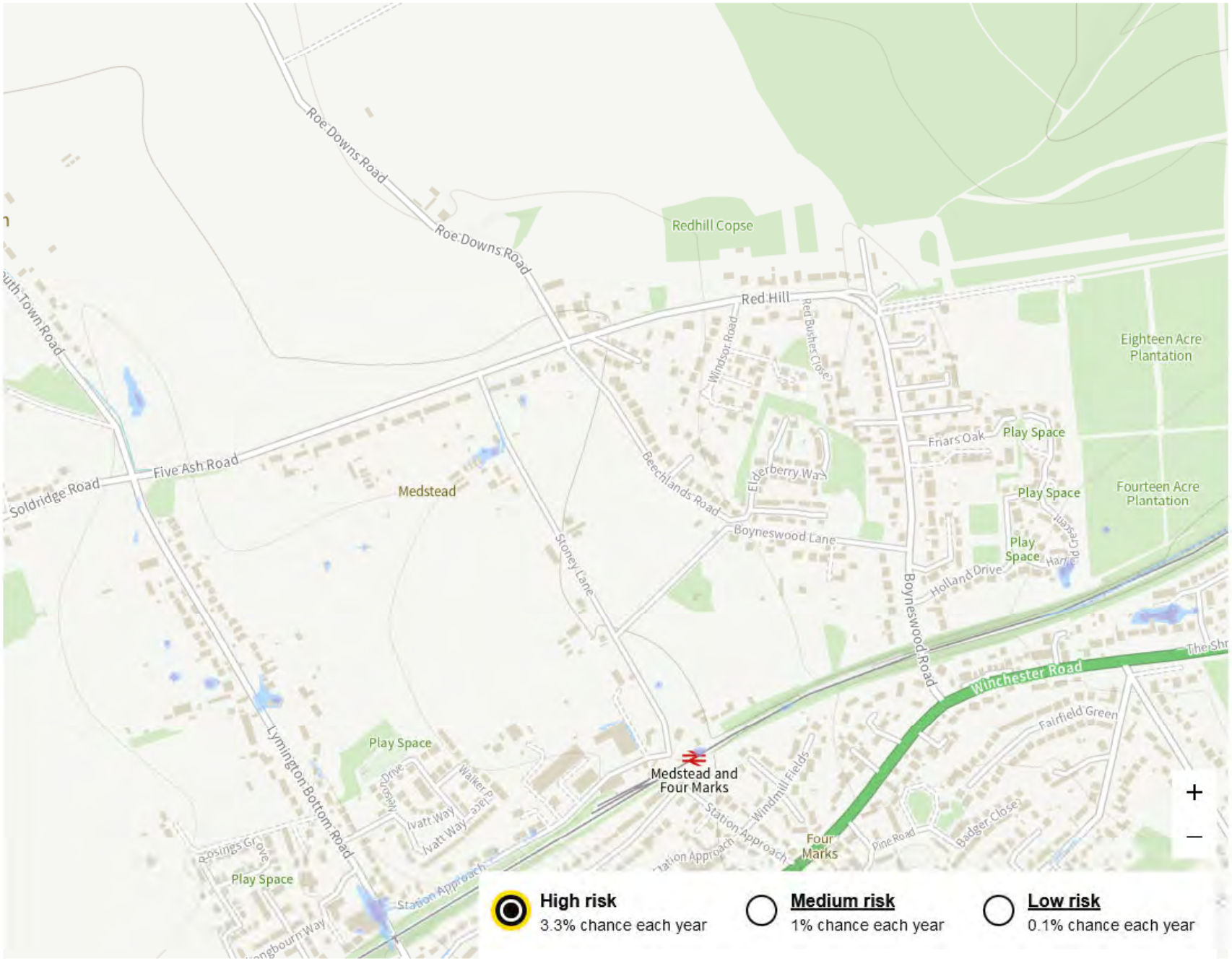
- ( ) Extent

Reservoirs

- ( ) Extent

Map details

- [x] Show flooding



Key

Surface water

- ○ Extent
- ◉ Depth
  - Above 90cm
  - 30cm to 90cm
  - Below 30cm
- ○ Velocity

Rivers and the sea

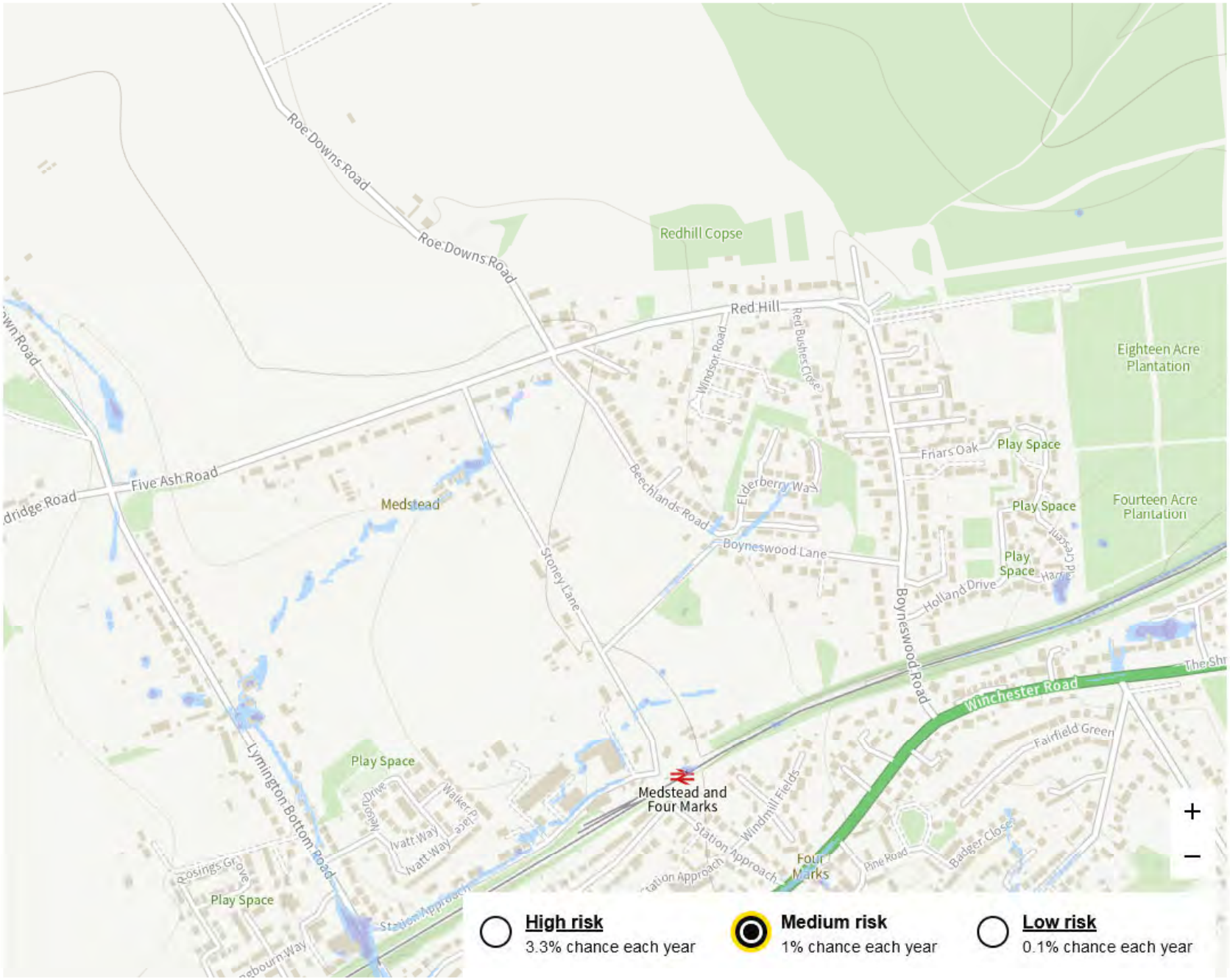
- ○ Extent

Reservoirs

- ○ Extent

Map details

- ☑ Show flooding



Key

Surface water

- ○ Extent
- ◉ Depth
  - Above 90cm
  - 30cm to 90cm
  - Below 30cm
- ○ Velocity

Rivers and the sea

- ○ Extent

Reservoirs

- ○ Extent

Map details

- ☑ Show flooding

Key

Surface water

- ○ Extent
- ◉ Depth
  - Above 90cm
  - 30cm to 90cm
  - Below 30cm
- ○ Velocity

Rivers and the sea

- ○ Extent

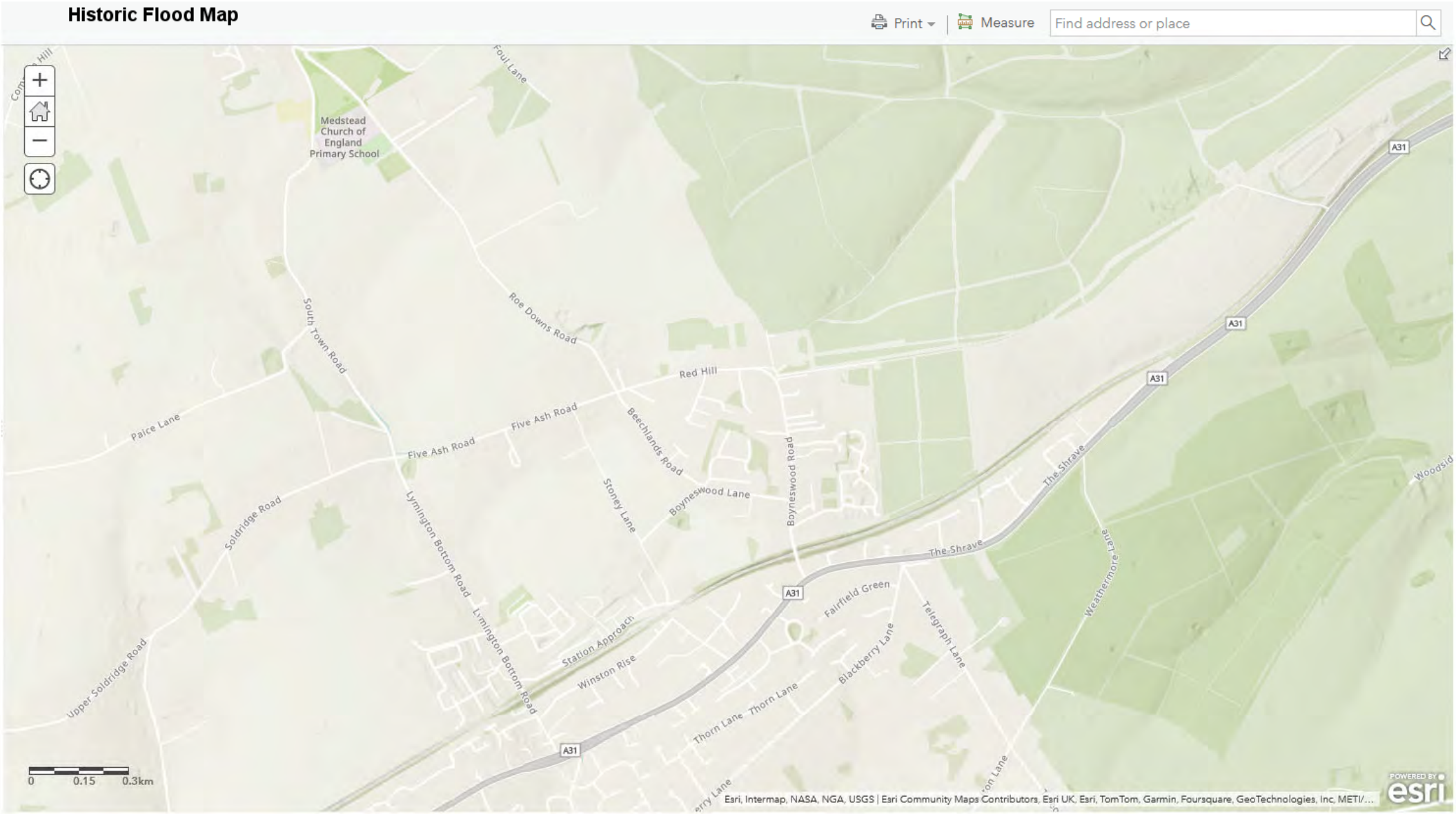
Reservoirs

- ○ Extent

Map details

- ☑ Show flooding

Historic Flood Map



THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

LEGEND

- East Hampshire District Boundary
- South Downs National Park
- Town
- Groundwater Flood Record (EA)
- Main Rivers
- Limited potential for groundwater flooding to occur
- Potential for groundwater flooding of property situated below ground level
- Potential for groundwater flooding to occur at surface

NOTES

1. The 1:50,000 scale digital map data is generalised and the geological interpretation should only be used as a guide to the geology at a local level, not as a site specific geological plan based on detailed site investigations.
2. This map is intended to provide a strategic over-view of susceptibility to groundwater flooding and should not be used to assess flood risk for individual
3. Absence of values for any grid square means that no part of that square is identified as being susceptible to groundwater emergence.
4. Point data represents groundwater flood incidents recorded by the Environment Agency and do not represent an exhaustive record.

Purpose of Issue: FINAL

Client: EAST HAMPSHIRE DISTRICT COUNCIL

Project Title: EAST HAMPSHIRE LEVEL 1 SFRA

Drawing Title: BGS SUSCEPTIBILITY TO GROUNDWATER FLOODING

Drawn	Checked	Approved	Date
HB	AR	SK	21/09/2018

AECOM Internal Project No.	Scale @ A3
60577188	1:65,000

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aecom.com

AECOM

Drawing Number: FIGURE 4A

Rev: 01

Alton
Caker Stream
Lavant Stream
River Wey
Four Marks
Oakhanger Stream
Whitehill & Bordon
Dead Water
River Slea
River Wey

N

0 1 2 3 4 5 6 km

THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

LEGEND

- East Hampshire District Boundary
- Town
- South Downs National Park
- Highly compatible for infiltration SuDS
- Opportunities for bespoke infiltration SuDS
- Probably compatible for infiltration SuDS
- Very significant constraints are indicated
- Main Rivers

NOTES

1. The 1:50,000 scale digital map data is generalised and the groundwater flood risk interpretation should only be used as a guide to risk at a local level, not as a site specific assessment of risk which should be based on more detailed site specific information.

Descriptions of each of the categories are as follows:

- Highly compatible for infiltration SuDS : The sub-surface is likely to be suitable for free draining infiltration SuDS.
- Probably compatible for infiltration SuDS : The sub-surface is probably suitable for infiltration SuDS, although the design may be influenced by ground conditions.
- Opportunities for bespoke infiltration SuDS : The subsurface is potentially suitable for infiltration SuDS, although design will be influenced by the ground conditions.
- Very significant constraints are indicated : There is a very significant potential for one or more geohazards associated with infiltration.

2. This map is intended to provide a strategic overview of infiltration SuDS suitability and should not be used to approve or discount infiltration SuDS for individual properties.

Purpose of Issue: FINAL

Client: EAST HAMPSHIRE DISTRICT COUNCIL

Project Title: EAST HAMPSHIRE LEVEL 1 SFRA

Drawing Title: BGS INFILTRATION SUDS SUITABILITY

Drawn	Checked	Approved	Date
HB	AR	SK	21/09/2018

AECOM Internal Project No.	Scale @ A3
60577188	1:65,000

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aecom.com

AECOM

Drawing Number: FIGURE 5A

Rev: 01

0 1 2 3 4 5 6 km

N

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LEGEND

- East Hampshire District Boundary
- Town
- South Downs National Park
- Main Rivers
- Ordinary Watercourse
- Groundwater Flood Record (EA)

Recorded Floods (EA)

- < 1960
- 1960 - 1969
- 1970 - 1979
- 1980 - 1989
- 1990 - 1999
- > 2000

Flood Investigations (HCC)

- Fluvial Flooding
- Surface Water Flooding

Flood Incidents (EHDC)

- Unknown
- 2001
- 2006
- 2007
- 2008
- 2008- 2009
- 2009
- 2010
- 2011
- 2012

NOTES

The Environment Agency Recorded Flood Outline shows the maximum extent of all individual Recorded Flood Outlines from river, the sea and groundwater springs and shows areas of land that have previously been subject to flooding in England.

Point data represents individual incidents reported to the Environment Agency or Hampshire County Council by their officers or members of the public. It does not represent an exhaustive record of flooding.

Purpose of Issue: FINAL

Client: EAST HAMPSHIRE DISTRICT COUNCIL

Project Title: EAST HAMPSHIRE LEVEL 1 SFRA

Drawing Title: RECORDED FLOOD OUTLINES AND HISTORIC INCIDENTS

Drawn	Checked	Approved	Date
LL	AD	SK	25/09/2018

AECOM Internal Project No.	Scale @ A3
60577188	1:65,000

AECOM

AECOM

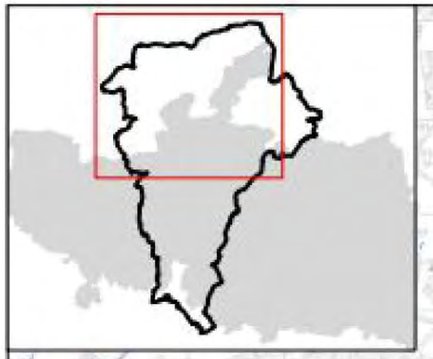
Drawing Number: FIGURE 7A

Rev: 01

0 1 2 3 4 5 6 km

N

File Name: L:\Water News\2 - PROJECTS\60577188\GIS and Maps\SFRA\SFRA.qgs



THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

Legend

- East Hampshire District Boundary
- South Downs National Park
- Town
- Main Rivers
- Ordinary Watercourse
- 1 in 30 year (3.3% annual probability) - High Risk
- 1 in 100 year (1% annual probability) - Medium Risk
- 1 in 1000 year (0.1% annual probability) - Low Risk

Incidents Confirmed

- Confirmed
- Unconfirmed

NOTES:

1. This map shows the predicted likelihood of surface water flooding based on the Environment Agency's Risk of Flooding from Surface Water(RoFSW) data, which may be subject to further analysis in the future. Further information is provided on the Environment Agency website (www.gov.uk/environment-agency).
2. The Risk from Surface Water Flooding is divided into categories: High: each year, the chance of flooding is greater than 1 in 30 (3.3%). Medium: each year, the chance of flooding is between 1 in 100 (1%) and 1 in 30 (3.3%). Low: each year, the chance of flooding is between 1 in 1000 (0.1%) and 1 in 100 (1%). Very Low- each year, the chance of flooding is less than 1 in 1000 (0.1%).
3. The potential impact of surface water flooding can vary according to the depth of the water, and its velocity (speed and direction that it is flowing in).
4. Surface water flooding happens when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead. This type of flooding can be difficult to predict and is hard to forecast exactly where or how much rain will fall in any storm.
5. This map is intended to provide strategic overview of susceptibility to surface water flooding and should not be used to assess flood risk for individual properties.
6. Point data represents incidents of surface water flooding reported to Hampshire County Council and is not an exhaustive record of historic flooding.

Purpose of Issue: FINAL

Client: EAST HAMPSHIRE DISTRICT COUNCIL

Project Title: EAST HAMPSHIRE LEVEL 1 SFRA

Drawing Title: ENVIRONMENT AGENCY 'RISK OF FLOODING FROM SURFACE WATER'

Drawn	Checked	Approved	Date
LL	MD	SK	25/09/2018

AECOM Internal Project No.	Scale @ A3
60577188	1:65,000

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AECOM

Drawing Number: FIGURE 10A

Rev: 01

File Name: L:\Water Kew\4 - PROJECTS\60577188 East Hants SFRA\2D WIP\GIS

Appendix 6

Proposed Site Layout Plan and Drained Areas Plan

TITLE
Proposed Site Layout Plan

SCALE	PROJECT. No.
1:1250 @ A3	23066
REPORT TYPE	DRG. No.
FRA	03 C

Key

Roads	7051m²
Drives	3,325m²
Roofs	5,104m²

TITLE
Proposed Drainage Areas Plan

SCALE	PROJECT. No.
1:1250 @ A3	23066
REPORT TYPE	DRG. No.
FRA	04 C

Appendix 7

Preliminary Drainage Strategy Plan and Calculations

N

Pumping Station

PED LINK

Foul water from Northern part of site to discharge by gravity to pumping station

Pumped foul main to discharge to foul drainage via gravity connection

BEECHLANDS ROAD

STONEY LANE

PLAY AREA

Impermeable Areas	
Roads - Footway Carriageway and verge	7,051m²
Private Drives	3,325m²
Roofs	5,104m²
Total	15,480m²

Drainage Legend:

- Private foul drainage
- Private foul pumping station
- Private foul rising main
- Existing Public Foul Sewer
- Storm water trench soakaway typically 1.2m wide extending into chalk sub-strata approximately 5m beneath ground level. Backfilled with 30% voided stone.
- Areas of voided 30% subbase beneath carriageways to convey water to the trench soakaway.
- Vertical barriers across road and trench soakaway at suitable centres to prevent migration of surface water longitudinally
- Areas of voided 30% subbase beneath drives to convey water to the trench soakaway via the carriageway subbase
- Service trench

TITLE
Proposed Drainage Strategy Plan
Sheet 1 of 2
(Not For Construction)

SCALE	PROJECT. No.
1:750 @ A3	23066
REPORT TYPE	DRG. No.
FRA	05 B

N

Pumped foul main to discharge to foul drainage via gravity connection

Foul water from Southern part of site to discharge by gravity to existing sewer

Foul drainage to discharge to sewer via gravity connection

Foul water to discharge existing public manhole. IL 202.91 Subject to agreement with asset owner

BEECHLANDS ROAD

BEECHLANDS ROAD

BOVANESWOOD LANE

CYC/PED LINK

PLAY AREA

Impermeable Areas	
Roads - Footway Carriageway and verge	7,051m²
Private Drives	3,325m²
Roofs	5,104m²
Total	15,480m²

Drainage Legend:

- Private foul drainage
- Private foul pumping station
- Private foul rising main
- Existing Public Foul Sewer
- Storm water trench soakaway typically 1.2m wide extending into chalk sub-strata approximately 5m beneath ground level. Backfilled with 30% voided stone.
- Areas of voided 30% subbase beneath carriageways to convey water to the trench soakaway.
- Vertical barriers across road at suitable centres to prevent migration of surface water longitudinally
- Areas of voided 30% subbase beneath drives to convey water to the trench soakaway via the carriageway subbase
- Service trench

TITLE: Proposed Drainage Strategy Plan
Sheet 2 of 2
(Not For Construction)

SCALE	PROJECT. No.
1:750 @ A3	23066
REPORT TYPE	DRG. No.
FRA	06 B

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	150.0		

Nodes

Name	Area (ha)	Cover Level (m)	Depth (m)
Trench Soalaway	1.599	200.000	5.000

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Additional Storage (m³/ha)	0.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	1440	Check Discharge Volume	x

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	45	0	0

Node Trench Soalaway Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.16200	Invert Level (m)	195.000	Depth (m)	4.800
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	522	Inf Depth (m)	0.100
Safety Factor	2.0	Pit Width (m)	1.200	Number Required	1
Porosity	0.30	Pit Length (m)	680.000		

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	Trench Soalaway	352	199.703	4.703	178.7	1151.2640	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)
360 minute winter	Trench Soalaway	Infiltration	18.4

Appendix 8

Outline Drainage Maintenance Schedule

Drainage Maintenance Schedule

The Civil Engineering Practice
11 Tungsten Building
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Sussex
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01273 424424
reception@civil.co.uk
www.civil.co.uk

Project	**Land at Beechlands Road, Medstead**
Project Number	**23066**
By	Steve Doughty
Date	11 April 2024

1 Schedule of Maintenance

1.1 Once appointed the Contractor will prepare a site specific method statement for the control of silt and other pollutants during construction. CIRIA Report C532, Control of water pollution from construction sites, provides further guidance on this.

1.2 The Contractor will maintain the proposed drainage system during construction and until the handing over of the site.

1.3 Upon completion the Principal Contractor will collate the data sheets, operation and maintenance details of all materials used in the construction of the site drainage system.

1.4 These details will issued to the Management Company for their records.

1.5 Upon completion management of shared drainage facilities (where not adopted by a Statutory Undertaker) will be passed on to a Management Company appointed by the Developer on behalf of the Residents.

1.6 In the event that the Management Company becomes unable to discharge its duties within two years of first appointment the Developer will endeavour to appoint an alternative on behalf of the Residents.

1.7 Maintenance of individual property drainage connections is the responsibility of the individual property owners.

1.8 The following maintenance schedule details the typical tasks to be undertaken at different intervals.

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Manage vegetation and remove nuisance plants – aesthetics	As required
	Litter and debris removal – catchpits and manholes	Monthly or as required
	Cleaning of gutters and any filters on downpipes	3 Monthly
	Remove sediment and debris from silt trap chambers, channel drains and inlet chambers	6 monthly
	Visual inspection of permeable paving for defects and settlement	Annually
	Sweeping / brushing of permeable paving	Every 2 years
	Surface and foul water pipework – jetting / rodding	Every 2 years or as required
Corrective Maintenance	Remove debris / blockages to silt traps / channel drains	As required
	Repairs to access chambers / manhole covers	As required
	Replace any broken permeable blocks / surface, remedial works to any depressions or rutting	As required
	Inspect inlet, outlet from downpipes, channel drains, and gullies for blockages, standing water and clear	As required
Monitoring	Inspect silt traps and note the rate sediment has accumulated	Monthly in the first year and then annually
	Inspect trench soakaway inspection chambers to ensure it is fully emptying	Annually

Indicative Schedule of Maintenance for the Proposed Drainage System

Component	Inspection Frequency					
	1 Month	3 Months	1 Year	After leaf fall in Autumn	2 Years	When alarm indicates
Gullies, Channels and Gutters		✓		✓		
Catchpits	✓			✓		
Surface and Foul Water Pipework					✓	
Permeable Paving			✓			
Trench Soakaway			✓			
Foul Pumping Station			✓			✓

Inspection Frequency Summary

2 Design Life

2.1 The design life of the development is likely to exceed the design life of the components within the SuDS network. During the routine drainage inspections it may be determined that some components have reached the end of their functional life cycle.

2.2 Where possible repairs should be the first option considered however if repairs are unviable it will be necessary for the property owner / Management Company to replace the faulty component.

3 Emergency Plan

3.1 Potential flood and maintenance indicators:

- Manholes or inspections chambers overflowing
- Gullies overflowing or ponding
- Channel drains overflowing or ponding
- Other visual indicators of the drainage system not performing as it should

3.2 Should any of the items above occur then immediate action as outlined below should be undertaken:

- Inspect for blockages in the problem area
- Should the problem not be identified via an initial inspection:
    - For unadopted onsite drainage the Management Company should appoint a suitable drainage engineer to inspect and survey the system and jet any blockages
    - For adopted onsite drainage the relevant statutory undertaker should be alerted
    - Where it is suspected that there is a problem with the downstream drainage network the Owner or relevant statutory undertaker of that system should be alerted.