



**S003-001 71 HEAD LANE, GT.
CORNARD**

Flood Risk Assessment

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Revisions and Additional Material

Document History and Status

Revision	Date	Purpose/Status
-	27.11.2023	First Issue

Document Details

Project Director	Mark Jones
Report Author	Mark Jones
Project Number	S003/001
Project Name	71 Head Lane, Gt. Cornard

1 Introduction and Limitation

1.1 Introduction

1.1.1 MJ Engineering Group (MJEG) has been commissioned by Mark Swift Architects on behalf of the owners at 71 Head Lane, Great Cornard to carry out a Flood Risk Assessment for an extension to the existing property at the aforementioned property. The proposed development layout can be found in [Appendix A](#).

1.1.2 It is proposed to submit the Flood Risk Assessment to the Planning Authority as part of a planning application. Specifically, this assessment intends to provide the following:

- Flood Risk Zone,
- Flood Risk from Overland Surface Water,
- Flood Risk from Reservoir,
- Assessment of the impact of the proposed extension.

1.2 Limitation

1.2.1 This Report has been prepared by MJ Engineering Group Ltd (MJEG) for the sole use of the “client”. This Report is confidential and may not be disclosed by the client nor relied upon by any other party without the prior and express written agreement of MJEG.

1.2.2 The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by MJEG has not been independently verified unless otherwise stated in this Report.

1.2.3 MJEG disclaim any undertakings or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to MJEG attention after the date of the Report.

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2 Site Description

2.1 Site Location and Existing Condition

2.1.1 The site is located in the town of Great Cornard, Suffolk in the Babergh District. It is located circa 1.98km southeast of the Sudbury town centre, as shown in Figure 1 below.

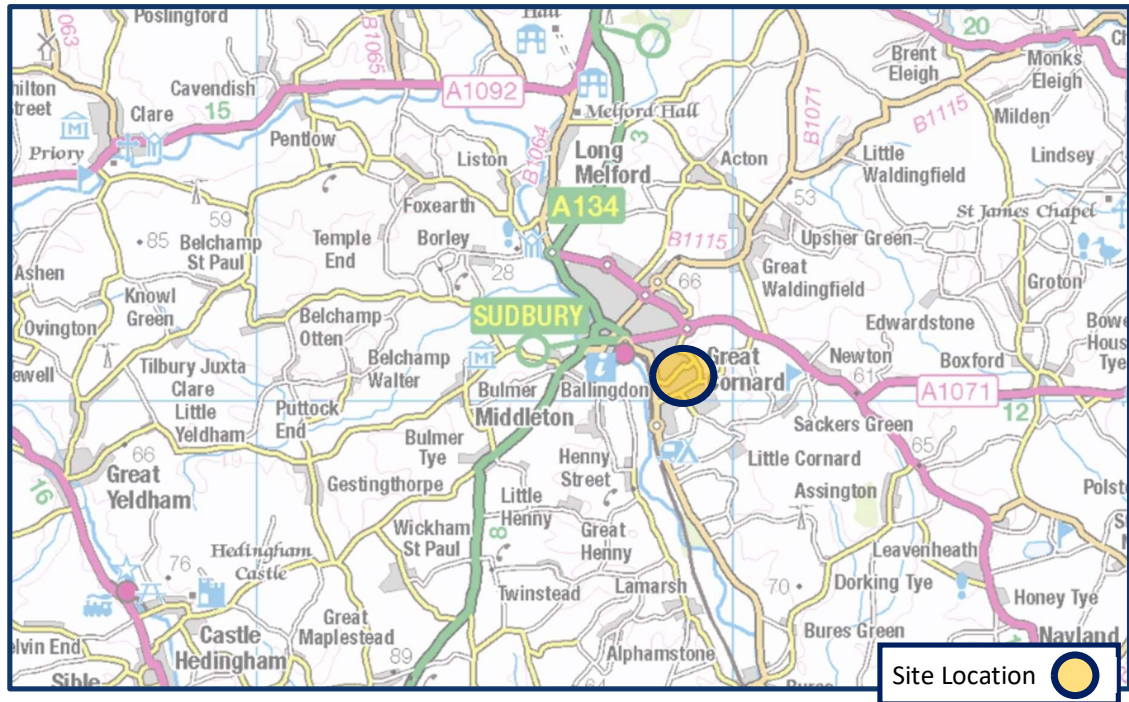


Figure 1: Wider Site Location

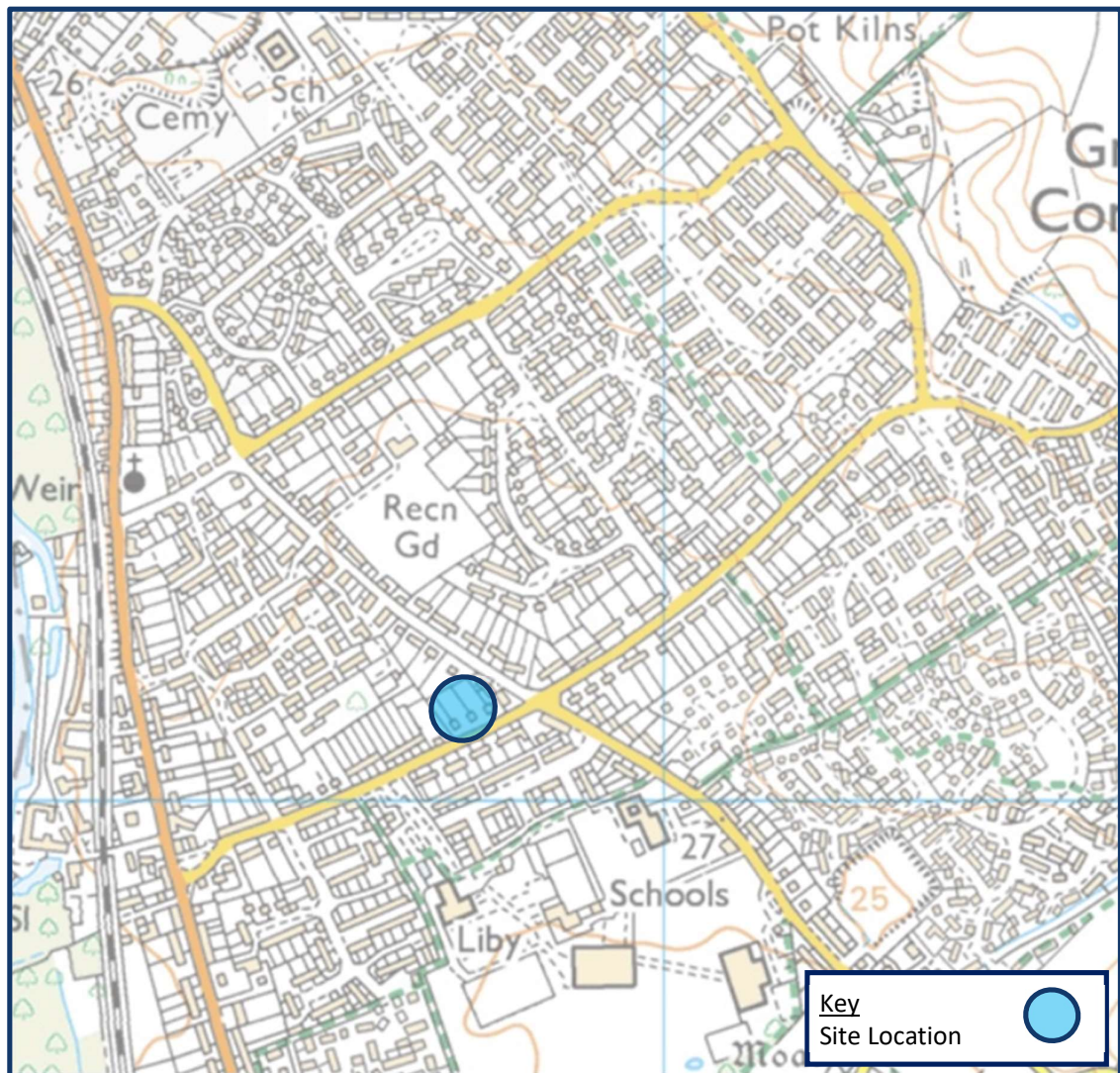


Figure 2: Site Location

2.1.2 The site is located at National grid reference TL887400.

2.2 Existing Property

2.2.1 The existing property is a one-storey detached dwelling with a single storey previous rear extension. There is a side path to the left-hand side looking at the property from Head Lane. The right-hand side is built up to the boundary.

2.3 Ground Conditions

2.3.1 The British Geological Society (BGS) website has been reviewed to establish the ground conditions in the area and consider in more detail historical boreholes from the locality to ascertain the likely feasibility for using infiltration.

2.3.2 The BGS mapping identifies a large area of River Terrace Deposits, which consists of Sand and Gravel. The extent is shown to encompass the site and the surrounding area as [Figure 3](#) below.

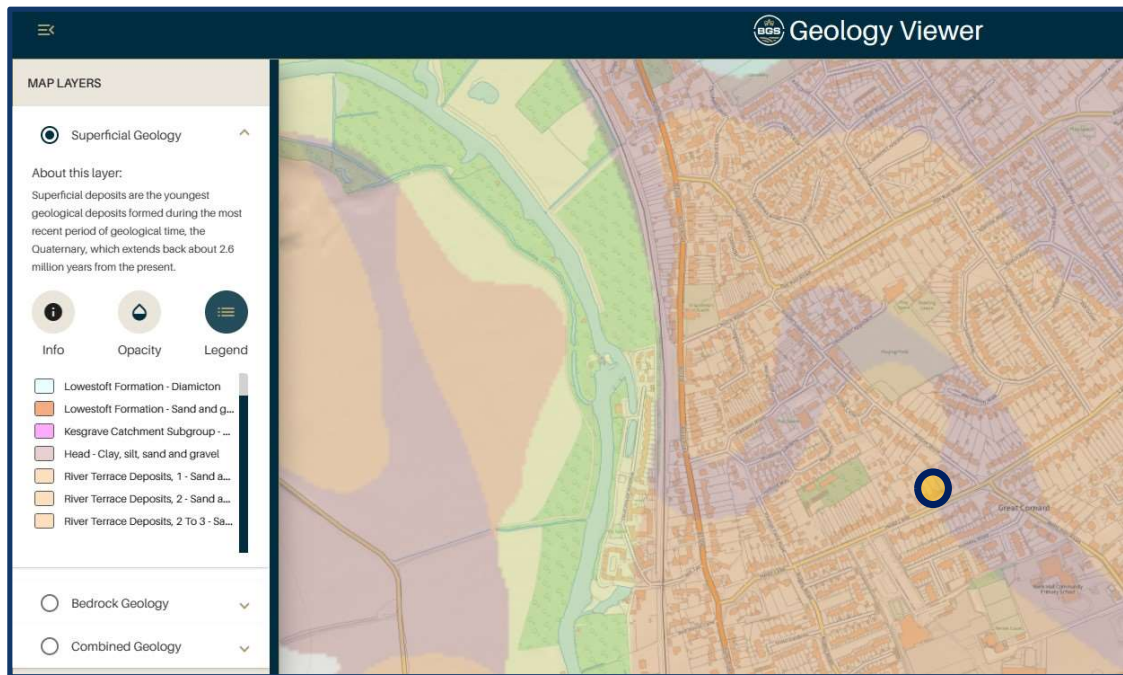


Figure 3: BGS mapping - Superficial plan

2.3.3 At depth the surrounding area is shown to consist of Chalk formation. To understand the depth of the Chalk and viability for infiltration local boreholes have been reviewed.

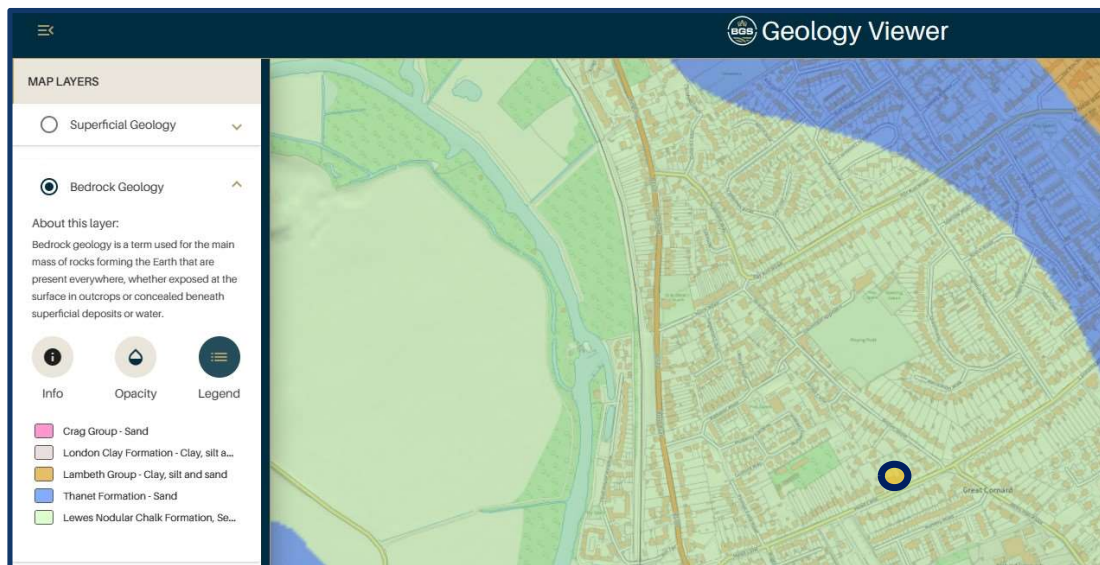


Figure 4: BGS mapping - Bedrock plan

2.3.4 A review of local boreholes in the surrounding area found historical logs located to the north of the site in Broom Street, as shown in figure 5 below. The borehole recorded 200mm of Sand and flint gravel over Firm Chalk to a depth of 8.2m where the borehole was terminated. The borehole records can be found in Appendix B.

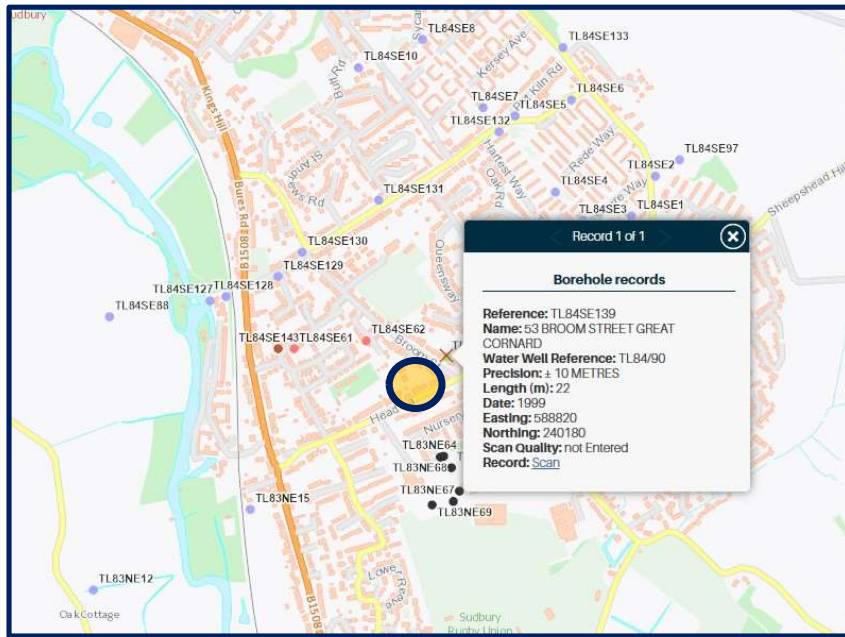


Figure 5: BGS Borehole locations plan

3 Proposed Site Use

- 3.1.1 The proposal is to provide a rear extension that builds out to the existing rear building line and connects to the existing side utility room as shown in drawing 04-23 – 02, which can be found in [Appendix A](#).
- 3.1.2 The extension will maintain an access route along the boundary between the front drive and rear garden to the left-hand side of the property.

4 Planning Policy Context

4.1 National Planning Policy

- 4.1.1 The National Planning Policy Framework (NPPF, 2021) includes government policy for developments and meeting the challenges of climate change and flood risk. The policy requires “Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk...”.
- 4.1.2 The location of new developments should take into consideration the impact of climate change through planning to avoid increasing vulnerability as a result of climate change. Where locations are considered vulnerable, these risks should be managed and where possible mitigated to limit the risk.
- 4.1.3 Development in areas at risk of flooding should be made safe without detrimental impact to others elsewhere. Local Plans should be evidence based through the Sequential Test in selecting the appropriate location for new development within the plan period, and thus avoiding places that are at risk of flooding.
- 4.1.4 Development priorities are based on the specific flood risk zones outlined within Table 1 of the technical guidance, as [Figure 6](#) below.

<i>Flood Zones</i>	<i>Definition</i>
Zone 1 Low Probability	Land having a less than 1 in 1,000 annual probabilities of river or sea flooding (shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding, or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in Light Blue in Flood Map)
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding, or land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in Dark Blue on the Flood Map)
Zone 3b The Functional Floodplain	This zone comprises land where water must flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately designated from Zone 3a)

Figure 6: Flood Zone definitions

- 4.1.5 The Environment Agency (EA) website confirms the site to be within Flood Zone 1. The full Flood map for planning can be found in [Appendix C](#). The flood risk to the site is assessed and discussed further in [Section 5](#) of this report.
- 4.1.6 Further guidance in NPPF classifies commercial development schemes to be 'more vulnerable' land class use in terms of flood risk. As such, as defined in NPPF Table 2 (para 79), a 'more vulnerable' use is appropriate land use for sites in Flood Zone 1. The development therefore meets the requirements of the NPPF.

<i>Flood Risk Vulnerability Class</i>	<i>Land-use</i>
Essential infrastructure	<ul style="list-style-type: none"> • Essential transport infrastructure which has to cross the area at risk, • Essential utility infrastructure, • Wind turbines, • Solar Farms.
Highly Vulnerable	<ul style="list-style-type: none"> • Police and ambulance stations, • Emergency dispersal points, • Basement dwellings, • Caravans, mobile homes and park homes, • Installations requiring hazardous substances consent.
More Vulnerable	<ul style="list-style-type: none"> • Hospitals, • Residential institutions, • Buildings used for dwelling houses, • Non-residential uses, • Landfill and sites used for waste management, • Sites used for holiday or short let
Less Vulnerable	<ul style="list-style-type: none"> • Police, ambulance stations not required during flooding, • Buildings used for shops, financial, professional, restaurants, cafes and hot food take-away, offices and general industry, storage and distribution. • Land and building used for agriculture and forestry, • Waste treatment, • Minerals working and processing, • Water treatment works, • Sewerage treatment works, • Car parks.
Water-compatible development	<ul style="list-style-type: none"> • Flood control infrastructure • Water transmission infrastructure & pump station • Sewerage transmission & pump station • Sand & gravel working • Docks, marinas and wharves, • Navigation facilities, • Ministry of Defence installations, • Ship building, repairs, dismantling, • Water-based recreation, • Lifeguard and coastguard stations, • Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms, • Essential ancillary sleeping or residential accommodation for staff required by uses in this category.

Figure 7: Land-Use Vulnerability Classification

5 Flood Risk Assessment

5.1 Introduction

5.1.1 The main sources of flooding have been assessed as part of this report, in line with NPPF Flood Risk from the following sources have been assessed:

- Tidal and Fluvial;
- Pluvial;
- Reservoirs and other artificial sources.

5.2 Tidal and Fluvial

5.2.1 Tidal flooding is a result of flooding from tidal waters to land along the coast, or inland usually caused by high tides or storm surge. Fluvial occurs when the water level in a river or stream rises and overflows onto land as a result of the capacity of rivers being exceeded by the river flow.

5.2.2 The Environment Agency (EA) flood map for planning shows the majority of the site access being located in Flood Zone 1, as [Figure 8](#). The EA Flood Report can be found in [Appendix C](#).

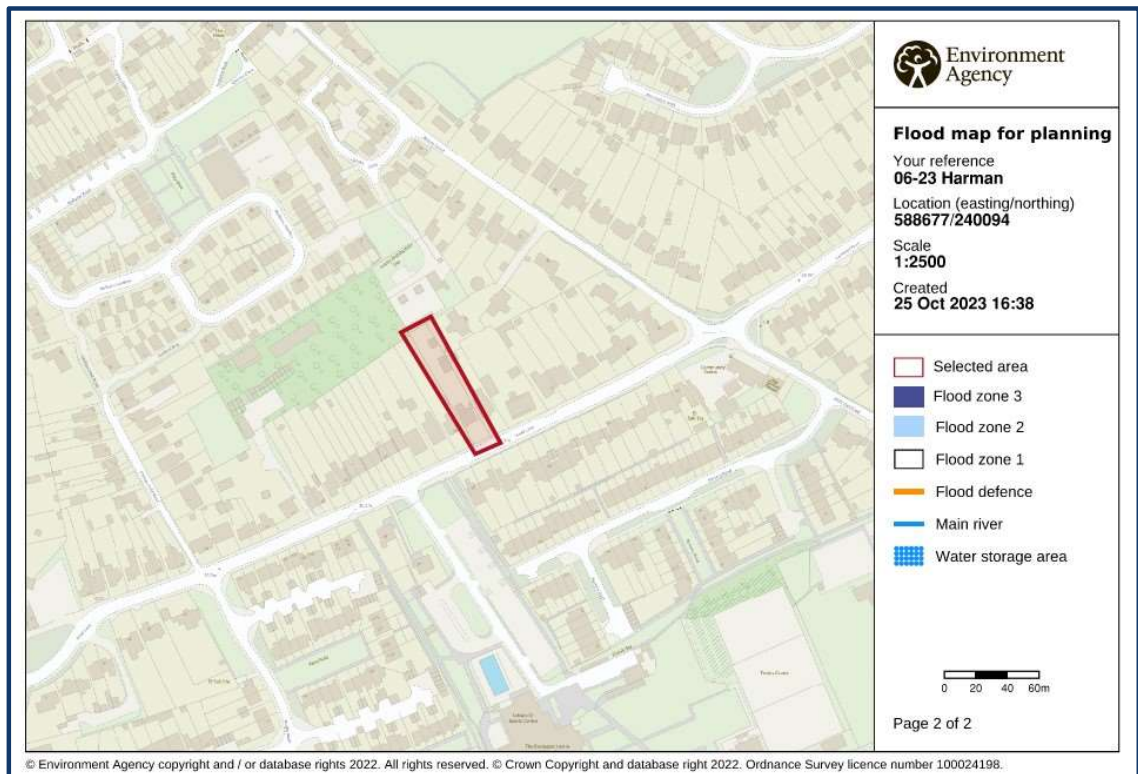


Figure 8: Extent Flood Risk from Rivers or Sea

5.3 Pluvial

- 5.3.1 Pluvial flooding occurs as a result of heavy rain creating flooding independent of a water body. Flooding occurs usually in low spots, and as a result of intense rainfall inundating the urban drainage system.
- 5.3.2 The extent of flooding from the Surface Water map from GOV.UK website shows areas of surface water flooding on the site as **Figure 9**. There is overland surface water routing from the Mid Suffolk Leisure Centre along St. Marys Road and across the rear gardens of the dwellings from Windermere Road to Recreation Road and away from the application across the Recreation Park area.
- 5.3.3 The flow of water across the rear gardens will be routed and restricted by the boundary fencing and outbuildings.

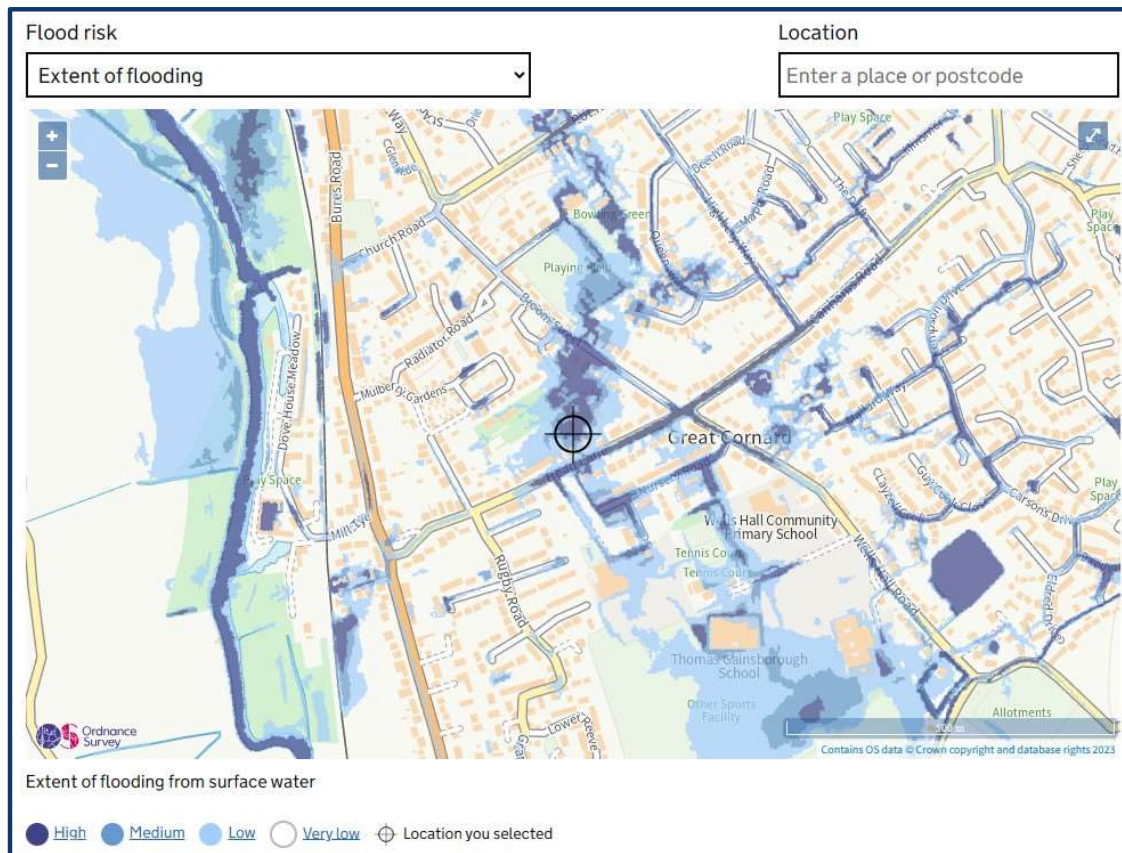


Figure 9: Extent of Surface Water Overland Map

- 5.3.4 The areas are categorized as high risk, which is defined as an area that has a chance of flooding greater than 3.3% each year. These flood areas are shown to be no greater than 300mm in depth, see **figure 10** below.



Figure 10: Extent of high-risk overland surface water flooding

5.3.5 For a medium risk event where there is a chance of flooding between 1% and 3.3% each year, the overland surface water routes across the gardens and between the buildings. The flood depth is estimated at about 300mm as it is close to the low defined area which is maximum of 300mm.

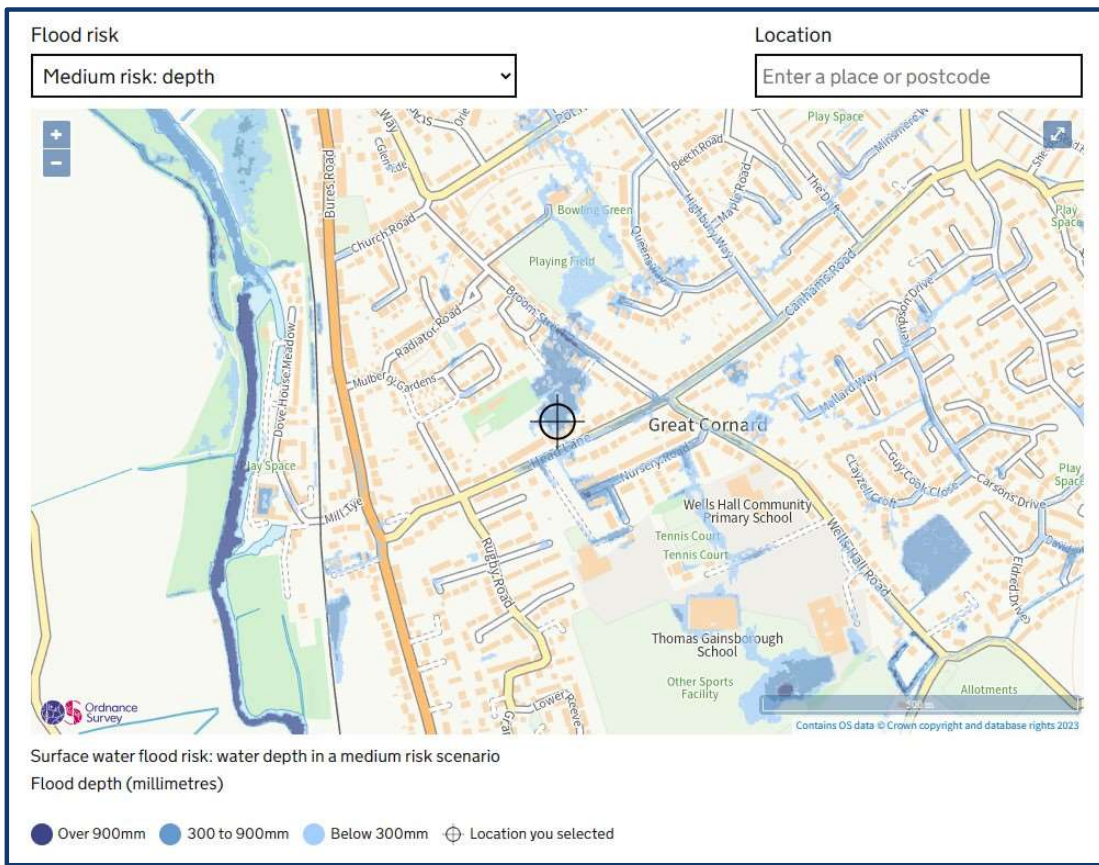


Figure 11: Extent of medium-risk overland surface water flooding

5.3.6 During an extreme storm event where there is a chance of flooding of between 0.1% and 1% each year, the surface water is shown to be between 300 to 900mm in depth. Given the small area which is surrounded by no greater than 300mm deep water it is most likely the depth potentially would be between 300-400mm.

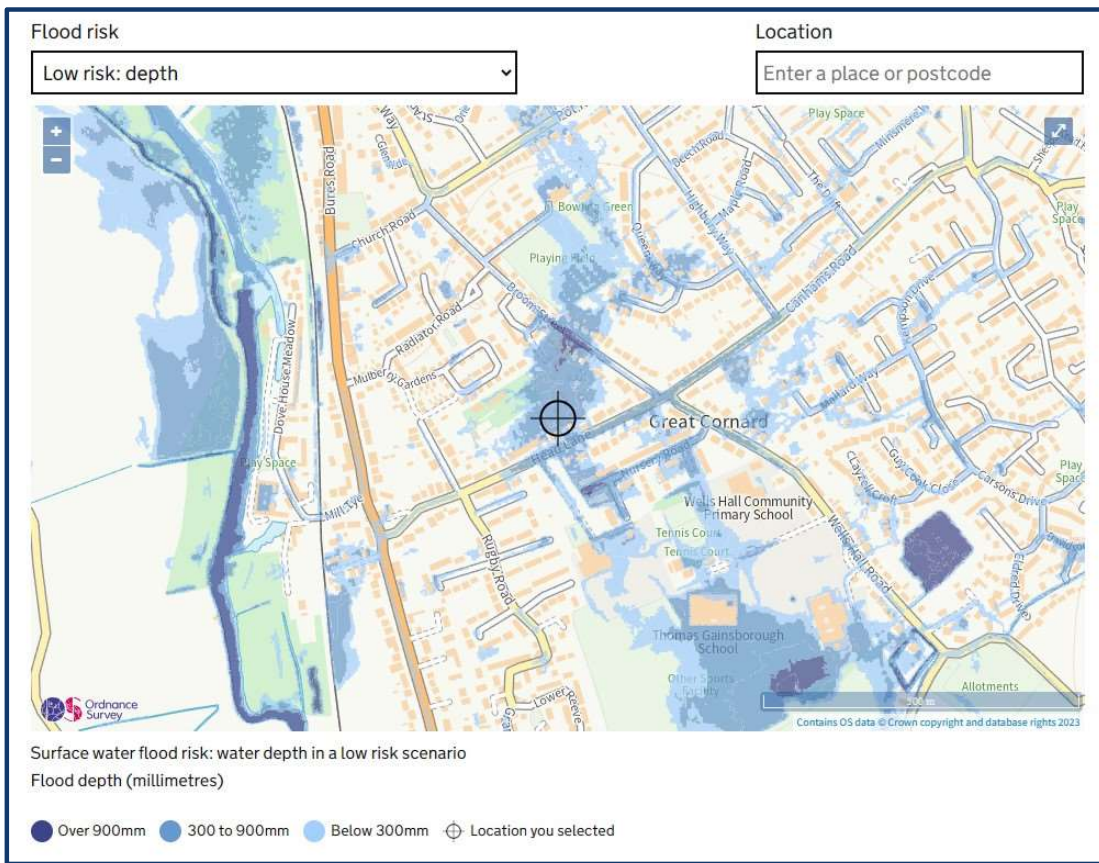


Figure 12: Extent of low-risk overland surface water flooding

5.3.7 In all cases the overland surface water routes into the rear garden of 71 and through the side walkway all the side of the property to the front drive, as shown in the site photo below.



Figure 13: Rear property Photo

5.4 Reservoirs & Other Artificial Sources

5.4.1 The risk of flooding from the failure of a reservoir has been reviewed and shown to confirm the site is not at risk.

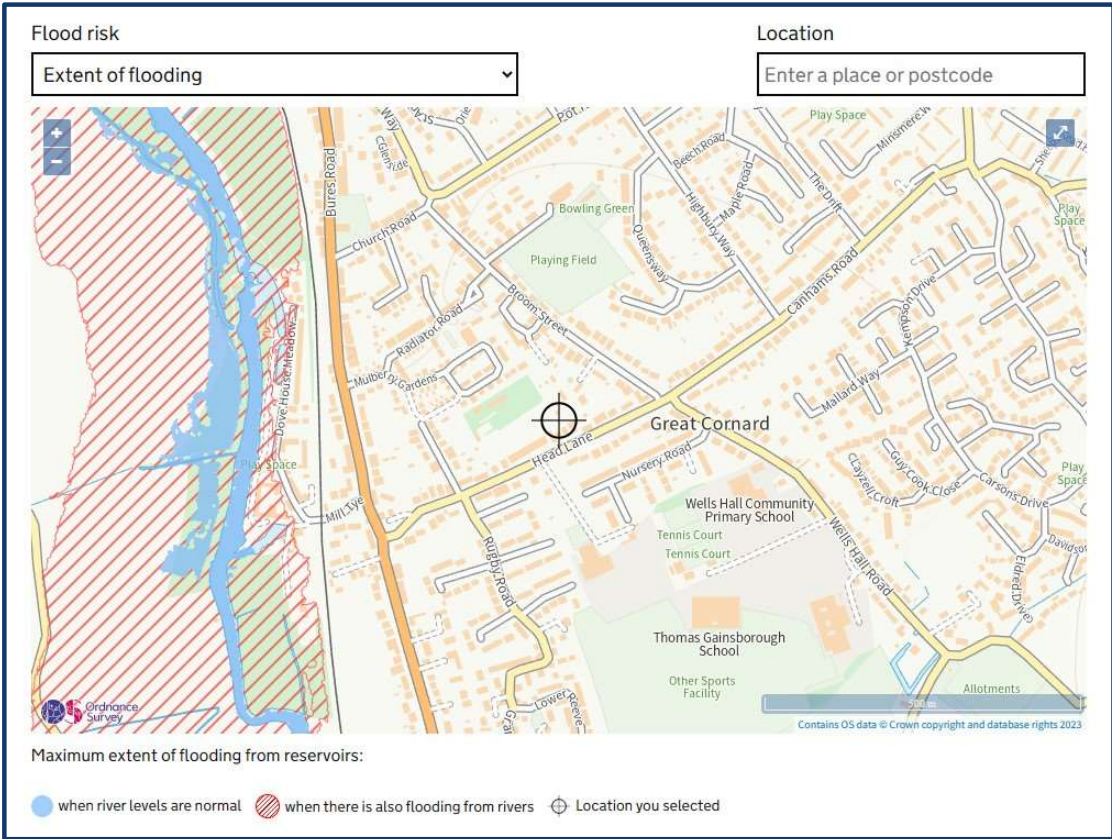


Figure 14: Extent of Reservoir Flooding

6 Flood Assessment

6.0.1 The area is located within Flood Zone 1 and not at risk from Fluvial flooding. Currently the site is at risk from overland flooding which flows into the rear garden and along the side path to the front drive as shown in [Figure 13](#).

6.0.2 The extension equates to 23sq.m. in the rear garden, where flood water would be stored and trapped. Whilst the proposed extension will extend into the rear garden, it is considered it will assist in routing surface water flow along the rear wall to the side pathway and to the front of the dwelling.

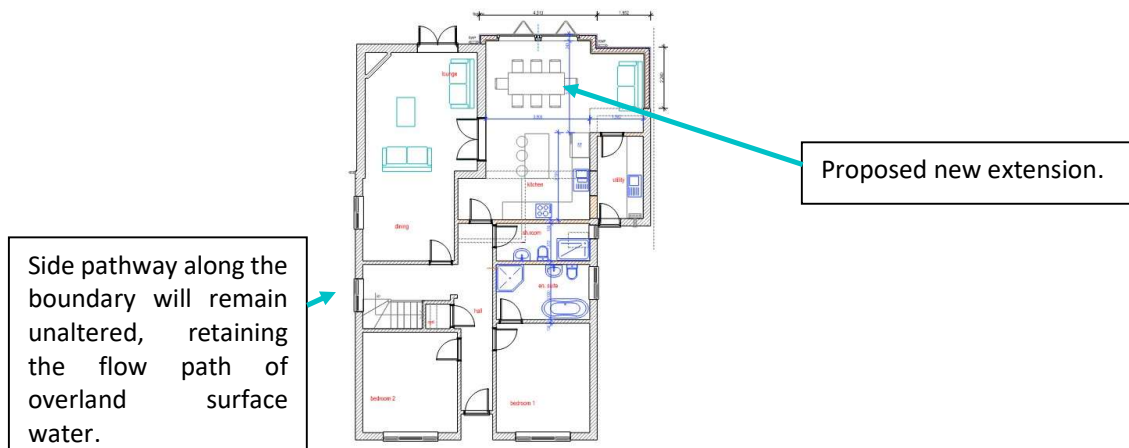


Figure 15: Proposed Ground Floor Plan

6.0.3 The flood water flow will be restricted by fencing and gateways across the rear gardens from Broom Street to 71 Head Lane. The extension will remove the area where surface water will get trapped and provide a flow route to the side.

6.0.4 The rear doors are currently raised approximately 300mm above existing ground level which reduces the risk in the extreme storm event, and with the proposed floor level will be set the same.

6.1 Flood Exceedance

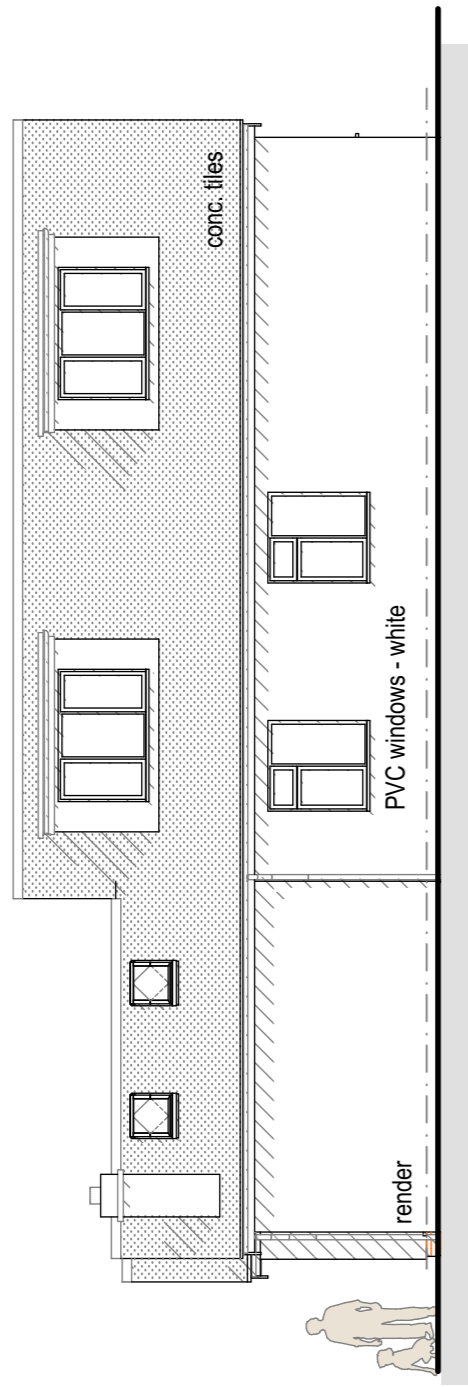
6.1.1 The land topography will remain the same, and the flood exceedance routes will be allowed to flow along the boundary to the front as currently.

7 Summary and Conclusion

7.1 Summary

- 7.1.1 MJ Engineering Group (MJEG) has been commissioned by Mark Swift Architects on behalf of the property owner to carry out a Flood Risk Assessment for the proposed extension to 71 Head Lane Great Cornard, Suffolk.
- 7.1.2 The site is located in the town of Great Cornard, Suffolk in the Babergh District, circa 1.98km southeast of the Sudbury town centre.
- 7.1.3 The site is located within a Flood Zone 1 and as a More Vulnerable use is an acceptable use for this location. There is a risk from overland surface water flooding that routes across the local rear gardens to the front.
- 7.1.4 The existing property currently has a side pathway that allows overland surface water to flow through to the front. The proposed extension will retain a flow route through from the rear garden to the front.
- 7.1.5 In considering the flood storage area of the rear garden, the proposed extension will reduce the likelihood of surface water becoming trapped along the rear of dwelling and encourage the flow to the front of the dwelling where it broadly flows along public highway.
- 7.1.6 It is concluded that there is no increase in risk from the proposed extension.

Appendix A – Site Proposal

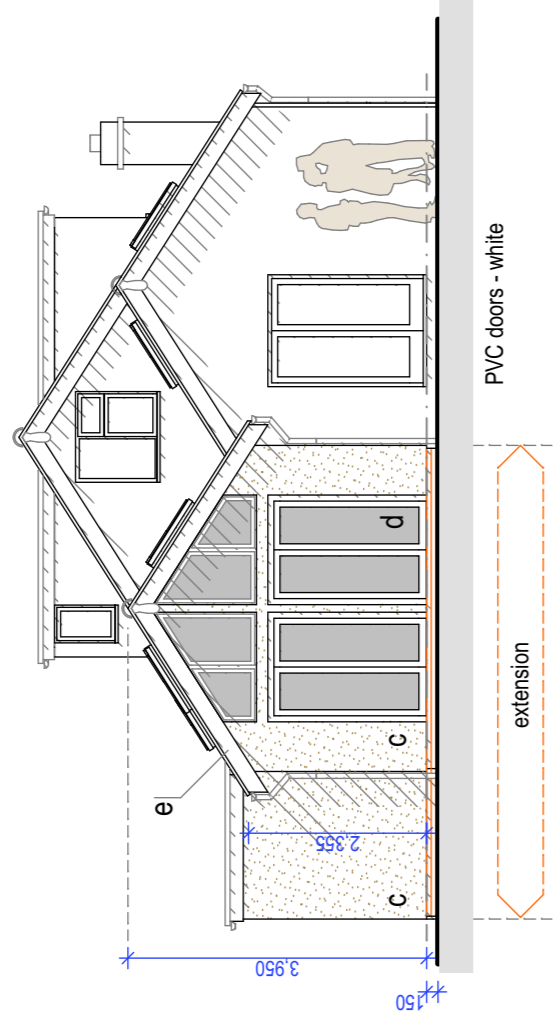


elev. 2 - side

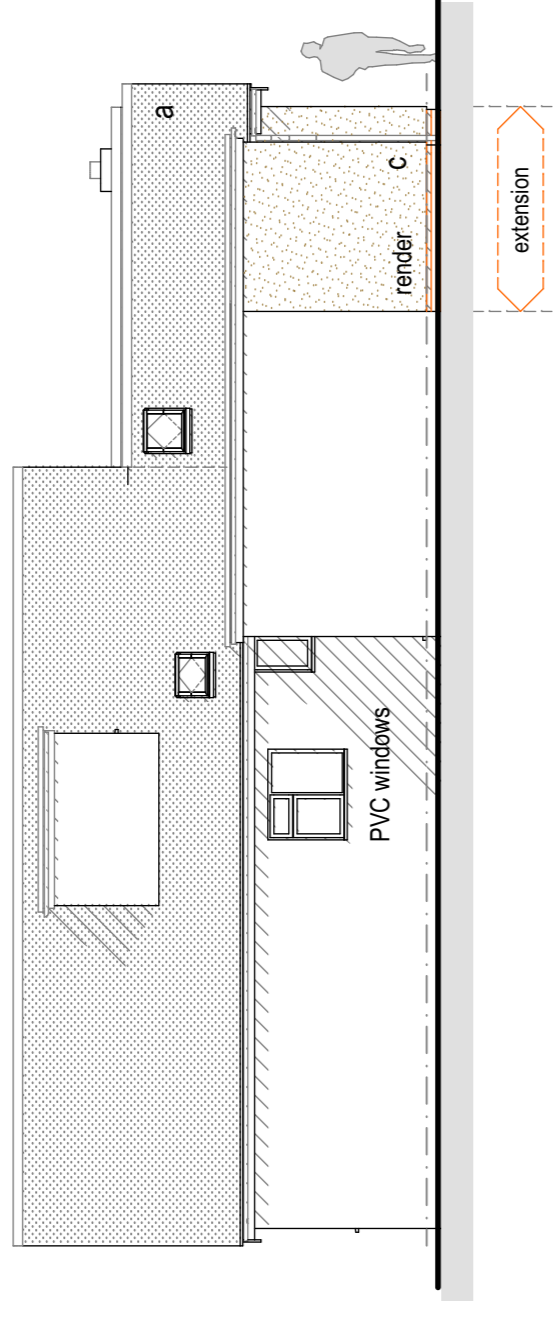
- schedule of finishes :
- a: roof finishes: interlocking roof tiles
 - b: roof finishes: interlocking roof tiles
 - c: walls finishes: render - colourwashed to match existing
 - d: window frames in white PVC-u
 - e: barge + fascias: white PVC-u

elevations

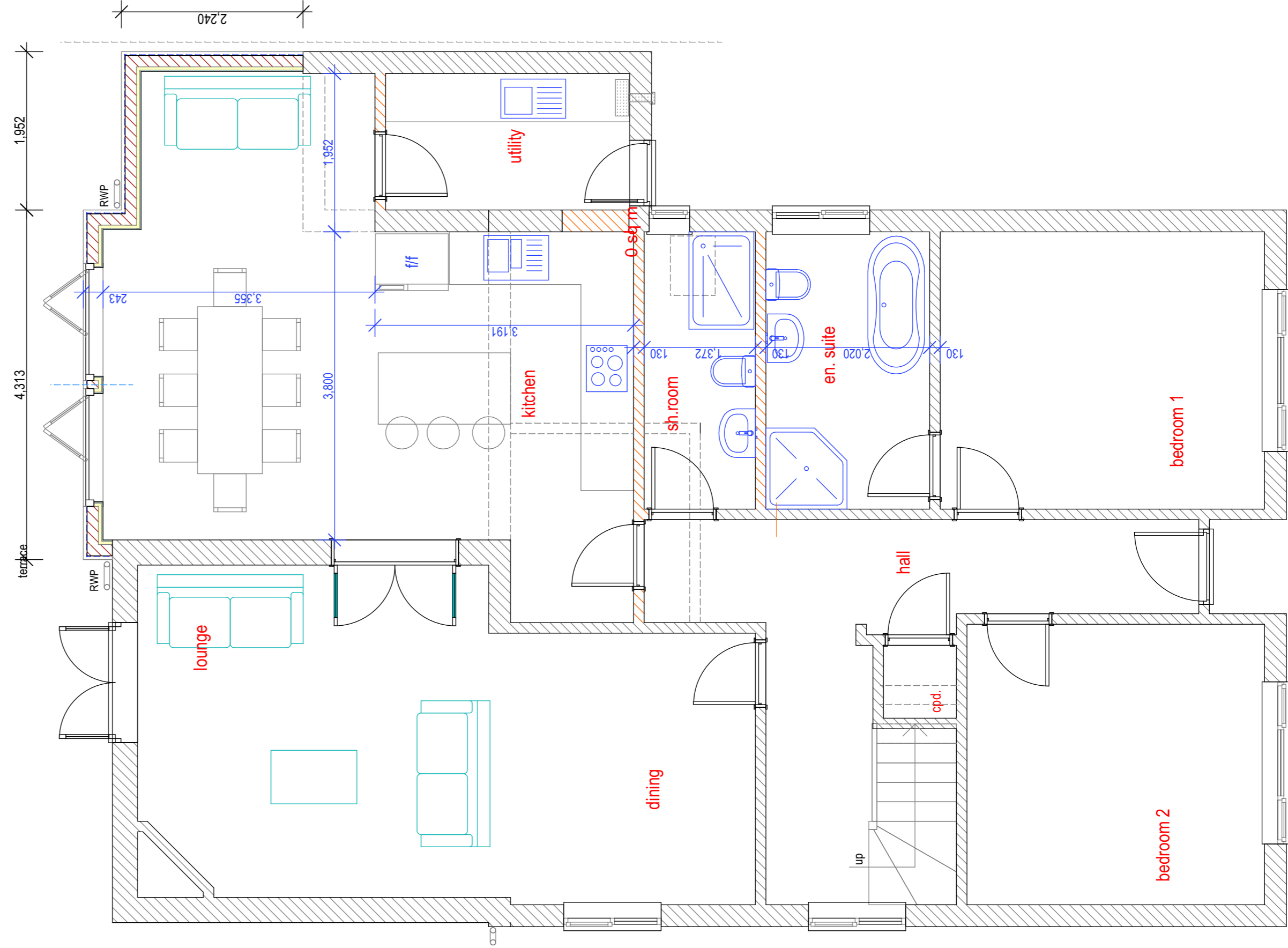
0 5m
1:100



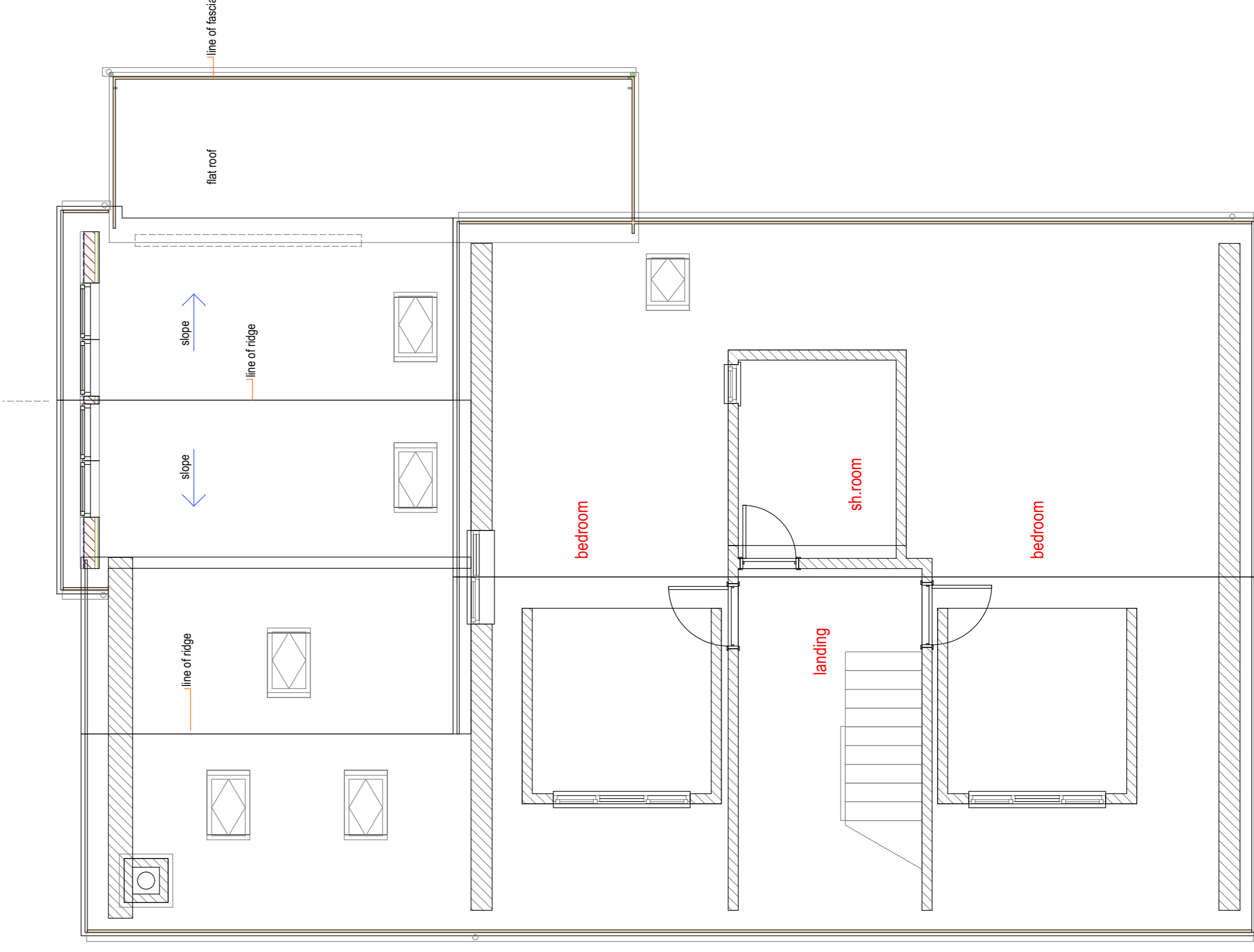
elev. 3 - rear



elev. 4 - side



Ground floor plan
1:50



Roof / First floor plan
1:50



Site plan
1:500

Appendix B – Borehole Log





HYDROGEOLOGY RESEARCH GROUP

206

TL 84/90

Form WR-38 (BGS)

BOREHOLE RECORD

(139)

EASTERN LS

ANGLIAN EA

TL84 SE

A SITE DETAILS	
Borehole drilled for	<u>(DOMESTIC)</u>
Location	<u>MR & MRS R.J ROWLING</u>
NGR (8 fig.)	<u>53 BROOM STREET, GT CORNARD, SUFFOLK</u> <u>TL 8882 4018</u> Please attach site plan
Ground Level (if known)	<u>N/K</u>
Drilling Company	<u>A.G Brown</u>
Date of Drilling	Commenced <u>16th September 1999</u> Completed <u>20th September 1999</u>
B CONSTRUCTION DETAILS	
Borehole Datum (if not ground level)	_____ above _____ m below GL
(point from which all measurements of depth are taken e.g. flange, edge of chamber, etc.)	
Borehole drilled diameter	<u>150</u> mm from <u>GL</u> to <u>22.0</u> m/depth
	_____ mm from _____ to _____ m/depth
	_____ mm from _____ to _____ m/depth
Casing material <u>PVC, Plain</u> diameter and type (e.g. if plain steel, plastic slotted)	<u>125</u> mm from <u>GL</u> to <u>14.5</u> m/depth
_____ diameter	_____ mm from _____ to _____ m/depth
_____ diameter	_____ mm from _____ to _____ m/depth
_____ diameter	_____ mm from _____ to _____ m/depth
Grouting details	<u>BENTONITE SEAL 7.5 - 0.5m</u>
Water struck at	<u>10.1</u> m (depth below datum — mbd)
	_____ m (depth below datum — mbd)
Rest water level on completion	<u>5.2m</u> 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	<u>14.0m</u> mbd
Water Level (Start of Test)	<u>5.2m</u> mbd
Water Level (End of Test)	<u>5.2m</u> mbd
Pumping rate	<u>10 gals per min</u> m ³ /d./l/s
for	<u>12</u> days/hours
Recovery to (from end of pumping)	<u>5.2</u> mbd in <u>5</u> mins: hrs: days
Date(s) of measurements	<u>20th November 1999</u>
Please supply chemical Analysis if available.	

NGDC
ACCESSION
NUMBER
36886



D STRATA LOG			
Geological Classification	Description of strata	Thickness	Depth
(BGS only)		m	m
	PEASHINGRE FILL	0.2	0.2
	MID DENSE ORANGE SAND AND FLINT GRAVEL	8.0	8.2
	FIRM WHITE CHALK WITH ABUNDANT FLINTS	13.8	12.0
Borehole terminated at 22.0m			
(continue on separate page if necessary)			
Other comments (e.g. gas encountered, saline water intercepted, etc.)			

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



HYDROGEOLOGY RESEARCH GROUP

206

TL 84/90

Form WR-38 (BGS)

BOREHOLE RECORD

EASTERN LS

ANGLIAN EA

TL84 SE/139

A SITE DETAILS	
Borehole drilled for	(DOMESTIC) MR & MRS R.J ROWLING
Location	53 BROOM STREET, GT CORNARD, SUFFOLK
NGR (8 fig.)	TL 8882 4018 Please attach site plan
Ground Level (if known)	N/K
Drilling Company	A.G BROWN
Date of Drilling	Commenced 16 th September 1999 Completed 20 th September 1999
B CONSTRUCTION DETAILS	
Borehole Datum (if not ground level)	_____ above _____ m below GL
(point from which all measurements of depth are taken e.g. flange, edge of chamber, etc.)	
Borehole drilled diameter	150 mm from GL to 22.0 m/depth
	_____ mm from _____ to _____ m/depth
	_____ mm from _____ to _____ m/depth
Casing material and type (e.g. if plain steel, plastic slotted)	PVC PLAIN 125 mm from GL to 14.5 m/depth
	_____ diameter _____ mm from _____ to _____ m/depth
	_____ diameter _____ mm from _____ to _____ m/depth
	_____ diameter _____ mm from _____ to _____ m/depth
Grouting details	BENTONITE SEAL 7.5 - 0.5m
Water struck at	10.1 m (depth below datum - mbd)
	_____ m (depth below datum - mbd)
Rest water level on completion	5.2m 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	14.0m mbd
Water Level (Start of Test)	5.2m mbd
Water Level (End of Test)	5.2m mbd
Pumping rate	10 gals per min m ³ /d.l/s
	for 12 days/hours
Recovery to (from end of pumping)	5.2 mbd in 5 mins: hrs: days
Date(s) of measurements	20 th NOVEMBER 1999
Please supply chemical Analysis if available.	



D STRATA LOG			
Geological Classification	Description of strata	Thickness	Depth
(BGS only)		m	m
	PEASHINGALE FILL	0.2	GL
	MID DENSE ORANGE SAND AND FEINT GRAVEL	8.0	0.2
	FIRM WHITE CHALK WITH ABUNDANT FLINTS	13.8	8.2
BOREHOLE TERMINATED AT 22.0m			
(continue on separate page if necessary)			
Other comments (e.g. gas encountered, saline water intercepted, etc.)			

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

Appendix C – Flood Report

Flood map for planning

Your reference
06-23 Harman

Location (easting/northing)
588677/240094

Created
25 Oct 2023 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 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 2022 OS 100024198. <https://flood-map-for-planning.service.gov.uk/os-terms>



Flood map for planning

Your reference

06-23 Harman

Location (easting/northing)








588677/240094

Scale

1:2500

Created

25 Oct 2023 16:38

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



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