

**Flood Risk
Assessment**

for

**Proposed Development
at
12c Nutbourne Road
Hayling Island
PO11 9RT**

Date: February 2017

Planning Ref: APP/16/01290

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Site Location Plan.

Block Plan – Chris Rushton Architects Ltd.

Environment Agency – Defence Data and Location Plan.

Environment Agency - Flood Map for Planning (Rivers and Sea).

Environment Agency – Information Sheet reference SSD/35716.

Environment Agency – Historic Flood Map.

Environment Agency – Risk of Flooding from Surface Water.

Flood Risk Assessment for 12c, Nutbourne Road, Hayling Island

1.0 Introduction

- 1.1 This report presents a Flood Risk Assessment, in support of the planning application for a new dwelling at the site 12c Nutbourne Road, Hayling Island (land adjacent to 12b Nutbourne Road). The purpose of this report is to assess the risk to the proposed development on this site with respect to flooding and to recommend any solutions that would be necessary to mitigate those risks.
- 1.2 In brief, it is proposed to construct a new single storey 2 bed dwelling. The full extent of the proposed development is illustrated on the block plan drawing by Chris Rushton Architects Limited, which is appended to the report.
- 1.3 In accordance with Planning Policy Statement 25 (PPS25), the aims of this report are to demonstrate the following:-
 - i) whether the proposed development is likely to be affected by flooding.
 - ii) what measures are proposed to deal with the flood risk and whether they are sustainable.
 - iii) whether the proposed development will increase the risk of flooding to adjacent properties.
 - iv) what measures are recommended for flood emergency planning and whether they are sustainable (as advised in PPS25, paragraph G12 and the PPS25 Practice Guide, paragraph 7.23).

2.0 Description of the Site and Coastal Defences.

- 2.1 The site is located at NGR 474253, 098317 (SZ 743983) and the post code is PO11 9RT (refer to the site location plan which is appended to the report). It is situated in the midst of a housing development on a small peninsular in the southeast corner of Hayling Island, about 0.3km north of the south shore to the English Channel / Solent and 0.75km west of the inlet from the Channel to Chichester Harbour. About 0.5km to the north is an estuarial channel to Stocker's Lake / Chichester Harbour. Sandy Point nature reserve is about 0.5km east of the site.
- 2.2 The housing development is on relatively level low lying ground generally below the 5m contour on the 1:25,000 scale Ordnance Survey Map.
- 2.3 There is a shingle embankment at the back of the beach on the south shore, which according to the Environment Agency's Defence Data and Location Map (appended to the report) is a coastal defence asset (Asset ID 470251). Behind the shingle embankment is a concrete sea wall, which is generally lower than the shingle embankment but about 1m higher than the land to the north. The land to

the north of the south facing beach is generally lower than the level of the shingle embankment.

3.0 Risk of Flooding and Predicted Flood Levels

- 3.1 The Environment Agency Flood Map for Planning (Rivers and Sea), which is appended to the report, indicates that the proposed development is in a flood zone 2 area for the undefended scenario. The land to the west and immediately north is in flood zone 1 and to the land further north and east is generally in flood zone 3. A flood zone 2 area has been assessed as having between a 1 in 200 and 1 in 1000 (0.5% to 0.1%) annual probability of flooding from the sea. A flood zone 3 area has been assessed as having a greater than 1 in 200 (>0.5%) annual probability of flooding. At this level of flood risk it is recommended by the Environment Agency that measures are taken to mitigate the risk of flooding.
- 3.2 Because the EA flood map shows part of the site is in a flood zone 2 area the Environment Agency was approached for specific 1 in 200 year predicted flood levels for this site and /or recorded maximum flood levels. The Environment Agency were not able to provide specific flood levels for this site but were able provide more detailed information than is available on their web site. This included a historic flood map and an information sheet with regard to historic flood information and predicted sea levels. The historic flood map and information sheet, reference number SSD/35716 are appended to the report.
- 3.3 In summary, the information sheet given by the Environment Agency gives still water design estimates for tide levels (extreme tide levels) at Chainage point 63 (NGR 472810, 096359) for the years and annual exceedance probabilities given in the table below. The extreme tide level includes an allowance for climate change and for the effect of storm surge and as such the value is higher than the astronomical tide. However, it does not account for any local increase in sea level that may be induced by onshore wave action. A summary of the historic flooding is given in section 4.

Year	Tide Level (mAOD)	
	0.5% annual exceedance probability/1 in 200 year	0.1% annual exceedance probability/1 in 1000year
2008	3.3	3.5
2070	3.8	4.0
2115	4.4	4.6

4.0 History of Flooding

- 4.1 The information provided by the Environment Agency records that regular flooding occurred from the sea prior to the 1985 Beach Nourishment Scheme. Presumably this scheme included the shingle embankment referred to in paragraph 2.3. Since then the Environment Agency is aware of flooding on two occasions, in November 2005 and March 2008. It is reported that the cause of the flooding was overtopping of the sea defences. The only defences shown on the Environment Agency Defence Data and Location Map is the shingle embankment on the south shore.

- 4.2 The historic flood map shows flooding of the Nutbourne Road adjacent to the site of the proposed development. However it does not show any flooding of the properties either side of the road.

5.0 Risk of Flooding from Overland Flows and Rising Groundwater

- 5.1 The Environment Agency Map for Flood Risk from Surface Water Flooding indicates that the proposed development is in an area of very low risk from surface water flooding.
- 5.2 There is no evidence to suggest that rising groundwater would be a matter of concern on this site.

6.0 Proposed Mitigation Measures to Deal with Flood Risk

- 6.1 The Environment Agency would normally recommend that the ground floor level of the new building should be above the estimated 1 in 200 year fluvial flood level plus 600mm freeboard plus an allowance for climate change. Climate change has already been allowed for in the extreme tide levels (refer to paragraph 3.3). The predicted extreme tide level for the year 2070 with an annual exceedance probability of 0.5% (1:200 years) is 3.8m AOD. Therefore the recommended ground floor level for the proposed development on this site should be a minimum of 3.8m plus 0.6m = 4.4m AOD.
- 6.2 The historical floods map shows that Nutbourne Road floods but not the properties each side of the road. Therefore, it is also recommended that the ground floor level should be a minimum of 0.8m (including 0.2m allowance for climate change) above the road kerb height adjacent to the proposed development. Whichever is the higher level of the two factors (refer also to paragraph 6.1 above) should determine the level of the ground floor.
- 6.3 In addition it is recommended that the following flood resilience measures should be adopted to further mitigate the risk of damage from flooding:-
- 1) All electric circuits to the ground floor could be fed top down and placed a minimum of 900 mm above the recommended floor level.
 - 2) Other services entering the building below ground floor level should be appropriately sealed.
 - 3) All access covers to sewers outside the buildings should be of a sealed type if they are below the minimum recommended floor level. This will prevent possible pollution in a flood event.

All the above measures will be permanent features and therefore sustainable for the future.

7.0 Flooding to Adjacent Properties and Flood Emergency Planning

- 7.1 The site is in a flood zone 2 area and is not part of a flood plain. Consequently, the addition of the proposed dwelling and other impermeable areas will not result in the loss of existing flood plain and will not increase the risk of flooding to other properties.
- 7.2 The new development should be designed so that there will not be any measureable increase in the rate of surface water run-off from the site, above the rate of that for the existing site. This could be achieved using various SUDS methods. For example, if the ground is suitable, surface water from roofs could be dispersed by soakaway and permeable paving could be adopted for hardstandings, footways etc. In addition storage and attenuation systems could be used if practicable. Consequently, if SUDS techniques are used surface water drainage of the proposed new development should not increase the risk of flooding to any neighbouring properties. However the surface water drainage of the proposed development is outside the scope of this FRA.
- 7.3 The proposed new development is located in Flood Zone 2 and in accordance with PPS25 table D1 this is a zone of a medium probability of flooding. In accordance with Table D2 of PPS25 the development will have a Flood Risk Vulnerability Classification of 'More Vulnerable'. However, in accordance with table D.3 the site is appropriate for development.

... / continued on Summary Page

8.0 Summary

- 8.1 The Environment Agency Flood Map for Planning (Rivers and Sea) places the property in a flood zone 2 area. Other information provided by the Environment Agency indicates that flooding from the sea overtopping defences has occurred in the past, although the historic flood map implies that the flooding has been restricted to the road outside the proposed dwelling. The predicted extreme tide level for the year 2070 with an annual exceedance probability of 0.5% (1:200 years) is 3.8m AOD.
- 8.2 To mitigate the risk of flooding it has been recommended that the minimum ground floor level of the proposed new dwelling should be the greater of the following two factors:-
- 4.4m AOD or.
 - Kerb height adjacent to the property plus 0.6m allowance for freeboard and 0.2m allowance for climate change.

Further mitigation measures set out in paragraph 6.3 have also been recommended.

- 8.3 The proposed dwelling is outside / above flood zone 3 and will not reduce the volume of the floodplain. Consequently, the development will not increase the risk of flooding to neighbouring properties.
- 8.4 The proposed new dwelling is in an area of very low risk of surface flooding.

Signed:

Date: 28th February 2017



J R TAYLOR
BEng AMICE

for and on behalf of
BURGESS ROUGHTON
Consulting Engineers

APPENDIX

Site Location Plan.

Block Plan – Chris Rushton Architects Ltd.

Environment Agency – Defence Data and Location Plan.

Environment Agency - Flood Map for Planning (Rivers and Sea).

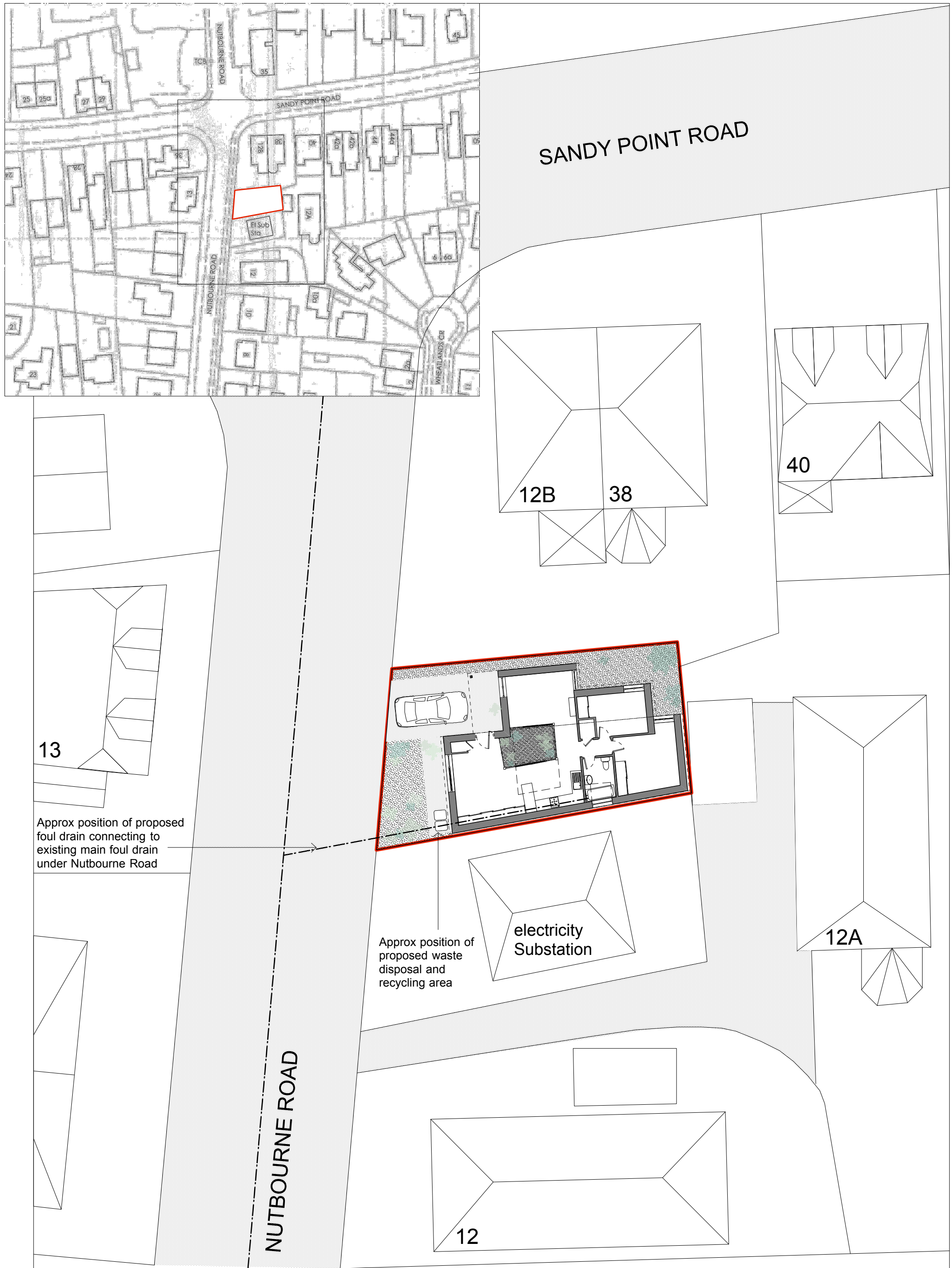
Environment Agency – Information Sheet reference SSD/35716.

Environment Agency – Historic Flood Map.

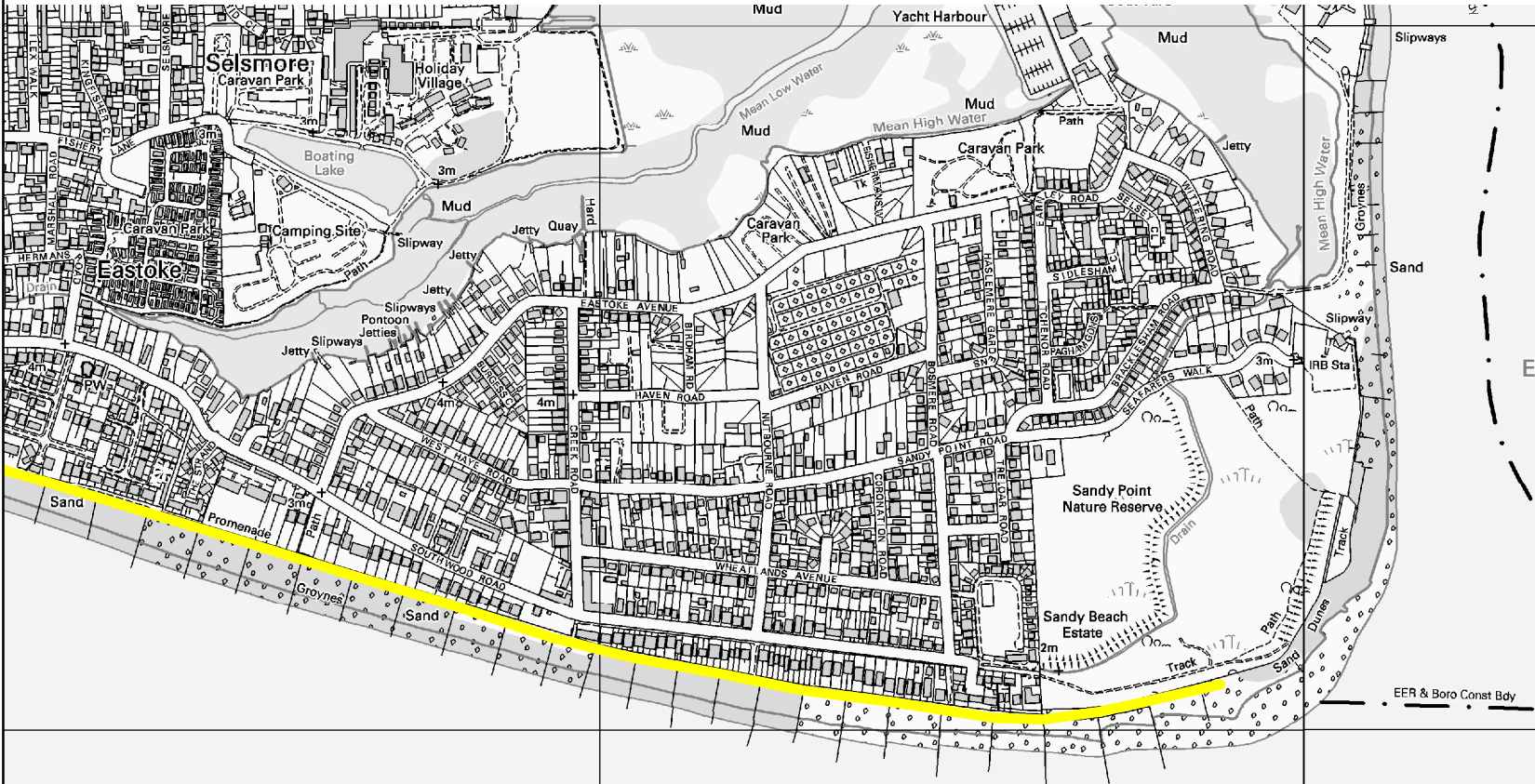
Environment Agency – Risk of Flooding from Surface Water.

LOCATION PLAN





Defence Data and Location Map



Legend

GEOM_002

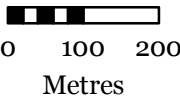
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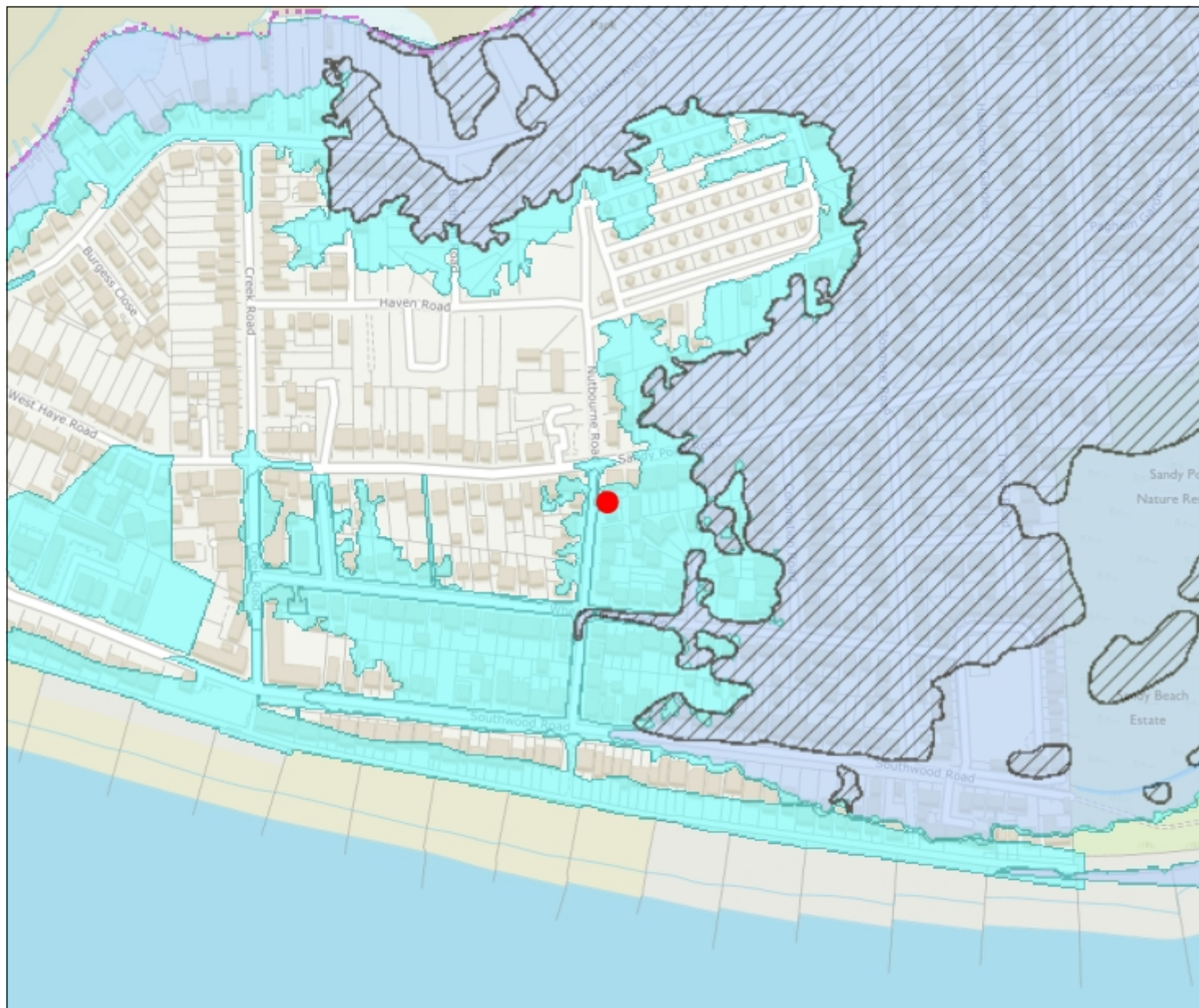
470251

Asset ID	Description	Length (m)	Protection Type
470251	Shingle embankment	1905.26	coastal

1:10,000 *
*when printed at A4.



Flood Map for Planning (Rivers and Sea)



Scale 1: 5,000



Flood Map for Planning (Rivers & Sea)

- Defences
- Flood Storage Areas
- Areas benefiting from flood defences
- Flood Zone 3
- Flood Zone 2

Flood Map Areas (assuming no defences)

Flood Zone 3 shows the area that could be affected by flooding:

- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year.

Flood Zone 2 shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.

john.burgessroughton@btinternet.com

Our ref: SSD/35716

Your ref:

Date: February 10, 2017

Dear John Taylor

Provision of Product 4 for 12c Nutbourne Road, Hayling Island

Thank you for your request of 24th January 2017 to use Environment Agency data, Product 4 in the development of the Flood Risk Assessment. The information is attached.

Further details about the Environment Agency information supplied can be found on the GOV.UK website:

<https://www.gov.uk/browse/environment-countryside/flooding-extreme-weather>

If you have requested this information to help inform a development proposal, then you should note the information on GOV.UK on the use of Environment Agency Information for Flood Risk Assessments

<https://www.gov.uk/planning-applications-assessing-flood-risk>

<https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion>

The site may be affected by an extreme flood. According to our published flood map, which provides a general estimate of the likelihood of flooding across England & Wales, the property is shown to be within Flood Zone 2 - an area which may have a 0.1% chance of flooding annually (1 in 1000), **ignoring** the presence and effect of any flood defences.

Environment Agency

Romsey Depot, Canal Walk, Romsey, SO51 8DU

Customer services line: 08708 506 506

Email: enquiries@environment-agency.gov.uk

www.environment-agency.gov.uk

The Environment Agency is aware of flooding to this area prior to 1985 and also in 2005, 2008 and can provide the following information.

Name:	Hayling Island 2005-2006
Start Date:	03/11/2005
End Date:	03/11/2005
Flood Source:	Sea
Flood Cause:	Overtopping of defence
Comments:	High tide was at 11:48. Actual wind direction at 11:45 was 206 degrees (South/ Southwesterly) and wind speed in knots was 39.8, equivalent to Force 8 (Chimet 2005). Barometric pressure was measured at 1001.3millibars. Significant Wave Height was 1.91m an

Name:	Hayling Island Prior to 1985
Flood Source:	Sea
Flood Cause:	Overtopping of defence
Comments:	Regular flooding occurred prior to the 1985 Beach Nourishment Scheme. The addresses are taken from December 2007 records which have been matched to records of properties flooded in 1985. Therefore the address/building name may have altered since 1985.

Name:	Hayling Island 2008
Start Date:	10/03/2008
End Date:	10/03/2008
Flood Source:	Sea
Flood Cause:	Overtopping of defence

Defences – See attached map.

Coastal Boundary Data

The Environment Agency holds data about extreme sea levels around the coast of England, Wales and Scotland.

Sea levels (still water design estimates) for the 0.5% (1:200) and the 0.1% (1:1000) annual exceedance probabilities relevant to your site are provided in the table below.

Chainage point: 63	Easting: 472810	Northing: 96359
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Year	Tide Level (mAOD*)	
	0.5% annual exceedance probability/1 in 200 Year (Flood Zone 3)	0.1% annual exceedance probability/1 in 1000 Year (Flood Zone 2)
2008	3.3	3.5
2070	3.8	4.0
2115	4.4	4.6

* Levels in metres above Ordnance Datum Newlyn.

* All levels include Climate Change Allowance

These values are based on 2008 base data, and have been projected for climate change using estimates for sea level rise presented in Table 4 of the Technical Guidance to the National Planning Policy Framework.

Note 1:

Extreme sea level values are for still water sea levels only. Extreme sea level values include the effect of storm surge but do not account for any local increase in sea level that may be induced by onshore wave action. Wave set-up would need to be estimated separately.

Note 2:

Annual exceedance probability describes the likelihood (chance) of being exceeded in any given year.

This information is provided subject to the enclosed notice, which you should read.

I hope that we have correctly interpreted your request. Please see the attached Standard Notice or licence for details of permitted use.

We respond to requests for recorded information that we hold under the Freedom of Information Act 2000 (FOIA) and the associated Environmental Information Regulations 2004 (EIR).

If you are not satisfied with our response to your request for information you can contact us within 2 calendar months to ask for our decision to be reviewed.

If you have any queries or would like to discuss the content of this letter further please call us on 08708 506506.

If you have any queries or would like to discuss the content of this letter further please contact the Partnership and Strategic Overview Team at the Environment Agency.

Yours faithfully

Alex Haydon
Partnership and Strategic Overview team, Hampshire and Isle of Wight
Environment Agency

Email psohiow@environment-agency.gov.uk

Historic Flood Map

Legend

 Historic Flood Map



0 100 200 300
Metres



Risk of flooding from Surface Water



Scale 1:3,000



Likelihood of flooding from Surface Water

- High ($\geq 3.3\%$)
- Medium ($3.3\% - 1\%$)
- Low ($1\% - 0.1\%$)
- Very Low

Likelihood of flooding from Surface Water

- High:** Greater than or equal to 3.3% (1 in 30) chance in any given year
- Medium:** Less than 3.3% (1 in 30) but greater than or equal to 1% (1 in 100) chance in any given year
- Low:** Less than 1% (1 in 100) but greater than or equal to 0.1% (1 in 1,000) chance in any given year
- Very Low:** Less than 0.1% (1 in 1,000) chance in any given year

This information is shown on the Risk of Flooding from Surface Water map on our website.