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[redacted]

Flood Risk Assessment

258 Priory Road
Southampton
SO17 2JW

Date: March 2022
Project No.: 303698
Revision: 01

Structural Engineering
Civil Engineering
CDM Consultants
Sustainability and BREEAM
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Issue and Amendment Record:

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00	First Issue	MJH	JD	JD	18.03.22
01	Update from architect comments	MJH	IL	IL	25.03.22

Contents

1.0 Introduction

1.1 Scott White and Hookins have been instructed by Vicky Todd on behalf of the client, Jaldip Patel, to undertake a flood risk assessment of a proposed residential development at 258 Priory Road, Southampton. This flood risk assessment has been produced as a supporting document for a planning application and takes the form of a desk study. A drainage strategy for the development is not covered in this report and will form a separate document.

1.2 The proposed development comprises the partial demolition of the existing building on site to provide a larger building for the provision of four dwellings. An existing dilapidated outbuilding on the site is to be demolished. The existing site is currently used for residential purposes. A location plan is provided in **Appendix A**. Proposed site plans are given in **Appendix C**. It should be noted that one half of the existing site is to remain undeveloped.

1.3 On the basis of the proposed development the scheme is classed as 'More Vulnerable' under table 2 of the NPPF, the same classification as the existing site and therefore the development does not increase the flood risk vulnerability. The NPPF follows a sequential risk-based approach in determining the suitability of land for development in flood risk areas, with the intention of steering all new development to the lowest flood risk areas. The proposal is a redevelopment of the existing site and therefore a development at a lower flood risk area is not possible.
The FRA addresses the second part of the exception test. The extension to the existing building is approximately 50m² and therefore is considered to be a minor development and will following EA standing advice.

	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
FZ1					
FZ2		ETR			
FZ3a	ETR		ETR		
FZ3b	ETR				

Green – Development appropriate.
Red- Development not permitted.
ETR – Exception test required to allow development.

1.3 This report considers the flood risk to the proposed development and the impact that the development will have in relation to flooding of adjacent areas and watercourses. It also considers any limits relating to flooding that are likely to be imposed to allow the development to be undertaken.

1.4 This report takes into account the requirements of NPPF and local policies and is based on information received from the Environment Agency.

1.5 Local planning policy is contained with the Southampton City Council Core Strategy. Policy CS 23: Flood risk states 'Development will achieve an appropriate degree of safety taking into account standards of defence and sea level rise over the life of the development'. **See Appendix I**.

1.6 This report is for the private and confidential use of the client and its agents and may not be copied in whole or in part without the written permission of Scott White and Hookins LLP.

2.0 Existing Site Conditions

2.1 The site is located at 258 Priory Road, SO17 2JW, centred on grid reference SU43609 14040, and the area of the site to be developed is approximately 440m^2 in size. A location plan is given in **Appendix A**.

2.2 The site currently comprises a detached house with associated driveway, a rear garden and a dilapidated building on the eastern site boundary. An aerial view of the site is given in **Appendix A**. The site is bounded by Priory Road, residential properties to the north and south, and dense bushes/brambles to the east with the River Itchen beyond. Access to the site is from Priory Road.

2.3 A topographic survey has been undertaken by Encompass Surveys dated July 2018 (see drawing in **Appendix B**). It shows the site slopes towards the eastern boundary of the site. Site levels range from 3.70m AOD at the site entrance to 2.65m AOD at the south-east corner of the site next to the dilapidated building. The remainder of the existing site which is to remain undeveloped continues to gradually slope towards the River Itchen.

2.4 The British Geological Survey records for the site indicate that the site is likely to be underlain by River Terrace Deposits comprising Sand and Gravel. The site is likely to be underlain by bedrock geology of the London Clay Formation comprising Clay, Silt and Sand. See **Appendix D**.

3.0 Potential Flood Risk Affecting the site

3.1 Fluvial and Tidal Flooding

3.2.1 Flood plain mapping available online provided by the Environment Agency (EA) indicates that the site lies in Flood Zones 1, 2 and 3 due to the site's proximity to the River Itchen. The Flood Zones are defined in Table 1 of the Planning Practice Guidance (PPG) 'Flood Risk and Coastal Change' section as follows:

- Flood Zone 1 'Low Probability' – Land at less than 1 in 1000 (0.1%) annual probability of river or sea flooding;
- Flood Zone 2 'Medium Probability' – Land between 1 in 100 (1%) and 1 in 1000 (0.1%) annual probability of river flooding, or between 1 in 200 (0.5%) and 1 in 1000 (0.1%) annual probability of sea flooding;
- Flood Zone 3 'High Probability' – Land at 1 in 100 (1%) or greater annual probability of river flooding, or 1 in 200 (0.5%) or greater annual probability of sea flooding.

3.2.2 See extract of flood maps obtained from the Environment Agency in **Appendix E**. Since the River Itchen is tidal within the area of the site, it is considered to be at risk of tidal flooding.

3.2.3 Tidal flood levels provided by the Environment Agency are based on 2012 base data (see EA consultation response in **Appendix F**). The data was subsequently updated in 2015 to reflect the climate change allowances at the time.

Year	Tidal Level (m AOD)	
	0.5% Annual Exceedance Probability (Flood Zone 3)	0.1% Annual Exceedance Probability (Flood Zone 2)
1 in 200 year (2015)	3.30	3.40
1 in 200 year (2070)	3.80	3.90
1 in 200 year (2115)	4.40	4.60

3.2.4 A comparison of site levels (2.65-3.70m AOD) with supplied flood levels confirms the site is located in Flood Zones 1, 2 and 3 based on current model. Updated sea level rise allowances due to climate change were released in December 2019 which the supplied flood levels in the table above do not take into consideration.

SWH calculated the following climate change flood levels as shown in the Table below. SWH assessments are enclosed in **Appendix G**.

Year	Tidal Level (m AOD)	
	0.5% Annual Exceedance Probability (Flood Zone 3)	0.1% Annual Exceedance Probability (Flood Zone 2)
1 in 200 year (2022)	3.35	3.45
1 in 200 year (2122)	4.38	4.48

3.2.5 EA data indicates there are defences along the western bank of the River Itchen. Directly west of the site there is a private wall that has design standard of protection of 100 years (see EA data in **Appendix F**).

3.2.6 The Partnership for Urban South Hampshire Strategic Flood Risk Assessment (PUSH SFRA) shows indicative hazard mapping of the areas at risk of fluvial and tidal flooding including an assessment of the flood hazard due to a breach (a combination of flood depth and flow velocity). The mapping indicates a large proportion of the site (western area including the existing footprint of property no 258) has a very low flood risk with land at the western site boundary at moderate and high risk of flooding (see PUSH SFRA Mapping enclosed in **Appendix H**).

3.3 Surface Water Flooding

3.3.1 The EA Surface Water Flood Map indicates the site has a very low risk of surface water flooding (see mapping in **Appendix E**). Southampton Level 2 SFRA dated May 2017 mapping (see **Appendix H**) indicates a number of flood incidents have been recorded in close proximity to the site including on Priory Road due to a combination of tidal and surface water sources. The SFRA includes surface water modelling which indicates isolated areas with flood depth in the order of 0.25- 0.49m. This modelling would indicate surface water flood levels in the order of 3.2mAOD. As surface water is only likely to enter the site from Priory Road, the existing site levels at the eastern boundary of the site (approx. 3.70m AOD) mean the risk of flooding from overland flow is low.

3.4 Groundwater Flooding

3.4.1 The SFRA indicates the site lies within an 1km area where there is between 50-75% susceptibility to groundwater flooding. No groundwater flood incidents have occurred at the site or in the immediate vicinity (see SFRA Map extracts in **Appendix H**). Based on a BGS Borehole log Priory Avenue north of the site seepage was recorded at 2.40m below ground level otherwise the borehole was reported to be dry up to 5.2mbgl. The borehole logs further indicates groundwater levels probably correspond to a little above mean river levels. It is considered the risk of flooding from groundwater is low-medium. A copy of the borehole log is enclosed in **Appendix D**.

3.5 Reservoir Flooding

3.5.1 EA flood maps show the site is not at risk of flooding from a reservoir failure (see maps in **Appendix E**).

3.6 Sewer Flooding

3.6.1 The Southampton Level 2 SFRA indicates that there are no Southern Water records of sewer flooding at the site (see maps in **Appendix H**).

3.7 The data provided by the Environment Agency and mapping within the SFRA indicate that the site to be at low risk of flooding based on the current data. It is recognised that the impact of climate change will place the building and site at risk of flooding in future however there are existing flood defences in place in close proximity to the development site.

4.0 Flood Mitigation Proposals

4.1 Flood Mitigation

4.1.1 Ground Floor Levels

As the proposed development is classified as a minor development, the current Environment Agency standing advice recommends that floor levels are set no lower than existing of 300mm above the estimated flood level. In this instance, the floor level of the existing building is to be maintained throughout.

Standing advice states that where you cannot raise floor levels above the estimate flood level, it will be necessary to provide extra flood resistance and resilience measures.

The use of temporary flood guards should be incorporated into the detailed design of the building to prevent water ingress at door opening. Flood resilient is covered in further detail below.

4.1.3 Site Levels

It is also recommended that ground floor levels are set a suitable freeboard above surrounding ground (minimum 150mm) to mitigate the residual flood risk associated with excess surface water runoff in an extreme rainfall event. Similarly, exterior ground levels across the site should also be appropriately contoured to direct surface water away from dwellings in such a scenario.

4.1.4 Flood Resistant and Resilient Measures

EA Standing Advice states where you cannot raise floor levels above the estimate flood level, it will be necessary to provide extra flood resistance and resilience measures.

The 0.5% annual probability plus allowance for climate change flood level (design flood level) is calculated to be 4.38m AOD. It is therefore recommended that flood resilience measures are incorporated to a level of 4.68m AOD to achieve the 300mm freeboard above the design flood level. This is approximately 1m above current floor level of the existing dwelling.

Due to the residual risk to the property, flood resistant and resilient measures could be incorporated in the construction of the development in line with the current recommendations from the Defra/EA document 'Improving the Flood Performance of New Buildings – Flood Resilient Construction'.

4.1.5 Flood resistant measures aim to keep flood water out of the building by providing

barriers and incorporating low permeability measures in the wall and floors. Such measures include demountable defences, water resistant wall rendering, the sealing of ground level vents (e.g. using Ventguard, Ventseal or SmartBrick) and anti-flood valves fitted to all drainage runs exiting the building. It will also be necessary to ensure that all gas, electric and other building services are raised above the flood level.

4.1.6 Flood resilient measures are incorporated where it is accepted that, in severe flood events, water may enter parts of the building so it is necessary to ensure the building will remain useable after the floodwater has receded and the area has been cleaned. Therefore, the key issue is to incorporate materials that retain their structural integrity and have good drying and cleaning properties (e.g. the use of suitable tiling over areas, with water resilient grout). It is also recommended that services are secured and sockets etc. are located with a suitable freeboard above the floor level.

4.1.8 Actual measures can be discussed and agreed with Building Control Officers during detailed design

4.1.9 Floodplain compensation

Whilst the site is located within Flood Zone 3, the site is considered to benefit from the coastal flood defences and is considered to be tidal, therefore the requirement for compensatory floodplain storage is negated.

4.1.10 Safe Access and Egress

It is necessary to consider and incorporate safe access arrangements as part of the mitigation, to ensure the users/occupants of the development are safe in times of flooding. A safe 'dry' access route would ideally be provided from the door of the property to an area/location wholly outside of the 0.5% annual probability plus an allowance for climate change extent of 4.38m AOD.

4.1.11 Safe access and egress is not available for this site as this flood level is higher than the whole site and nearby surrounding area. The potential depth of water at the site entrance could reach 0.68m AOD during the lifetime of the development. Occupants would not be able to safely reach an area of no flooding unless they walked through flood water. This is not considered acceptable and in the event of flooding this would place additional strain on the emergency services. It is recommended a flood warning and evacuation (FWEP) plan is produced. The plan would effectively set out the emergency measures to be followed in the event of flooding (e.g. provision of safe refuge areas, evacuation route offsite).

4.1.12 It should be noted be noted that the proposed first floor level of the dwelling will be located above the flood level and therefore provides a safe refuge for the inhabitants if evacuation is not made in time. It is also recognised that a tidal flooding event is a short time period before the flood level will recede. A Floodline Warning Service is available for this site which the future occupants can sign up to.

4.1.13 Designing for Exceedance

Exceedance flow routes for storm events in excess of the 1% annual probability storm event including 40% allowance for climate change event will be channelled around the building towards the eastern boundary, which mimics the existing natural flows across the site.

6.0 Exception Test

6.1 As the proposed development is classed as 'More Vulnerable' and located in Flood Zone 3, the NPPF states an Exception Test is required.

6.2 For the Exception Test to be passed, three criteria must be satisfied:

a. Would the proposed development provide wider sustainability benefits to the community? If so, could these benefits be considered to outweigh the flood risk to and from the proposed development?

b. How can it be demonstrated that the proposed development will remain safe over its lifetime without increasing flood risk elsewhere?

c. Will it be possible to for the development to reduce flood risk overall (e.g. through the provision of improved drainage)?

6.3 The criterion (a) is for determination by the LPA and not this site-specific FRA.

6.4 This FRA has demonstrated the proposed development satisfies criterion (b)

- The primary flood risk of the site is from tidal flooding, ignoring the presence of existing defences.
- The proposed development does not change the flood risk vulnerability of the site.
- The proposed building extension is to maintain the existing floor level in accordance with Environment Agency standing advice.
- The design of the properties will incorporate flood resilient measures as discussed above.
- The proposed development will incorporate a new surface water drainage system, design in accordance with current statutory guideline and with modern rainfall modelling. The surface water system will incorporate adequate attenuation to mitigate the risk of the discharge from site being submerged (to be confirmed).

6.5 Part (c) will be confirmed as part of the development's drainage strategy.

6.0 Summary and Recommendations

5.1 The proposed development lies within Flood Risk Zones 1, 2 and 3 as indicated on the Environment Agency flood map. A comparison of site and flood levels confirms this. Through the application of the Exception Test the proposed development is considered appropriate within Flood Zone 3.

5.2 The proposed development is an extension of the existing dwelling of only 50m^2 area and therefore is considered to be a minor development and will follow standing advice.

5.3 The existing building and extension will need to be improved to incorporate flood resilient measures up to 4.68m AOD which is the level of the 0.5% (1 in 200) annual probability tidal flood level including climate change with 300mm freeboard. The design of the building should also incorporate temporary flood barriers where appropriate.

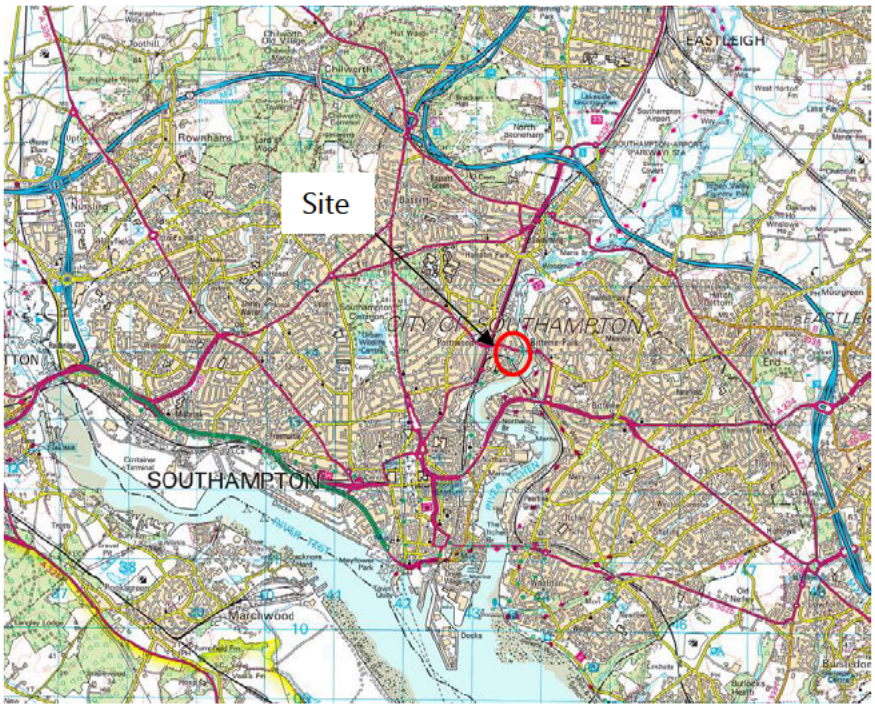
5.4 The future occupants should sign up to the EA's Floodline Warning Service as safe access and egress is not available. It is recommended a flood warning and evacuation plan is produced.

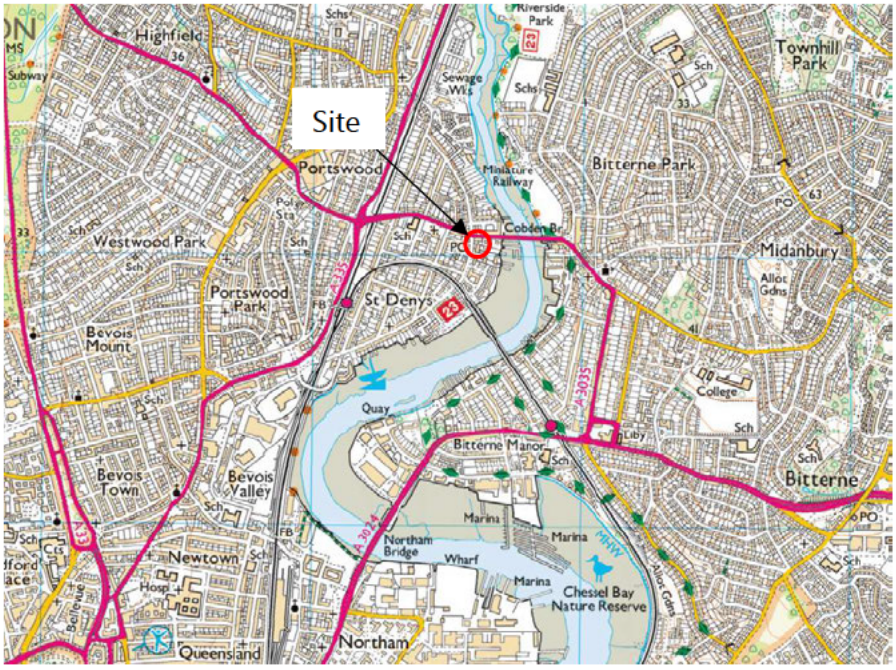
5.5 The details of the drainage proposals will be covered in a separate Surface Water Drainage Report.

6.0 Appendices

A. Site Location Plan
B. Existing Topographic Survey
C. Proposed Site Plan
D. British Geological Survey Records
E. Flood Map Extracts
F. EA Records and Correspondence
G. Climate Change Flood Level Calculation
H. SFRA Extracts
I. Local Drainage Planning Policy applicable to the development

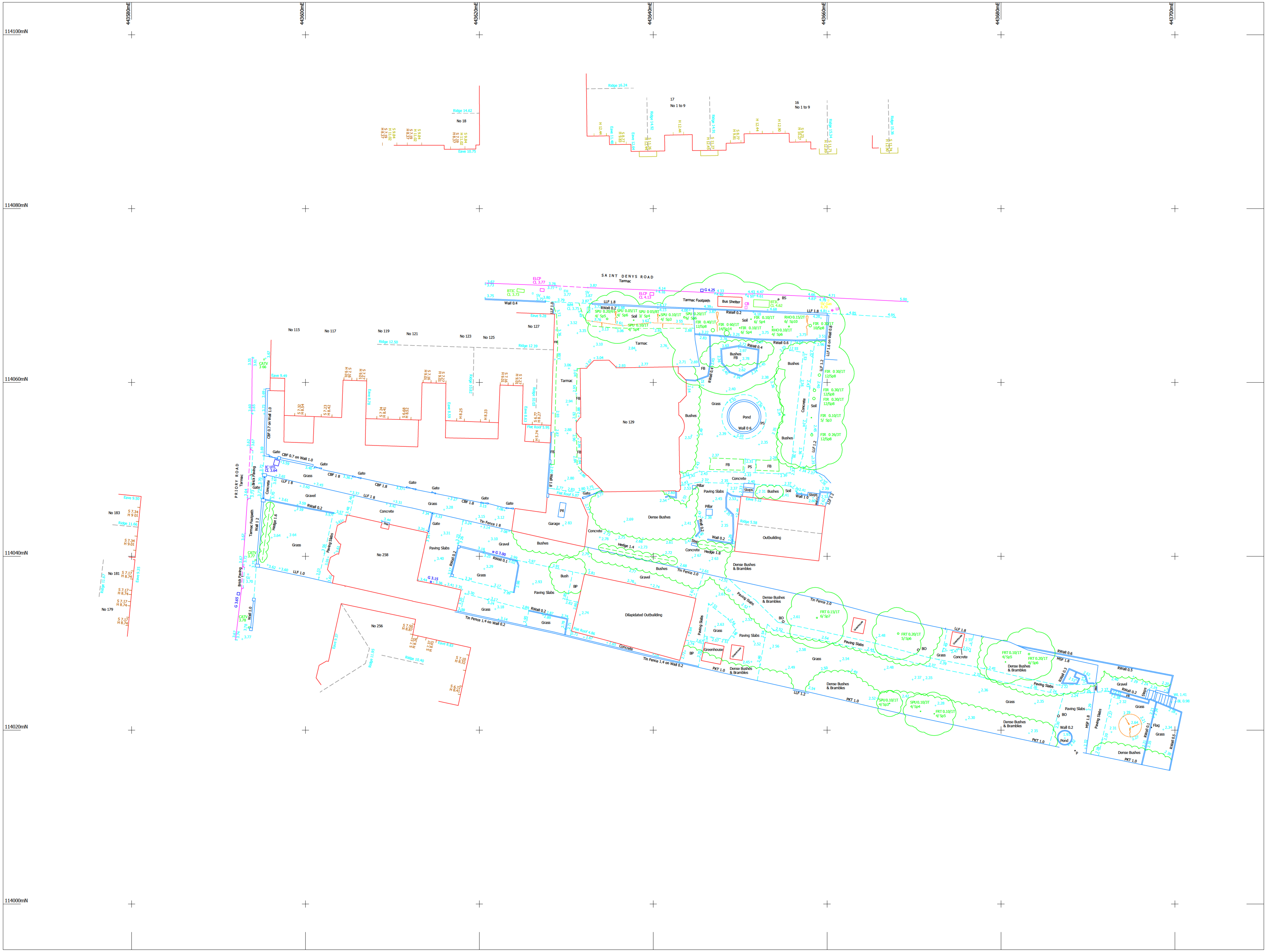
Appendix A
Site Location Plan





Aerial photograph of existing site

Appendix B
Existing Topographic Survey



NOTES:

Drainage:
Inspection Covers are lifted where possible and all drainage invert information has been obtained through visual inspection only, with no entry into manholes. Therefore the complete accuracy cannot be guaranteed. Where drainage is of critical importance we suggest the services of a specialist drainage expert be used.

Trees:
Every effort has been made to identify and detail all trees on site but where trees are of critical importance we suggest the use of a specialist such as an arborist. Tree spread and heights are indicative.

GPS:
GPS detail is relative to the time and date of survey. GPS levels and grid are obtained using industry standard guidelines and can vary according to the quality of the GPS network at the time of survey. Unless stated otherwise, surveys are Scale factor 1 and Horizontal and Vertical Datums are established from a central site fix and baseline orientation station utilising GNSS correction data.

Survey notes:
Survey specification is linked to the original purpose of the survey commissioned at source and is to be used for this purpose only. Survey is accurate within limitations of site conditions at the time of survey. In areas difficult to survey due to restricted access, lines of sight or dense vegetation, critical dimensions and positions should be verified following suitable clearance.
Survey detail obtained and shown is relative to the plotting scale.

LEGEND

TREE SPECIES INFORMATION

ALDER	ALD	LOCUST	LOC
ASH	ASH	LONDON PLANE	LPN
ASPEN	ASP	MAGNOLIA	MAG
BEECH	BCH	MAPLE	MPL
CEDAR	CED	OAK	OAK
CHERRY	CHY	PINE	PNE
CYPRESS	CYP	POPLAR	POP
ELM	ELM	PRUNUS	PNS
FIR	FIR	RHODODENDRONS	RDN
FRUIT	FRT	ROWAN	RWN
HAWTHORN	HAW	SILVER BIRCH	SIB
HAZEL	HAZ	SORBUS	SOR
HOLLY	HLY	SWEET CHESTNUT	SCH
HORSE CHESTNUT	HCH	SYCAMORE	SYC
HORNBEAM	HRM	WALNUT	WNT
LABURNUM	LRM	WILLOW	WLW
LARCH	LAR	YEW	YEW
LIME	LIM	SPECIES UNKNOWN	SPU
		COPPICED	COP

TREE ANNOTATIONS: Tree Species / Tree Boll Size / No of Bolls
Tree Height / Tree Canopy Spread

FENCE INFORMATION

BARBED WIRE FENCE	BWF
CORRUGATED IRON FENCE	CIF
CLOSE BOARD FENCE	CBF
CHAIN LINK FENCE	CLF
CHESTNUT PALING	CPF
CRASH BARRIER	CBR
HANDRAIL	HDL
IRON RAILINGS	IRF
LARCH LAP FENCE	LLF
MISCELLANEOUS FENCE	MSF
PALISADE FENCE	PSF
PICKET FENCE	PKF
POST AND CHAIN FENCE	PCF
POST AND RAIL FENCE	PRF
POST AND WIRE FENCE	PWF
STOCK WIRE FENCE	SWF
TRELLIS FENCING	TLF

LEVEL INFORMATION

BASEMENT LEVEL	BTL
BED LEVEL	BL
COVER LEVEL	CL
DAMP PROOF COURSE	DPC
FLOOR LEVEL	FL
INVERT LEVEL	IL
OUTFALL LEVEL	OL
THRESHOLD LEVEL	THL
FOUL WATER	FW
SURFACE WATER	SW
UNABLE TO LIFT	UTL
WATER LEVEL	WL

SURFACE INFORMATION

CONCRETE	Conc
BRICK PAVERS	BP
FLOWERBED	FB
PAVING SLABS	PS
RETAINING WALL	RWall
TACTILE PAVING	Tac

FEATURE INFORMATION

BOLLARD	BO	NOTICE BOARD	NB
BRITISH TELECOM BOX	BTB	POST	P
BRITISH TELECOM IC	BTIC	RAIN WATER PIPE	RWP
BUS STOP	BS	RAISED FLOWERBED	RFB
CABLE TELEVISION BOX	CATB	ROAD SIGN	RS
CABLE TELEVISION IC	CATV	RODDING EYE	RE
EARTHING ROD	ER	SERVICE MARKER POST	SMP
ELECTRICITY CABLE PIT	ELCP	SOIL VENT PIPE	SVP
ELECTRICITY CONTROL BOX	ECB	STOP COCK	SC
ELECTRICITY POLE	EP	STOP VALVE	SV
FIRE HYDRANT	FH	TELEGRAPH POLE	TP
INSPECTION COVER	IC	TELEPHONE CALL BOX	TCB
LAMP POST	LP	TRAFFIC SIGNAL	TS
LETTER BOX	LB	TRAFFIC SIGNALS IC	TSIC
LITTER BIN	BIN	WATER METER	WM
KERB OUTLET	KO	WATER TAP	Tap
NAME PLATE	NP		

Level Datum:
Levels are related to OSGB15 derived from the GPS network

Grid:
Grid is related to OSGB15 derived from the GPS network

Northpoint:

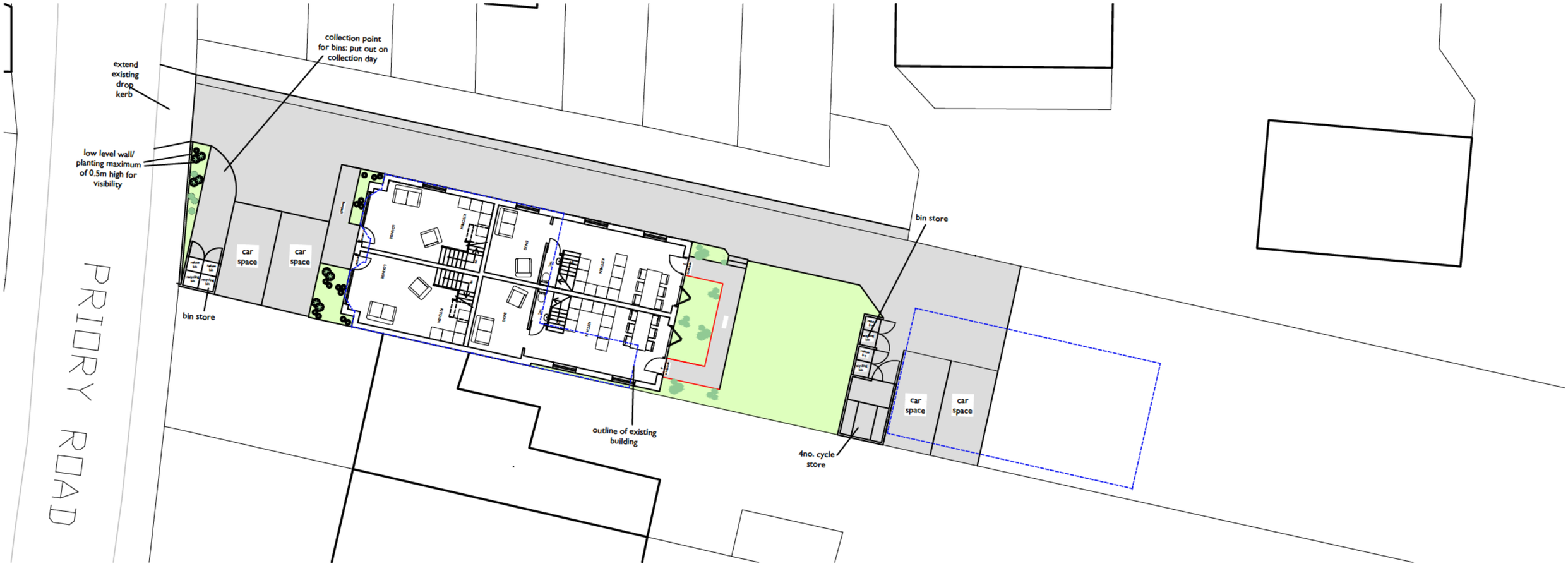
ENCOMPASS SURVEYS

Encompass Surveys Ltd
Unit 2CA
Deer Park Farm Industrial Estate
Knowle Lane
Fair Oak, Eastleigh
Hampshire SO50 7PZ

Tel: 023 80692002 Email: info@encompass-surveys.co.uk
Fax: 023 80697125 Website: encompass-surveys.co.uk

Client:	Punch Partnership Ltd (PML)		
Survey Location:	129 ST Denys Road & 258 Priory Road Southampton SO17 2JY / SO17 2JW		
Survey type:	Topographical	Scale:	1:200@A1
Drawing ref:	ENC/250718/0DD6-Top	Date:	July 2018
Drawn/QA:	CH/DH	Revision:	

Appendix C
Proposed Site Plan



Site Plan 1:200

10 0 10

Project
258 Priory Road, Southampton

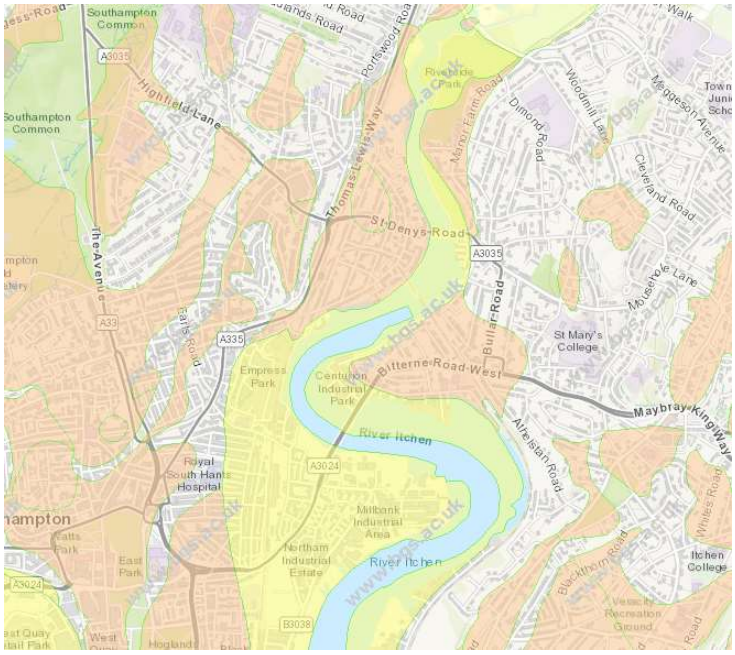
Client
J Patel

Drawing Title
Site Plan

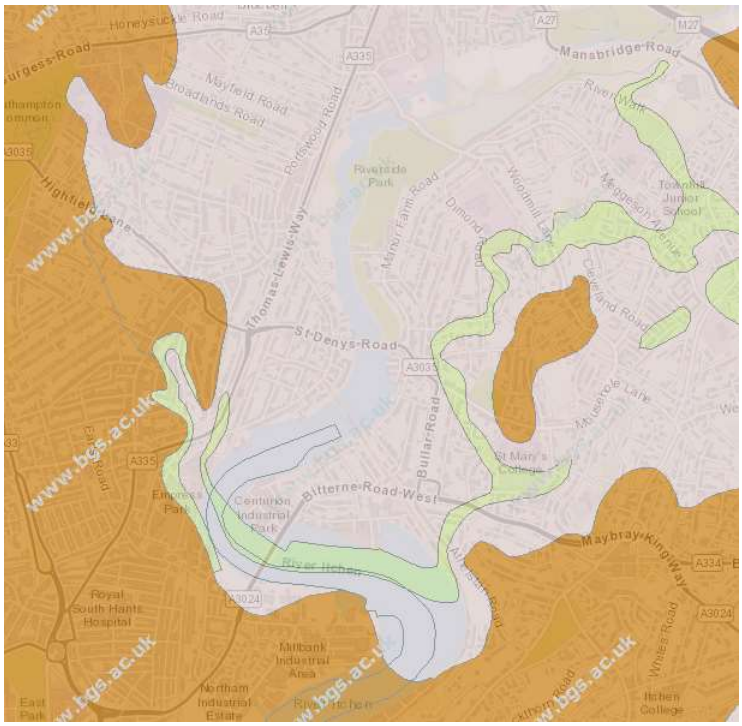
scale @ A3 1:200	checked .
date Oct '21	drawn VT

331 06C

Appendix D
British Geological Survey Records



ALLUVIUM - CLAY, SILT, SAND AND GRAVEL
TIDAL FLAT DEPOSITS - CLAY AND SILT
HEAD - GRAVEL, SAND, SILT AND CLAY
RIVER TERRACE DEPOSITS, 11 - SAND AND GRAVEL
RIVER TERRACE DEPOSITS, 1 - CLAY AND SILT
RIVER TERRACE DEPOSITS, 1 - SAND AND GRAVEL
RIVER TERRACE DEPOSITS, 2 - SAND AND GRAVEL
RIVER TERRACE DEPOSITS, 3 - CLAY AND SILT
RIVER TERRACE DEPOSITS, 3 - SAND AND GRAVEL
RIVER TERRACE DEPOSITS, 4 - CLAY AND SILT
RIVER TERRACE DEPOSITS, 4 - SAND AND GRAVEL
RIVER TERRACE DEPOSITS, 5 - SAND AND GRAVEL



Bedrock geology

BARTON CLAY FORMATION - CLAY
EARNLEY SAND FORMATION - SAND, SILT AND CLAY
MARSH FARM FORMATION - CLAY, SILT AND SAND
SELSEY SAND FORMATION - SAND, SILT AND CLAY
LONDON CLAY FORMATION - CLAY, SILT AND SAND
WITTERING FORMATION - SAND, SILT AND CLAY
NURSLING SAND MEMBER - CLAY, SILT AND SAND
PORTSMOUTH SAND MEMBER - SAND
WHITECLIFF SAND MEMBER - SAND

Extract of British Geological Survey

PRIORY AVENUE, ST.DENYS, SOUTHAMPTON **FIGURE 1**

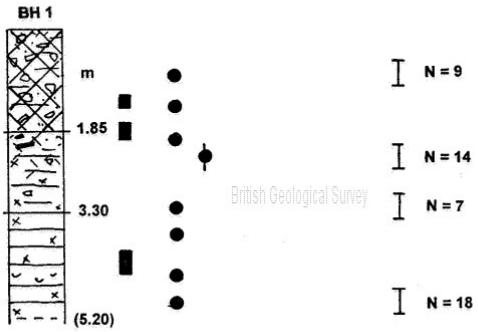
FINAL BOREHOLE LOG

150 mm dia. casing to 4.00 m **20.11.97**

Thin compact brown gravelly SAND (topsoil?) overlying loose dark grey gravelly CLAY/clayey GRAVEL with numerous fragments of broken flints. GRAVEL and gravelly SAND at base of stratum. FILL.

Soft dark grey CLAY and soft light grey chalky CLAY with pieces of wood and some flint inclusions overlying soft light & dark grey silty CLAY with gravel inclusions. FILL over Recent Alluvium over disturbed or re-worked London Clay.

Stiff dark grey silty CLAY with numerous small (mm) shells and shell fragments. London Clay.



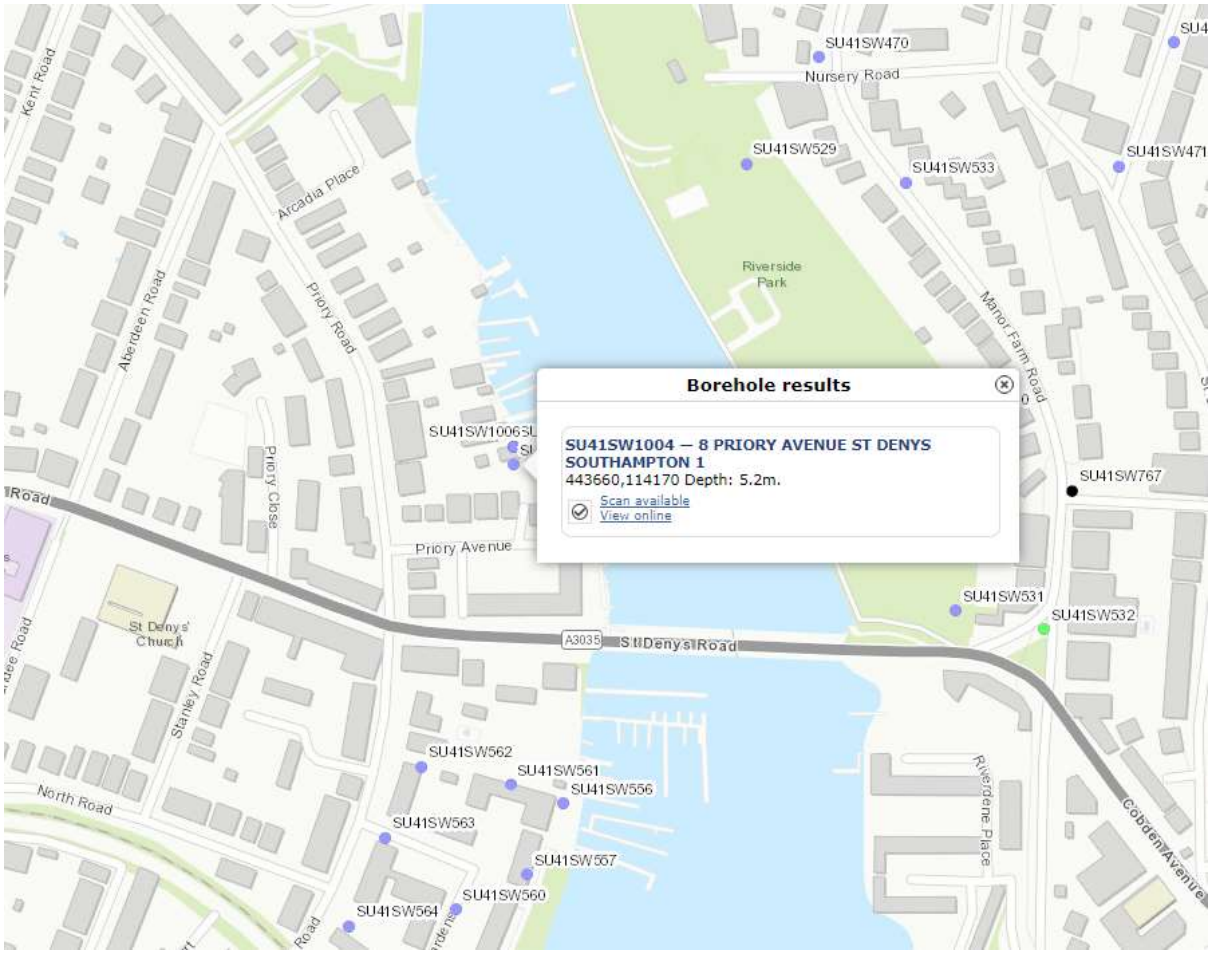
Seepage at 2.40 m. No rise in 20 min. With hole at 5.20 m, cased to 4.00 m, the borehole was reported 'dry'. Average groundwater levels probably correspond to a little above mean river levels. Site staff report high river levels flooding the site.

... 100 mm dia. core sample

... small disturbed or cutting shoe sample

... bulk sample

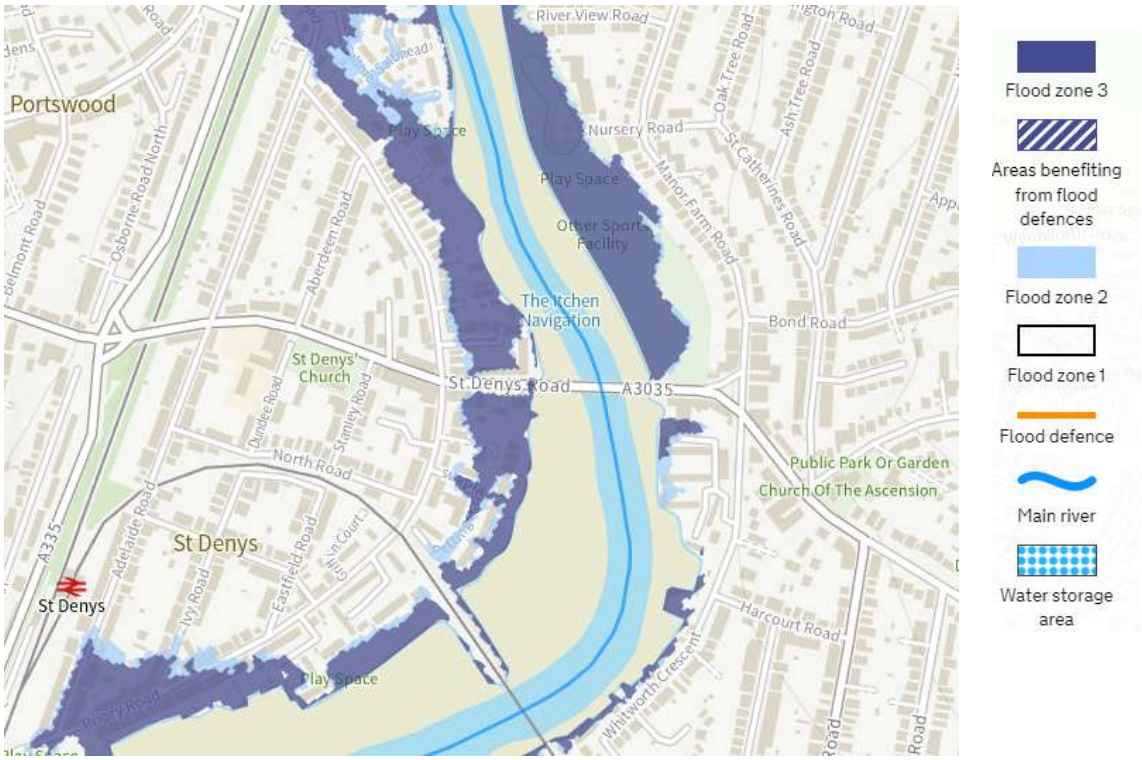
... dynamic sounding (SPT) N blows/300 mm



Source: https://mapapps.bgs.ac.uk/geologyofbritain/home.html

Appendix E
Flood Map Extracts

River and Sea Flooding



Flood Map For Planning

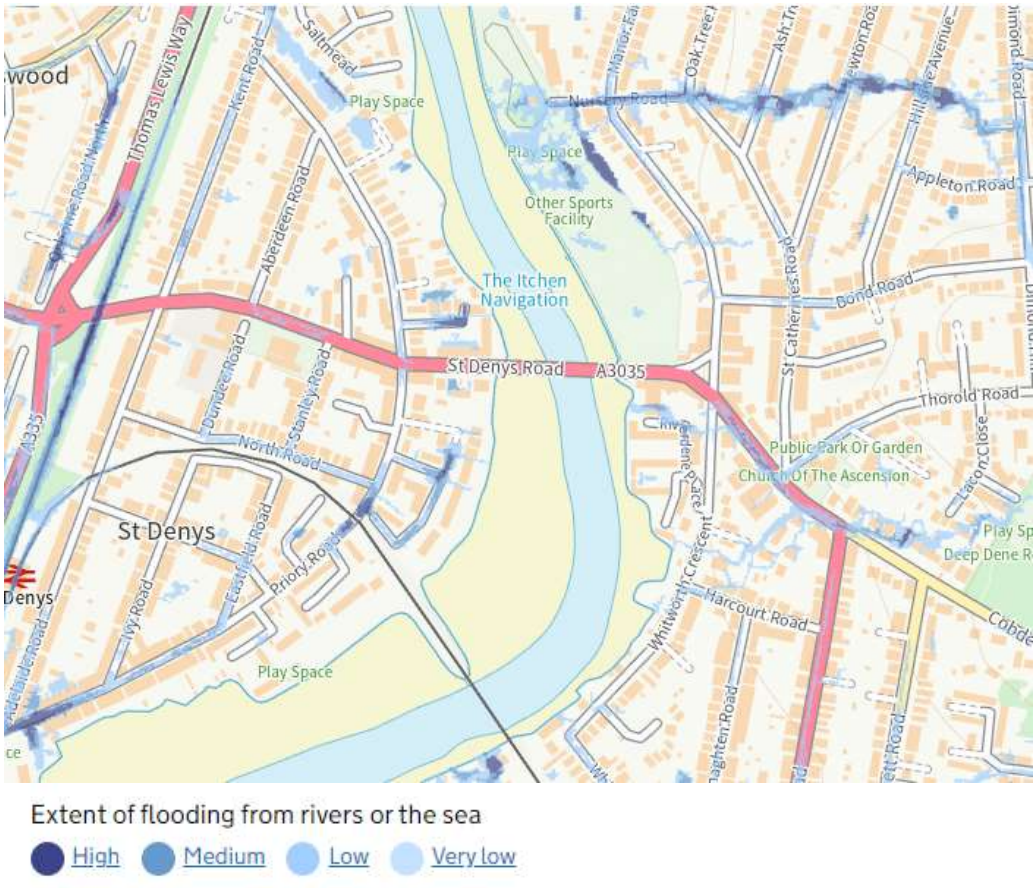
Flood risk from rivers or the sea

Low Probability (Flood Zone 1) means that each year this area has a chance of flooding of less than 0.1%. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

Medium Probability (Flood Zone 2) means that each year this area has a chance of flooding of between 0.1% and 1%. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

High Probability (Flood Zone 3) means that each year this area has a chance of flooding of greater than 1%. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

Surface Water Flooding



Flood Map – Surface Water

Flood risk from surface water

Very low risk means that each year this area has a chance of flooding of less than 0.1%. Flooding from surface water is difficult to predict as rainfall location and volume are difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding.

Low risk means that each year this area has a chance of flooding of between 0.1% and 1%. Flooding from surface water is difficult to predict as rainfall location and volume are difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding.

Medium risk means that each year this area has a chance of flooding of between 1% and 3.3%. Flooding from surface water is difficult to predict as rainfall location and volume are difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding.

High risk means that each year this area has a chance of flooding of greater than 3.3%. Flooding from surface water is difficult to predict as rainfall location and volume are difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding.

Reservoir Flooding

Maximum extent of flooding from reservoirs:

when river levels are normal when there is also flooding from rivers

Appendix F
EA Records and Correspondence

Michael Hartley

Subject: FW: Product 4 Request for Priory Road, SO17 2JW - Our ref: SSD/251575
Attachments: Defence map.pdf; Flood Map for Planning (Rivers and Sea).pdf; Risk of Flooding from Surface Water.pdf; Open Government Licence.pdf; Use of EA Information for FRAs.pdf

From: Partnership and Strategic Overview team, HIOW <psohiow@environment-agency.gov.uk>
Sent: 23 February 2022 16:52
To: Tim Killingback <tkillingback@swh.co.uk>
Cc: SSD Enquiries <SSDEnquiries@environment-agency.gov.uk>
Subject: Product 4 Request for Priory Road, SO17 2JW - Our ref: SSD/251575

Dear Tim,

Enquiry regarding product 4 for 258 Priory Road, Southampton SO17 2JW.

Thank you for your enquiry which was received on 24 January 2022.

We respond to requests under the Freedom of Information Act 2000 and Environmental Information Regulations 2004. The information is attached.

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 3 - an area which may have a 0.5% chance of flooding annually (1 in 200), **ignoring** the presence and effect of any flood defences.

The Environment Agency has no record of flooding to this property/area. Please note our records are not comprehensive and may not include all events. I recommend contacting the Lead Local Flooding Authority, "Southampton City Council" for a more comprehensive flood history check.

Information on any nearby sea defences is available from Southampton City Council.

Defences – See attached map.

Tidal flood levels 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. These levels have been taken from the Southampton Water Coastal Model which was produced in 2014 by JBA.

Chainage point: 198	Easting: 443668.169	Northing: 114297.327

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)
2015	3.3	3.4
2070	3.8	3.9
2115	4.4	4.6

* Levels in metres above Ordnance Datum Newlyn.

These values are based on 2012 base data.

- Please note the climate change allowances provided are not up to date. These were updated on 17 December 2019. You should refer to 'Flood risk assessments: climate change allowances' for the most up to date allowances. You will need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence.

Name	Product 4
Description	Basic / Detailed Flood Risk Assessment Map for 258 Priory Road, Southampton SO17 2JW
Licence	Open Government Licence
Information Warnings	The majority of our models will not have the new climate change allowances. +20% is not suitable for the majority of planning purposes and the new allowances to use should be checked here: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances
Information Warning - OS background mapping	*The mapping of features provided as a background in this product is © Ordnance Survey. It is provided to give context to this product. The Open Government Licence does not apply to this background mapping. You are granted a non-exclusive, royalty free, revocable licence solely to view the Licensed Data for non-commercial purposes for the period during which the Environment Agency makes it available. You are not permitted to copy, sub-license, distribute, sell or otherwise make available the Licensed Data to third parties in any form. Third party rights to enforce the terms of this licence shall be reserved to OS.*
Attribution	Contains Environment Agency information © Environment Agency and/or database rights. Contains Ordnance Survey data © Crown copyright 2017 Ordnance Survey 100024198.

Data Available Online

Many of our flood datasets are available online:

- Flood Map For Planning (Flood Zone 2, Flood Zone 3 ,Flood Storage Areas, Flood Defences, Areas Benefiting from Defences)
- Risk of Flooding from Rivers and Sea
- Historic Flood Map
- Current Flood Warnings

Does Your Proposal Have Environmental Issues or Opportunities? Speak To Us Early!

If you are planning a new project or development, we want to work with you to make the process as smooth as possible. Early engagement can improve subsequent planning applications to you and your clients' benefit and deliver environmental outcomes. For a cost recovery fee of £100 per hour plus VAT we will provide you with a project manager who will coordinate all meetings and reviews in order to give you detailed specialist advice with guaranteed delivery dates. More information can be found on our website here.

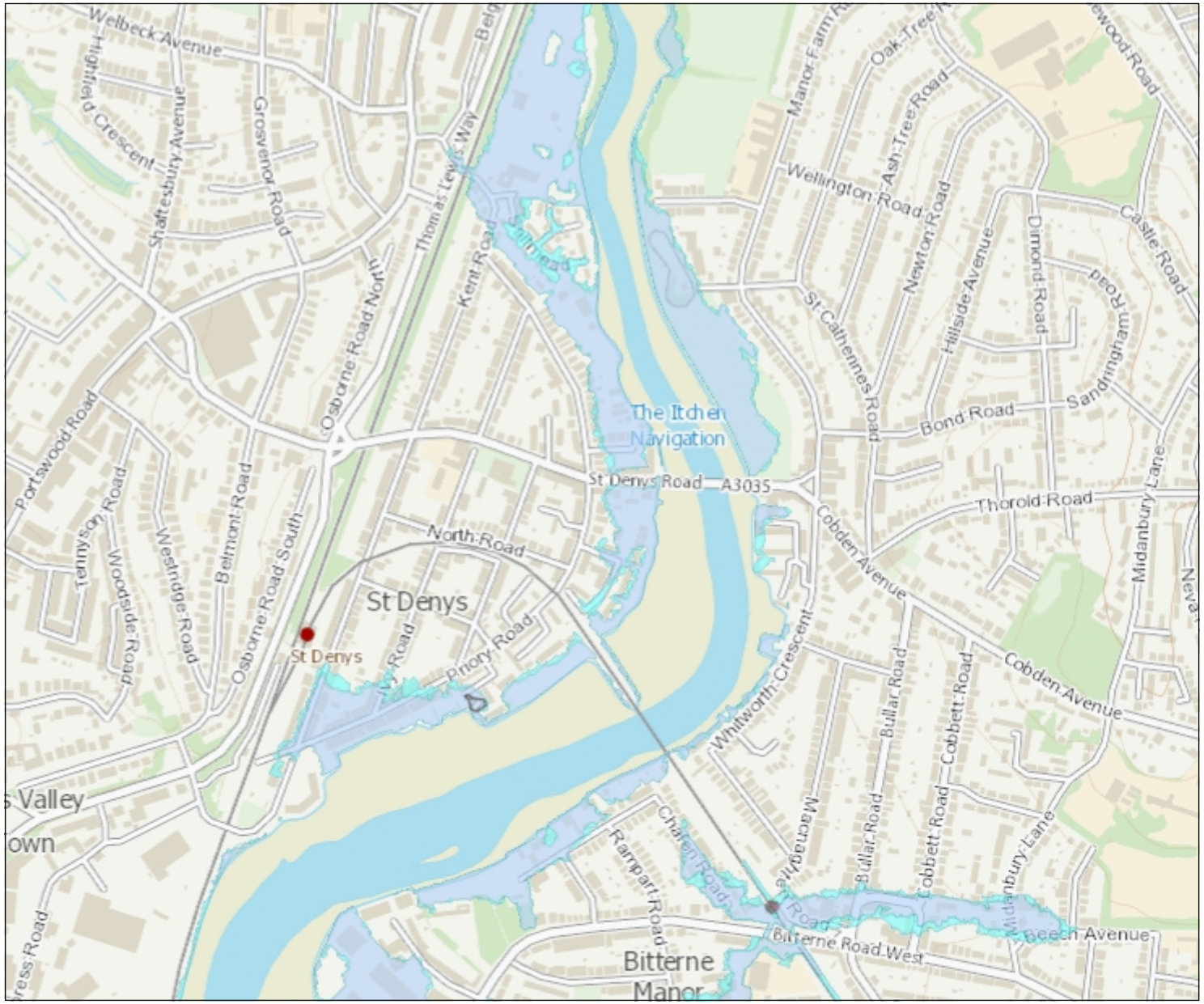
Please get in touch if you have any further queries or contact us within two months if you'd like us to review the information we have sent.

Yours sincerely,

Callum Robins
Partnership and Strategic Overview team, Hampshire and Isle of Wight
Environment Agency

Email psohiow@environment-agency.gov.uk

Flood Map for Planning (Rivers and Sea) - Centred on Priory Road, SO17 2JW - Created 23 February 2022



Environment Agency

1: 10,000

0 Metres 250

N W E S

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)

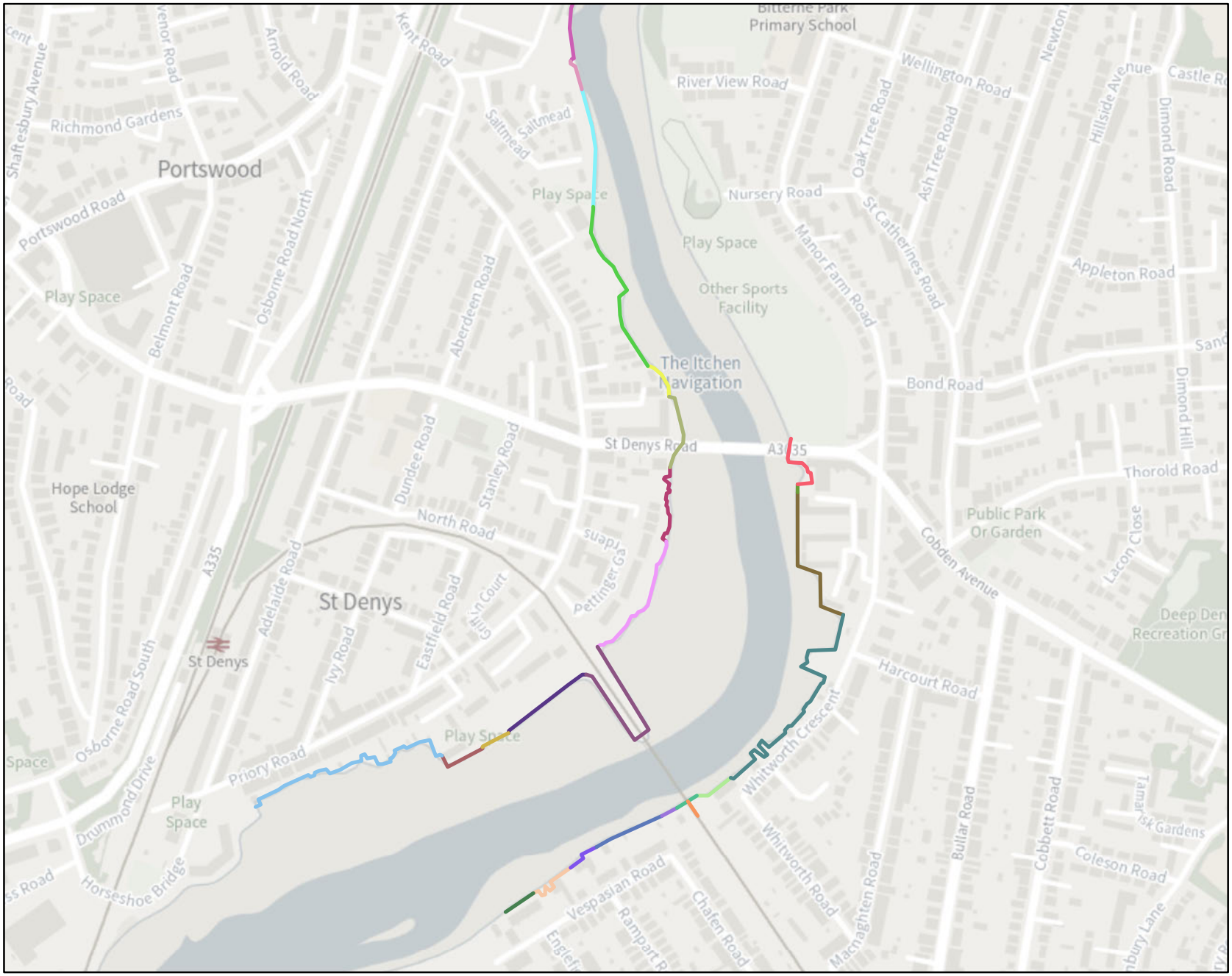
Flood Zone 3 shows the area that could be affected by flooding:

- 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 occuring each year.

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Defence map Centred on Priory Road, SO17 2JW - Created 23 February 2022



Legend

asset_id	
113815	20788
116733	20789
116734	20790
18666	20791
18667	20792
18668	45859
18669	47711
19297	48012
19298	49991
19299	49992
20470	49995
20471	49996
	53709

1:6,995 *

*when printed at A4.

N

0 130 260

Metres

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Asset ID	Asset sub-type	Length	Maintainer	Current condition	Design Standard of Protection (Years)	Date of last inspection
113815	Natural High Ground	83.60	Private individual, Company or Charity	No Data	100	08/05/2021
20470	Natural High Ground	67.22	Private individual, Company or Charity	No Data	100	09/05/2021
20788	Wall	42.51	Private individual, Company or Charity	No Data	100	09/05/2021
45859	Natural High Ground	124.49	Private individual, Company or Charity	No Data	100	10/05/2021
47711	Wall	310.54	Private individual, Company or Charity	No Data	100	10/05/2021
53709	Engineered High Ground	37.60	Private individual, Company or Charity	No Data	100	11/05/2021
116733	Wall	116.05	Private individual, Company or Charity	No Data	100	08/05/2021
116734	Natural High Ground	172.94	Private individual, Company or Charity	No Data	100	08/05/2021
18666	Embankment	248.56	Private individual, Company or Charity	No Data	No Data	09/05/2021
18667	Natural High Ground	51.31	Private individual, Company or Charity	No Data	100	09/05/2021
18668	Natural High Ground	149.67	Private individual, Company or Charity	No Data	100	09/05/2021
18669	Natural High Ground	106.91	Private individual, Company or Charity	No Data	100	09/05/2021
19297	Wall	46.48	Private individual, Company or Charity	No Data	100	09/05/2021
19298	Wall	51.09	Private individual, Company or Charity	No Data	100	09/05/2021
19299	Natural High Ground	193.47	Private individual, Company or Charity	No Data	100	09/05/2021
20471	Wall	228.54	Private individual, Company or Charity	No Data	100	09/05/2021
20789	Wall	90.92	Private individual, Company or Charity	No Data	100	09/05/2021
20790	Wall	21.97	Private individual, Company or Charity	No Data	100	09/05/2021
20791	Natural High Ground	367.59	Private individual, Company or Charity	No Data	100	09/05/2021
20792	Natural High Ground	9.70	Private individual, Company or Charity	No Data	100	09/05/2021
48012	Embankment	28.85	Private individual, Company or Charity	No Data	100	10/05/2021
49991	Embankment	100.28	Private individual, Company or Charity	No Data	100	11/05/2021
49992	Wall	39.99	Private individual, Company or Charity	No Data	100	11/05/2021
49995	Embankment	22.52	Private individual, Company or Charity	No Data	100	11/05/2021
49996	Natural High Ground	95.91	Private individual, Company or Charity	No Data	100	11/05/2021

Risk of flooding from Surface Water - Centred on Priory Road, SO17 2JW - Created 23 February 2022

Environment Agency

1: 10,000

0 Metres 250

N W E S

Likelihood of flooding from Surface Water

- High (>=3.3%)
- Medium (3.3% - 1%)
- Low (1% - 01%)
- Very Low
- Flood Extent 1 in 30
- Flood Extent 1 in 100
- Flood Extent 1 in 1000

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 GOV.UK.

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). E-mail: enquires@environment-agency.gov.uk

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Go to the version 2 of the licence.
Go to the Welsh version of the licence.

Appendix G
Climate Change Flood Level Calculation

Sea level allowances

Source of data:
https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

Table 2: sea level allowances by river basin district for each epoch in mm for each year (based on a 1981 to 2000 baseline) – the total sea level rise for each epoch is in brackets

Area of England (Use River Basin)	**2000- 2035 (mm)**	**2036 - 2065 (mm**	**2066-2095 (mm**	**2096-2125 (mm)**
South East	5.7	8.7	11.6	13.1

Higher Central

Base Year 2015-2035 @ 5.7mm/year (21 years x5.7mm) = 119.7mm

2036-2065 @ 8.7mm/year (30 years x 8.7mm) = 261mm

2066-2095 @11.6mm/year (30 years x11.6mm) = 348mm

2096-2122 @13.1mm/year (27 years x 13.1mm) =353.7mm

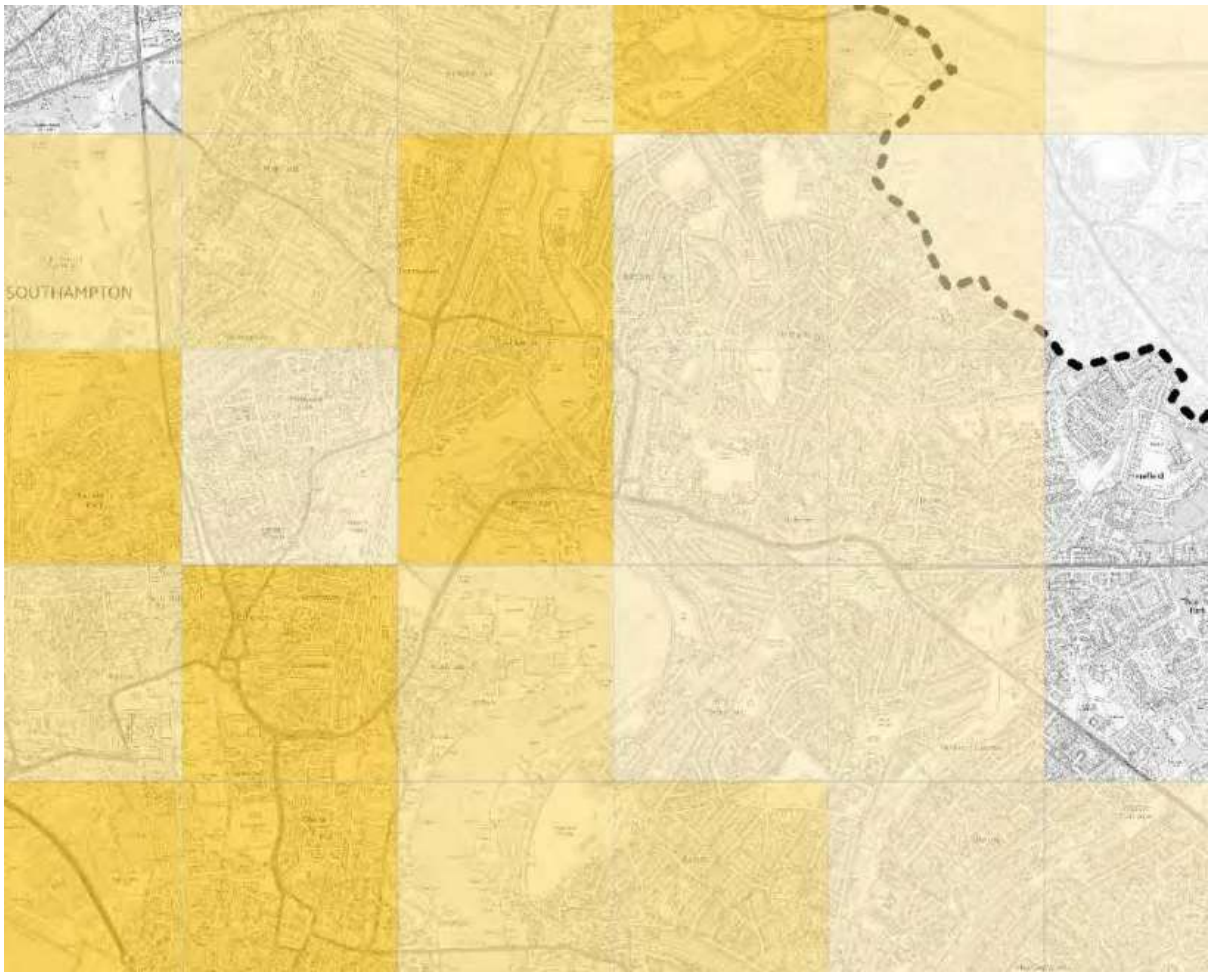
Overall total = 1082.4mm/1.082m rise

Baseline flood level present day (2015) at F0.5% (1 in 200) = 3.30m AOD and for year 2122 = 4.38m AOD.

Appendix H
SFRA Extracts

Southampton City Council Level 2 SFRA dated January 2017

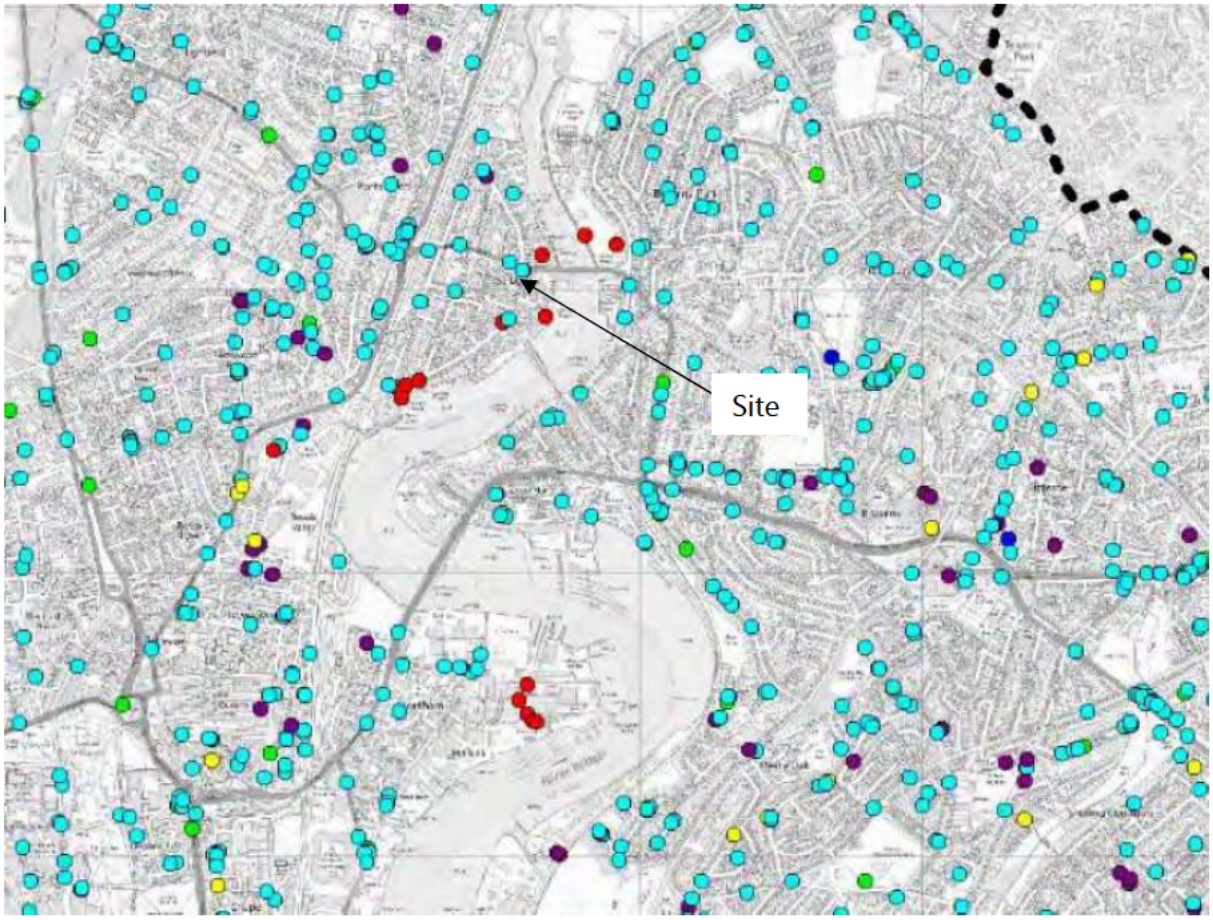
Areas susceptible to Groundwater Flooding



Susceptability to Groundwater Flooding

- Less than 25%
- 25% to 50%
- 50% to 75%
- Greater than 75%
- No Data

Recorded Flood Incidents in Southampton



Flood Incident Type

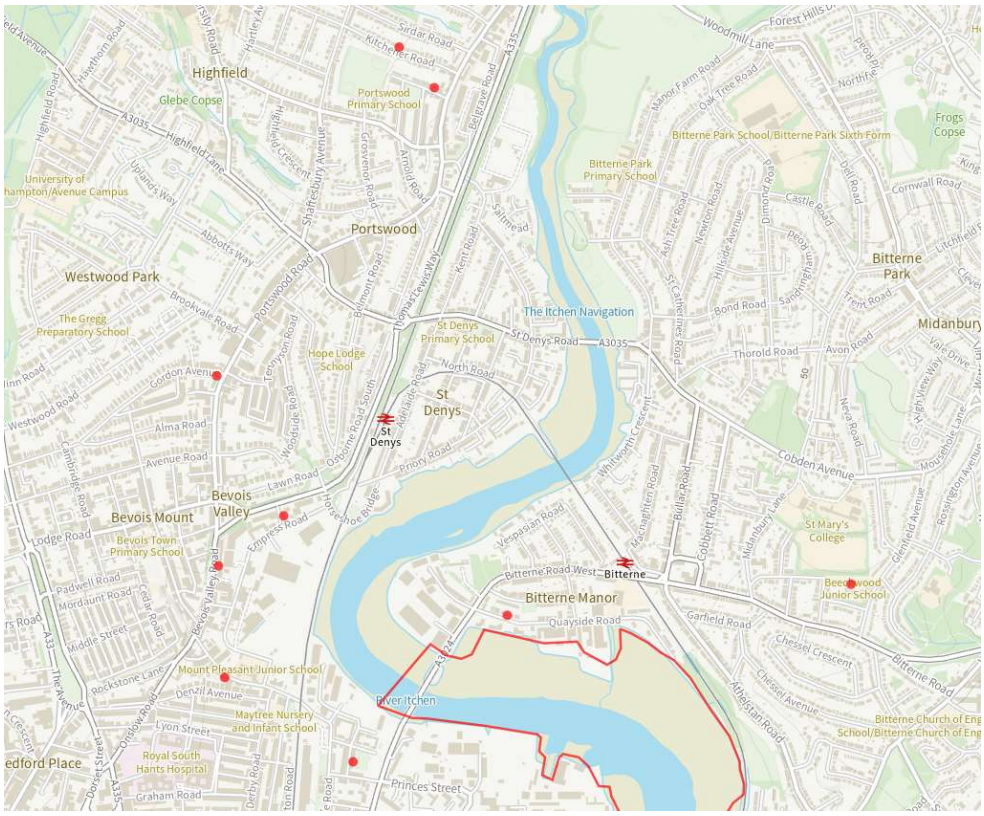
- Fluvial
- Groundwater
- Sewer (Foul/Combined)
- Sewer (Surface Water)
- Surface water
- Tidal

Source:

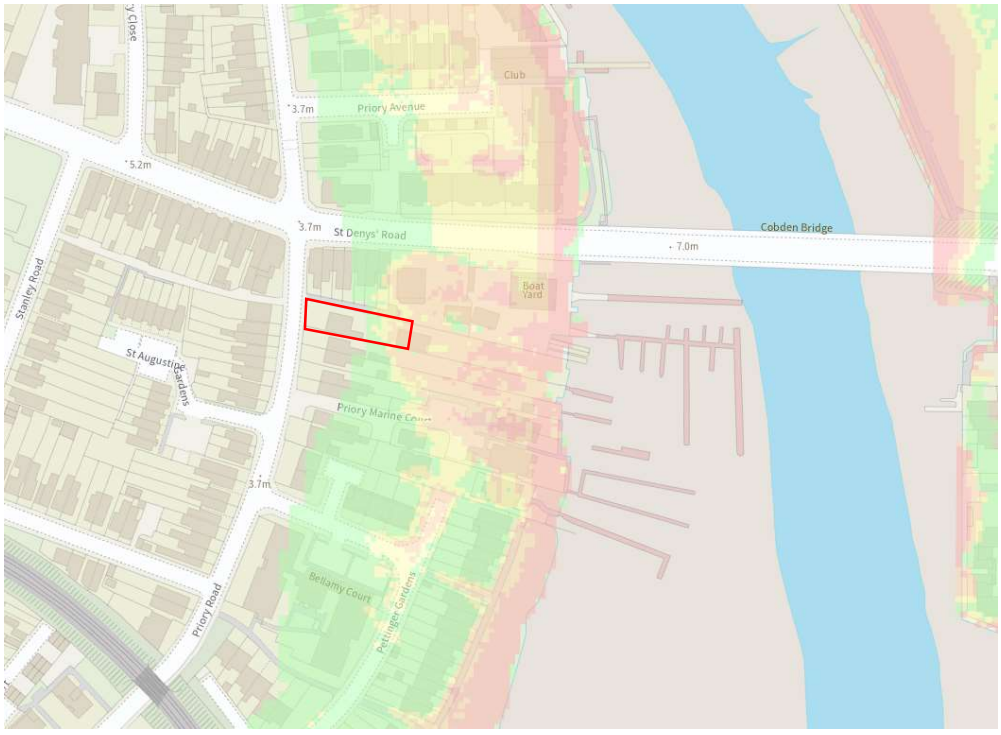
https://www.southampton.gov.uk/media/j5ajrhgq/southampton-level-2-strategic-flood-risk-assessment_tcm63-437164.pdf

Partnership for Urban South Hampshire Strategic Flood Risk Assessment dated 2016

South Water Sewer Flood Records



Flood Zone 2 Undefended Hazards



Source: https://pcc.dynamicmaps.co.uk/MapThatPublic/Default.aspx

Appendix I

Local Drainage Planning Policy applicable to the development

National Guidance

2.1 The frequency and severity of river flooding is perceived to have increased in recent years and in an attempt to mitigate the flood risk the Government published Planning Policy Statement Note 25: Development and Flood Risk (PPS25) in December 2006. PPS25 detailed the importance of the effective management and reduction of flood risk in the land use planning process and attempted to address the issue of climate change. This has since been superseded by the National Planning Policy Framework and the supporting technical guidance.

2.2 Traditionally surface water runoff from developments has been conveyed by pipe systems to the nearest watercourse or sewer. This tends to increase the rate and volume of the run off often leading to flooding downstream of the new development. Latest policy promotes the use of sustainable urban drainage systems (SuDS) whereby the control of run off is to be as close to source as possible. This can be achieved by utilising techniques which mimic the natural drainage processes, the use of direct infiltration for example. The Environment Agency will, in general, seek to restrict the allowable discharge from a new development to that previously expected from the undeveloped land.

2.3 The requirements of the revised Building Regulations which came into force on1st April 2002 are that adequate provision should be made for dealing with rainwater from the roofs of buildings and certain paved areas providing access to the buildings. Run off from such drainage systems are to be discharged to one of the following systems listed in order of priority:-

- A soakaway or other infiltration system
- A watercourse
- A sewer or drain

2.4 The revised Building Regulations were drafted to reinforce the requirements for SuDS wherever possible.

2.5 The Requirements of a Flood Risk Assessment:

2.5.1 A Flood Risk Assessment is required in order to ascertain whether a development will exacerbate the risk of flooding elsewhere in the catchment or is at risk of flooding itself.

2.5.2 A site specific FRA is required for: -

- Proposals of 1 Hectare or greater situated in Flood Zone 1
- New development (including minor development and change of use) located in areas of Flood Zone 1 that have critical drainage problems

- New development (including minor development and change of use) located in areas of Flood Zones 2 & 3.

Local Policies

2.6 The Southampton City Council Core Strategy Development Plan (CSDP) Document amended version dated March 2015 outlines the different requirements of new developments. The requirements of the CSDP relating to flood risk (Policy CS 23) states:

The Council will work with the Environment Agency and other key stakeholders to manage flood risk in the city, particularly in relation to new development in the flood risk zones within the city centre and Northam.

PPS25, including the flood risk hierarchy, will be taken into account (and where necessary balanced against other PPSs) in determining planning applications and preparing two subsequent DPDs (the City Centre Action Plan and the Sites and Policies DPD). The Council will undertake an additional assessment for the flood risk zones within the city centre and Northam in order to inform these DPDs. The DPDs will set out the range of options for managing flood risk in new development incrementally over time, including the major development quarter. Development will achieve an appropriate degree of safety taking into account standards of defence and sea level rise over the life of the development.

Individual developers should prepare a scheme specific flood risk assessment in order to inform their proposal at an early stage.

Developer contributions may be sought from relevant developments to support the provision of infrastructure to help to control and mitigate flood risk in accordance with Policy CS 25.