

RUSHBY BREWSTER

CONSULTING CIVIL AND STRUCTURAL ENGINEERS

Flood Risk Assessment

for

Proposed Residential Development Blendworth Crescent Leigh Park Havant Hampshire

Client:

PMC Construction and Development
Services Ltd
106 Queens Road
Portsmouth
PO2 7NE

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The Town House, St.George's Square, Bishops Waltham, Southampton, Hampshire, SO32 1AF

E: admin@rushbybrewster.co.uk W: www.rushbybrewster.co.uk

T: 01489 890004 F: 01489 890005

Directors: Allen Rushby IEng, AMIStructE; Chris Hendry MSc, CEng, MIStructE

Associates: Daniel Waddup BEng (Hons), CEng, MIStructE; Jason Bentley

Rushby Brewster Associates Limited. Registered in England: 3832290



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Introduction

- 1.1 Rushby Brewster Associates have been commissioned by PMC Construction Ltd to undertake a Flood Risk Assessment for this site in accordance with the requirements contained in 'Code for Sustainable Homes'.
- 1.2 The report addresses the relevant general issues of the National Planning Policy Framework 2012.

2.0 Data Sources

2.1 Environment Agency Flood Map.

An EA Flood map for the site was obtained from the EA web site and is included in Appendix 2.

2.2 Strategic Flood Risk Assessment.

PUSH / Atkins Strategic Flood Risk Assessment was accessed via their website to review detailed mapping information where appropriate.

3.0 Requirements for a Flood Risk Assessment

The National Planning Policy Framework 2012 and Technical Guidance documents published by the Department for Communities and Local Government set out policies for flood risk management and detail the criteria for the content of a FRA report. The requirements of this document and of the EA are detailed below.

3.1 National Planning Policy Framework 2012

Table 1 in Technical Guidance to the National Planning Policy Framework defines Flood Zones as follows:-

Zone 1 Low Probability

Definition

This zone comprises land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%).

(Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)

Appropriate uses

All uses of land are appropriate in this zone.

Flood risk assessment requirements

For development proposals on sites comprising one hectare or above the vulnerability to flooding from other sources as well as from river and sea flooding, and the potential to increase flood risk elsewhere through the addition of hard surfaces and the effect of the new development on surface water run-off, should be incorporated in a flood risk assessment. This need only be brief unless the factors above or other local considerations require particular attention.

Zone 2 Medium Probability

Definition

This zone comprises land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% - 0.1%) in any year. (Land shown in light blue on the Flood Map).

Appropriate uses

Essential infrastructure and the water-compatible, less vulnerable and more vulnerable uses, as set out in table 2, are appropriate in this zone. The highly vulnerable uses are only appropriate in this zone if the Exception Test is passed.

Flood risk assessment requirements

All development proposals in this zone should be accompanied by a flood risk assessment.

Zone 3a High Probability

Definition

This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.

(Land shown in dark blue on the Flood Map)

Appropriate uses

The water-compatible and less vulnerable uses of land (table 2) are appropriate in this zone. The highly vulnerable uses should not be permitted in this zone. The more vulnerable uses and essential infrastructure should only be permitted in this zone if the Exception Test is passed. Essential infrastructure permitted in this zone should be designed and constructed to remain operational and safe for users in times of flood.

Flood risk assessment requirements

All development proposals in this zone should be accompanied by a flood risk assessment.

Zone 3b The Functional Floodplain

Definition

This zone comprises land where water has to 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. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. But land which would flood with an annual probability of 1 in 20 (5%) or greater in any year, or is designed to flood in an extreme (0.1%) flood, should provide a starting point for consideration and discussions to identify the functional floodplain.

(Not separately distinguished from Zone 3a on the Flood Map)

Appropriate uses

Only the water-compatible uses and the essential infrastructure listed in table 2 that has to be there should be permitted in this zone. It should be designed and constructed to: remain operational and safe for users in times of flood; result in no net loss of floodplain storage; not impede water flows; and not increase flood risk elsewhere. Essential infrastructure in this zone should pass the Exception Test.

Flood risk assessment requirements

All development proposals in this zone should be accompanied by a flood risk assessment.

3.2 Table 2 in Technical Guidance to the National Planning Policy Framework defines the Flood Risk Vulnerability groups as follows.

Essential infrastructure

- Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk.
- Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood.
- Wind turbines.

Highly vulnerable

- Police stations, ambulance stations and fire stations and command centres and telecommunications installations required to be operational during flooding.
- Emergency dispersal points.
- Basement dwellings.
- Caravans, mobile homes and park homes intended for permanent residential uses.

- Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as "essential infrastructure").

More vulnerable

- Hospitals.
- Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels.
- Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.
- Non-residential uses for health services, nurseries and educational establishments.
- Landfill and sites used for waste management facilities for hazardous waste.
- Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan. 7

Less vulnerable

- Police, ambulance and fire stations which are not required to be operational during flooding.
- Buildings used for shops, financial, professional and other services, restaurants and cafes, hot food takeaways, offices, general industry, storage and distribution, non-residential institutions not included in "more vulnerable", and assembly and leisure.
- Land and buildings used for agriculture and forestry.
- Waste treatment (except landfill and hazardous waste facilities).
- Minerals working and processing (except for sand and gravel working).
- Water treatment works which do not need to remain operational during times of flood.
- Sewage treatment works (if adequate measures to control pollution and manage sewage during flooding events are in place).

Water-compatible development

- Flood control infrastructure.
- Water transmission infrastructure and pumping stations.
- Sewage transmission infrastructure and pumping stations.
- Sand and gravel working.
- Docks, marinas and wharves.
- Navigation facilities.
- Ministry of Defence defence installations.

- Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location.
- Water-based recreation (excluding sleeping accommodation).
- 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, subject to a specific warning and evacuation plan.

3.3 Table 3: Flood risk vulnerability and flood zone 'compatibility'

Table 3: Flood risk vulnerability and flood zone 'compatibility'

Flood risk vulnerability classification (see table 2)		Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
Flood zone (see table 1)	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test required	✓	✓
	Zone 3a	Exception Test required	✓	×	Exception Test required	✓
	Zone 3b functional floodplain	Exception Test required	✓	×	×	×

Key: ✓ Development is appropriate.
 × Development should not be permitted.

3.4 Environment Agency Guidelines

In addition to the National Planning Policy Framework the EA has produced Standing Advice and Guidance on development and FRAs which aim to outline the requirements for a FRA according to the nature of the development and the site location in relation to the Flood Zones. The following extract from the EA guidance sets out these FRA requirements.

When you need an assessment

You need to do a flood risk assessment for most developments within one of the flood zones.

This includes developments:

- in flood zone 2 or 3 including minor development and change of use

- more than 1 hectare (ha) in flood zone 1
- less than 1 ha in flood zone 1, including a change of use in development type to a more vulnerable class (e.g. from commercial to residential), where they could be affected by sources of flooding other than rivers and the sea (eg, surface water drains, reservoirs)
- in an area within flood zone 1 which has critical drainage problems as notified by the Environment Agency

When you don't need an assessment

You don't need to do a flood risk assessment for a development that's less than 1 ha in flood zone 1 unless it could be affected by sources of flooding other than rivers and the sea, e.g. surface water drains.

When to follow standing advice

You should follow the Environment Agency's standing advice if you're carrying out a flood risk assessment of a development classed as:

- a minor extension (household extensions or non-domestic extensions less than 250 square metres) in flood zone 2 or 3
- 'more vulnerable' in flood zone 2 (except for landfill or waste facility sites, caravan or camping sites)
- 'less vulnerable' in flood zone 2 (except for agriculture and forestry, waste treatment, mineral processing, and water and sewage treatment)
- 'water compatible' in flood zone 2

You also need to follow standing advice for developments involving a change of use into one of these vulnerable categories or into the water compatible category.

4.0 Site Details

4.1 Site Location and Description

The site is located to the south of Blendworth Crescent in a predominantly residential area of Havant. The site is irregular in plan shape tapering towards the east. The site comprises 1.13ha. of level grassland currently used as a recreation area; primarily dog walking and as an access route. The northern boundary of the site is denoted by the fences, mature trees and vegetation to the rear of neighbouring residential properties along Blendworth Crescent. The southern site boundary is marked by a number of tall trees dotted along a hedge row concealing a fence line separating the site from Trosnant Junior School, immediately to the south. The western site limit is denoted by a line of vegetation, fence and trees separating the site from the residential properties along Stockheath Lane.

4.2 Existing Site Topography and Drainage

Refer to the Hampshire Land Surveys Ltd drawing in the Appendix.

Site topography is relatively flat with a gradual fall from east to west with the lowest levels being at the south west corner.

There is currently no known foul drainage on the site. A 225mm diameter public foul sewer is located on the southern side of Blednworth Crescent. A 525mm diameter storm water sewer crosses the site in a north-south direction from Blendworth Crescent to the grounds of Trosnant School to the southern boundary.

4.3 Ground Conditions

Reference to the British Geological Survey (BGS) Map (Sheet 315, Southampton, Scale 1:50,000) indicates the site to directly overlie superficial geology of Head Deposits (sand, silt and clay) and the London Clay Formation (clay, silt and sand).

4.4 Environment Agency Data

The Environment Agency Ground Water Vulnerability map indicates that the site is underlain by superficial Secondary Aquifer.

The site lies within water source protection zone (SPZ), recorded as 1C-Inner Catchment within a confined aquifer.

5.0 Site Flood Risk Assessment

Review of the Environment Agency flood maps and the PUSH / Atkins Strategic Flood Risk Assessment has been completed and summarised below.

5.1 Environment Agency Flood Zone

The site lies within Flood Zone 1 (see Appendix 2 for EA Flood Map). This zone comprises land assessed as having a low (less than 1 in 1,000) annual probability of river or sea flooding.

5.2 Tidal Flood Risk

The Environment Agency Flood Map and the PUSH/Atkins SFRA data indicate that the site does not lie within an area at risk from tidal flooding.

5.3 Fluvial Flood Risk

The Environment Agency Flood Map and the PUSH/Atkins SFRA data indicate that the site lies within Flood Zone 1 and has low probability of fluvial flooding.

5.4 Surface Water Flooding

The Environment Agency and PUSH/Atkins SFRA data indicates that the site lies within a zone of low risk of surface water flooding although it can be seen that Blendworth Crescent itself is considered at risk.

5.5 Ground Water Flood Risk

The PUSH/Atkins SFRA data indicates that the site lies within an area of low bedrock permeability. There are however no records shown of historic ground water flooding in the vicinity of the site.

5.6 Flooding From Sewers

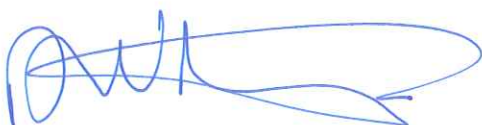
The PUSH/Atkins SFRA data indicates that there are no recorded sewer flooding incidents within the near vicinity of the site.

5.7 Flooding from Reservoirs, Canals and other Artificial Sources

The EA and PUSH/Atkins SFRA data indicates that there are no reported incidents of reservoir, canal or other artificial sources flooding affecting the site in its vicinity.

6.0 Conclusion

This FRA has assessed flood risk at the development site and has demonstrated that it lies within Flood Zone 1 with a low risk of flooding from other sources as outlined above. The development surface water drainage proposals will incorporate SUDs measures to mitigate any increase in run-off from the site.



Allen Rushby IEng, AMIStructE
For and on behalf of Rushby Brewster

APPENDIX 1

Site Location Plan

Architect's Site Plan

Topographical Survey

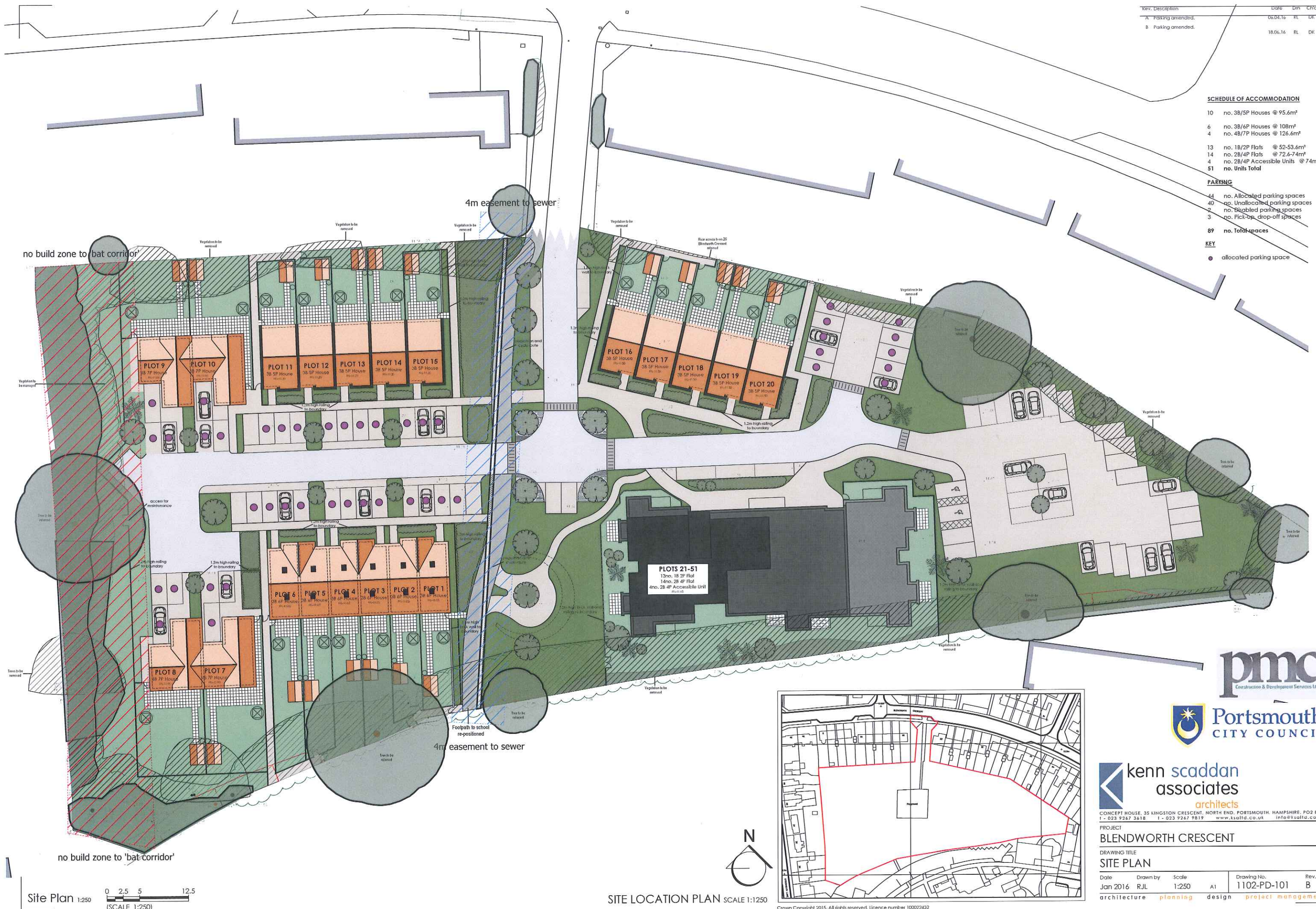
Google Maps



Imagery ©2016 DigitalGlobe, Getmapping plc, Infoterra Ltd & Bluesky, Map data ©2016 Google

20 m

Google Maps



Rev.	Description	Date	By	Chd
A	Parking amended.	06.04.16	RL	DK
B	Parking amended.	18.06.16	RL	DK

SCHEDULE OF ACCOMMODATION

10	no. 3B/5P Houses @ 95.6m²
6	no. 3B/6P Houses @ 108m²
4	no. 4B/7P Houses @ 126.6m²
13	no. 1B/2P Flats @ 52.53.6m²
14	no. 2B/4P Flats @ 72.6-74m²
4	no. 2B/4P Accessible Units @ 74m²
51	no. Units Total

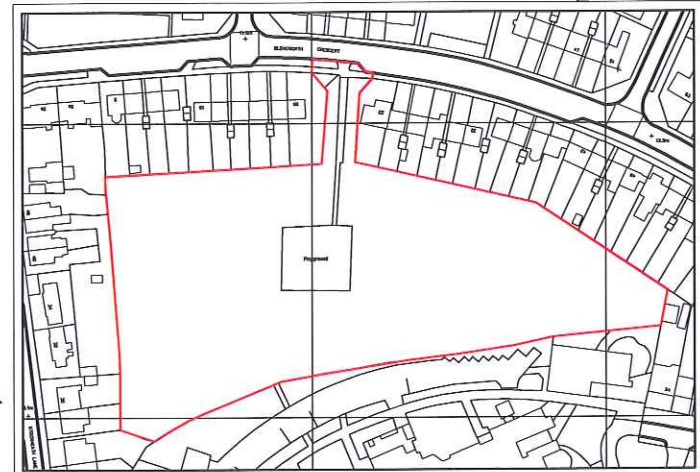
PARKING

44	no. Allocated parking spaces
40	no. Unallocated parking spaces
2	no. Disabled parking spaces
3	no. Pick-up, drop-off spaces
89	no. Total spaces

KEY

- allocated parking space

PLOTS 21-51
 13no. 1B 2P Flat
 14no. 2B 4P Flat
 4no. 2B 4P Accessible Unit



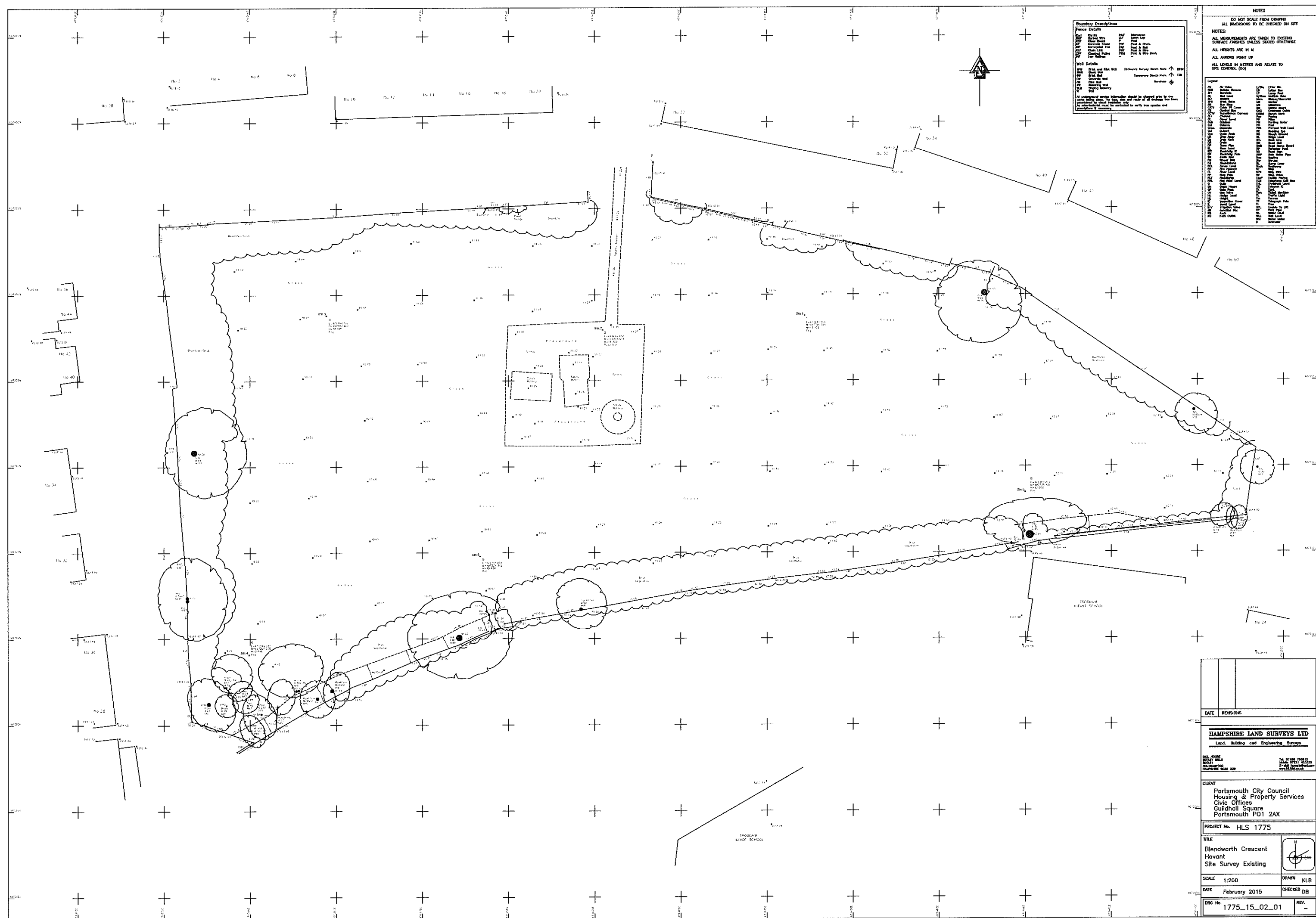
kenn scaddan associates
 architects
 CONCEPT HOUSE, 35 KINGSTON CRESCENT, NORTH END, PORTSMOUTH, HAMPSHIRE, PO2 8AA
 T: 023 9267 3618 F: 023 9267 9819 www.kscald.co.uk info@kscald.co.uk

PROJECT BLENDWORTH CRESCENT				
DRAWING TITLE SITE PLAN				
Date Jan 2016	Drawn by R.J.L.	Scale 1:250	Drawing No. 1102-PD-101	Rev. B
architecture	planning	design	project management	

Site Plan 1:250
 0 2.5 5 12.5
 (SCALE 1:250)

SITE LOCATION PLAN SCALE 1:1250

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[illegible][illegible]

DATE	REVISIONS		
HAMPSHIRE LAND SURVEYS LTD Land, Building and Engineering Surveys			
M/L: HOUNE SURVEY: WILLS DRAWN: WILLS HAMPSHIRE: SCOT 309	Tel: 01703 700815 Mobile: 07771 853330 E-Mail: info@hlsurveys.co.uk www.hlsurveys.co.uk		
CLIENT			
Portsmouth City Council Housing & Property Services Civic Offices Guildhall Square Portsmouth PO1 2AX			
PROJECT No. HLS 1775			
TITLE			
Blendworth Crescent Havant Site Survey Existing			
SCALE	1:200	DRAWN	KLB
DATE	February 2015	CHECKED	DB
DRG No. 1775_15_02_01		REV. -	

APPENDIX 2

Environment Agency Flood Maps



Enter a postcode or place name:

Other topics for this area...

Flood Map for Planning (Rivers and Sea)

Go

Map legend

X: 471,664;Y: 107,143 at scale 1:10,000

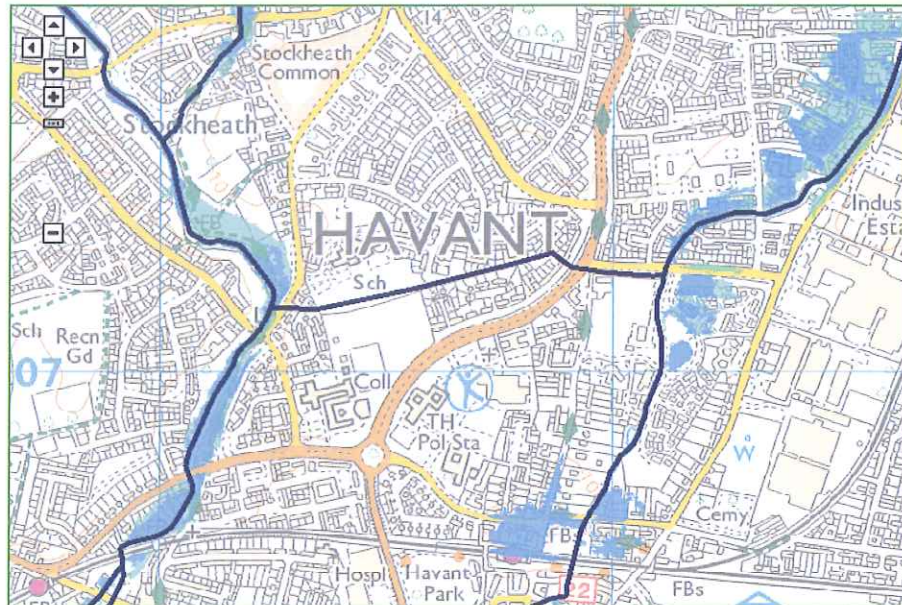
Other maps

Data search

Text only version

Click on the map to see what Flood Zone (National Planning Policy Guidance definitions) the proposed development is in.

- ☒ Flood Map for Planning (Rivers and Sea)
- ☐ Flood Zone 3
- ☐ Flood Zone 2
- ☐ Flood defences (Not all may be shown*)
- ☐ Areas benefiting from flood defences (Not all may be shown*)
- ☒ Main River Line
- ☐ Main River Line
- ☒ Other national environmental organisations
- ☐ Natural Resources Wales Area of responsibility
- ☐ Scottish Environment Protection Agency Area of responsibility



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More about flooding:

Understanding the Flood Map for Planning (Rivers and Sea)

A more detailed explanation to help you understand the flood map shown above.

Current flood warnings

We provide flood warnings online 24 hours a day. Find out the current flood warning status in your local area.

* **Legend Information:** Flood defences and the areas benefiting from them are gradually being added through updates. Please contact your local environment agency office for further details.

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Author: Environment Agency | wiybysupport@environment-agency.gov.uk
 Last updated: 18th March 2016

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Other topics for this area...



Risk of Flooding from Rivers and Sea



View other Interactive Maps

Risk of Flooding from Rivers and Sea

River flooding happens when a river cannot cope with the amount of water draining into it from the surrounding land. Sea flooding happens when there are high tides and stormy conditions.

The shading on the map shows the risk of flooding from rivers and the sea in this particular area.

Click on the map for a more detailed explanation.

Map of X: 471,664; Y: 107,142 at scale 1:10,000

Data search

Map legend

- ☒ Risk of Flooding from Rivers and Sea
 - High
 - Medium
 - Low
 - Very Low
- ☒ Other national environmental organisations
 - Natural Resources Wales Area of responsibility
 - Scottish Environment Protection Agency Area of responsibility



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Other topics for this area...



Risk of Flooding from Surface Water

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Risk of Flooding from Surface Water

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.

The shading on the map shows the risk of flooding from surface water in this particular area.

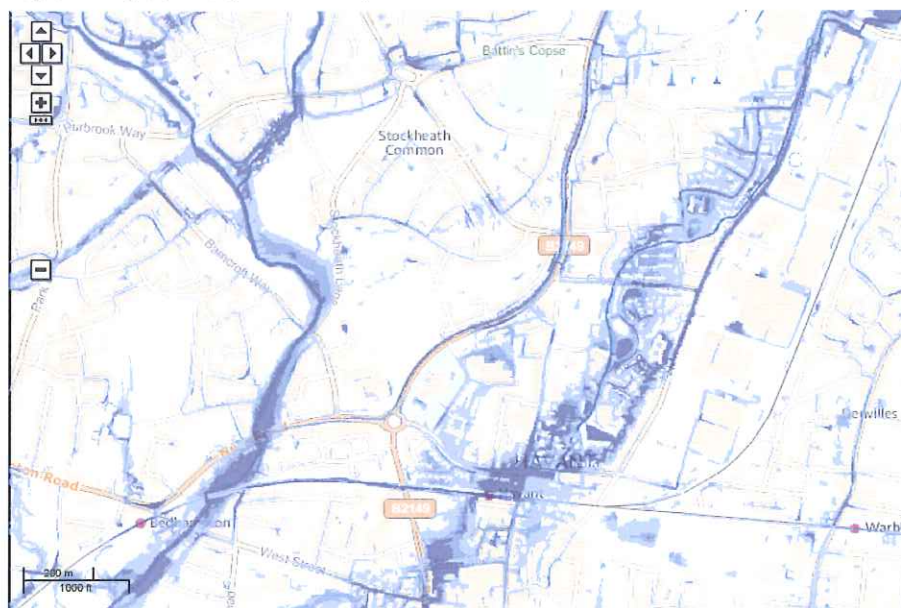
Click on the map for a more detailed explanation.

Map of X: 471,664; Y: 107,142 at scale 1:10,000

[Data search](#)

Map legend

☒	Risk of Flooding from Surface Water
	High
	Medium
	Low
	Very Low
☒	Other national environmental organisations
	Natural Resources Wales Area of responsibility
	Scottish Environment Protection Agency Area of responsibility



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Enter a postcode or place name:

Other topics for this area...

Go

Risk of Flooding from Reservoirs

View other Interactive Maps

Risk of Flooding from Reservoirs

Reservoir flooding is extremely unlikely to happen.

The shading on the map shows the area that could be flooded if a large reservoir were to fail and release the water it holds. A large reservoir is one that holds over 25,000 cubic metres of water, equivalent to approximately 10 Olympic sized swimming pools. Since this is a worst case scenario, it's unlikely that any actual flood would be this large.

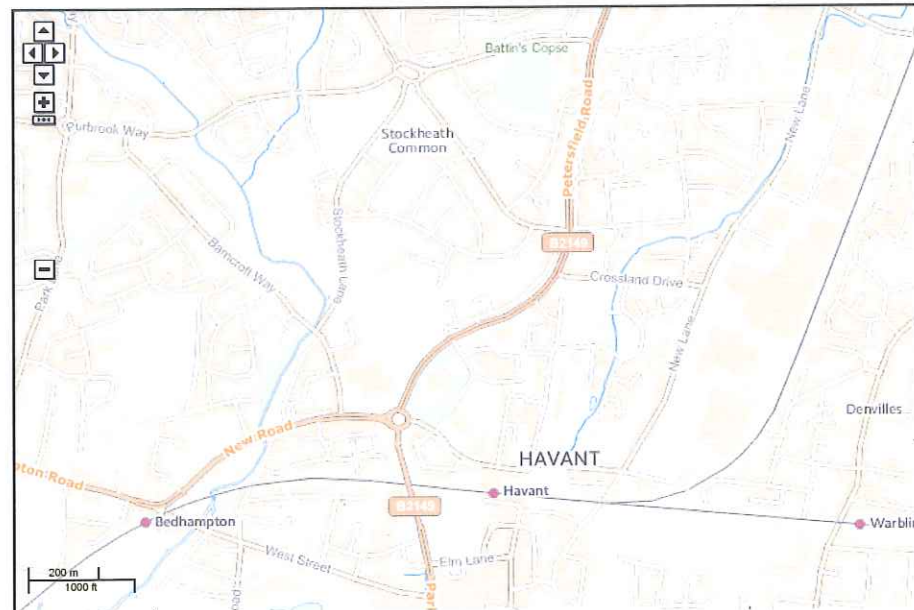
Click on the shading to see details of reservoirs that could cause flooding in this area.

Map of X: 471,664; Y: 107,142 at scale 1:10,000

Data search

Map legend

- ☒ Risk of Flooding from Reservoirs
- ☐ Maximum extent of flooding
- ☒ Other national environmental organisations
- ☐ Natural Resources Wales Area of responsibility
- ☐ Scottish Environment Protection Agency Area of responsibility



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APPENDIX 3

Southern Water Sewer Records

SEWER RECORDS PAGE 1 OF 2

107491



107203

471175

O.S. REF.

SU7107SW

Title: 188188_Land Adjacent Blendwort

Drawn by: mondalb

Scale: 1:1250

Date: 15/01/2015

The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy.

The actual positions should be determined on site.

WARNING: BAC pipes are constructed of Bonded Asbestos Cement
WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement

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Southern Water

471647