FLOOD RISK ASSESSMENT

57 Queensway, Bognor Regis, PO21 1QW

Reference: U0560 FRA-v1

May-25

www.urban-water.co.uk

	Section
Introduction	1
Site Assessment	2
National and Local Planning Policy	3
The Sequential and Exception Test	4
Flood Hazard Assessment	5
Flood Risk Management	6
Off-Site Impacts	7
Residual Risk	8
Conclusions	9

Appendices

Site Location Plan	A
Existing and Proposed Site Layouts	B
Site Characteristics	C
Flood Level Data	D

London Office
5th Floor, 167, 169 Great Portland St, London W1W 5PF

Oxford Office
Oxford Innospace, Old Music Hall, 106-108 Cowley Road, Oxford, OX4 1JE

FLOOD RISK ASSESSMENT

57 Queensway, Bognor Regis, PO21 1QW

Reference: U0560 FRA-v1

Report Limitations

All comments and proposals contained in this report, including any conclusions, are based on information available to RIDA Reports during investigations. The conclusions drawn by RIDA Reports could therefore differ if the information is found to be inaccurate or misleading. RIDA Reports accepts no liability should this be the case, nor if additional information exists or becomes available with respect to this scheme

Except as otherwise requested by the client, RIDA Reports is not obliged to and disclaims any obligation to update the report for events taking place after the date on which the assessment was undertaken.

RIDA Reports makes no representation whatsoever concerning the legal significance of its findings or the legal matters referred to in the following report.

All Environment Agency mapping data used under special license. Data is current as the data on the correspondence given by the Environment Agency and is subject to change.

The information presented and conclusions drawn are based on statistical data and are for guidance purposes only.
The study provides no guarantee against flooding of the study site or elsewhere, nor of the absolute accuracy of water levels, flow rates and associated probabilities.

This report has been prepared for the sole use of our direct client. No other third parties may rely upon or reproduce the contents of this report without the written permission of RIDA Reports. If any unauthorized third party comes into possession of this report they rely on it at their own risk and the authors do not owe them any Duty of Care or Skill.

Introduction 1

Purpose of this report

1.1 Urban Water has been appointed to undertake a Level 1 – Screening Study Flood Risk Assessment for a development located at PO21 1QW.

Objectives

1.2 The objectives of this FRA are to demonstrate the following:

- Whether the proposed development will likely be affected by current or future flooding.
- Whether the proposed development will increase flood risk elsewhere.
- Whether the flood risks associated with the proposed development can be satisfactorily managed.
- Whether the measures proposed to deal with the flood risk are sustainable.

Documents Consulted

1.3 To achieve these objectives, the following documents have been consulted and referenced:

The National Planning Policy Framework (NPPF)
CIRIA C753 document The SuDS Manual, 2015
Local Flood Risk Management Strategy (LFRMS)
Level 1 Strategic Flood Risk Assessment (SFRA)
Aerial photographs and topographical survey of the site
British Geological Society Records
Local Council flood Maps
Environment Agency flood maps
The CIRIA publication 'C635 Designing for exceedance in urban drainage Good practice'

Site Assessment 2

Development Site and Location

2.1 The site is located at Queensway, Bognor Regis. The nearest postcode is PO21 1QW. Refer to appendix A for site location plan.

2.2 The current use of the site is an existing car wash establishment. The current user vulnerability classification of the site is Less vulnerable . The site is located in the River Flood Zone 1. Refer to Appendix B for more details.

Development Proposals

2.3 The proposed development includes the demolition of existing buildings and associated areas, and the construction of a residential development comprising six 2-storey units. Refer to Appendix B for the layout of the proposed development.

2.4 The vulnerability classification of the proposed development is More vulnerable with an estimated lifetime between 50 and 100 years.

Site Hydrology and Hydrogeology

Hydrology

2.5 The English Channel is located approximately 350 m away from the development.

Aquifer

2.6 The development is located within a secondary aquifer type A. Aquifers type A consist of permeable layers capable of supporting water supplies at a local rather than strategic scale. They are generally aquifers formerly classified as minor aquifers.

Source Protection Zone

2.7 The site is not located within a Source Protection Zone.

Groundwater Levels

2.8 The ground water levels for this site are unknown.

Site Geology

Bedrock

2.9 The British Geological Survey records of the site show that it is located within the London Clay Formation - Clay, Silt and Sand.

Superficial Deposits

2.10 The British Geological Survey records show that the superficial deposits are River Terrace Deposits (Undifferentiated) - Sand, Silt and Clay.

National and Local Planning Policy 3

National Planning Policy Framework (NPPF)

3.1 The NPPF and its technical guidance is a set of planning policies with the key objective of contributing to sustainable development. As part of it, they ensure that flood risk and sustainability are considered during the planning process. This ensures that developments are not located in flood risk areas and directs developments to lower risk areas. The NPPF applies a sequential risk-based approach to determining land suitability for development in flood risk areas. The NPPF also encourages developers to seek opportunities to reduce the overall level of flood risk through the development layout and the application of Sustainable Drainage Systems (SuDS).

The Flood and Water Management Act (2010)

3.2 The Flood and Water Management Act aims to reduce the flood risk associated with extreme weather events. It provides robust flood risk management for people, homes and businesses and encourages using SuDS for developments. A robust SuDS strategy should consider the recommendations in this Flood Risk Assessment.

Strategic Flood Risk Assessment (SFRA)

3.3 Planning policy with regard to development and flood risk in the area is detailed in the Strategic Flood Risk Assessment (SFRA) which was published in 2016. The proposed development site is located within the administrative boundary of the Arun District Council.

3.4 The SFRA commits to direct new development to locations at the lowest flood risk. The SFRA provides information on the levels and flood hazards that could result from flooding. The Environment Agency flood zone maps and the SFRA ignore the presence of existing flood defences when defining the potential extent of flooding.

3.5 This report follows the guidance given in the Strategic Flood Risk Assessment by evaluating the flood risk and providing relevant flood mitigation.

The Sequential and Exception Test 4

4.1 The NPPF guidance states that the sequential test "is designed to ensure that areas at little or no risk of flooding from any source are developed in preference to areas at higher risk. This means avoiding, so far as possible, development in current and future medium and high flood risk areas considering all sources of flooding including areas at risk of surface water flooding."

Applicability of the Sequential Test

4.2 The flood risks were determined by identifying all the sources of flooding and assessing their possible impact and likelihood to development. It is confirmed that the development is:

- In Flood Zone 1, based on the Planning Flood Risk Map
- At Very Low risk of surface flooding
- At low risk of groundwater flooding
- Outside of a critical drainage area
- Outside of an area with sewer flooding

4.3 Due to the flood risk on the development, a sequential test is required. For this development, the sequential assessment was completed for the area within the red line of the planning application. The development has been located at the lowest flood risk. Regarding looking at other reasonably available sites, it is unlikely that other areas are available in lower flood risk probability as the development is small and can only be located within the proximity of the existing land use and land ownership. It is concluded that the current proposals pass the sequential test.

Exception Test

4.4 Fluvial flood risk was assessed using the Environment Agency Flood Zone Maps and the sequential risk-based approach recommended in the NPPF guidance. The exception test requirement considers the flood risk vulnerability of land uses about the flood zone categorisation. These parameters are assessed to determine whether the development requires an exception test or is inappropriate.

Step 1
Flood Zone categorisation

4.5 The proposed development is less than 1 ha and falls within the Environment Agency (EA) Flood Zone 1. Therefore, this Flood Risk Assessment Level 1-Screening report should be sufficient under the NPPF. Flood Zone 1 is considered to have a low probability of flooding, with an annual probability of flooding of <0.1%. The chance of flooding is 1 in 1000 years or lower.

Step 2
Flood risk vulnerability

4.6 Within Table 2 (Flood Risk Vulnerability Classification) of the NPPF Planning Practice Guide, the proposed development is classified as 'More vulnerable '.

Step 3
Flood Zone incompatibility

4.7 The Flood Risk vulnerability and Flood Zone incompatibility table of the NPPF Planning Practice Guide states that More vulnerable developments do not require an exception test in this area.

The Exception Test

4.8 The exception test is not required.

Flood Hazard Assessment 5

5.1 The development has been assessed for the following potential flood risks, river and tidal flood risk, surface water flooding, flooding from groundwater, reservoir flood risk and drainage systems.

Flood Defence and Historic Flooding

5.2 The Environment Agency records show that the site does not benefit from flood defences. They also show that the area around the site has not been flooded in the past. See Appendix C for details.

Flooding from river and sea

5.3 The proposed development is less than 1 ha and falls within the Environment Agency (EA) Flood Zone 1. Therefore, this Flood Risk Assessment Level 1-Screening report should be sufficient under the NPPF. Flood Zone 1 is considered to have a low probability of flooding, with an annual probability of flooding of <0.1%. The chance of flooding is 1 in 1000 years or lower.

5.4 The climate change allowance is not applicable for this site.

5.5 The site is located in an area outside of fluvial flooding flood risk.

5.6 It is concluded that the site is not affected by fluvial/sea flood risk.

Surface water (overland flows) flood risk

5.7 The Environment Agency maps show that the flood risk from surface water is very low. A residual risk of localised ponding remains unlikely. The Environment Agency surface water flood risk maps are defined by applying a specific procedure based on digital terrain models and assumptions regarding infiltration and urban drainage losses. The surface water flood maps are determined by the Environment Agency as follows:

5.8 *"The nationally produced surface water flood mapping only indicates where surface water flooding could occur due to local rainfall. It does not fully represent flooding that occurs from:*

- Ordinary watercourses
- Drainage systems or public sewers caused by catchment-wide rainfall events
- Rivers
- Groundwater

Due to the modelling techniques, the mapping picks out depressions in the ground surface. It simulates some flow along natural drainage channels, rivers, low areas in floodplains, and flow paths between buildings. Although the maps appear to show flooding from ordinary watercourses, they should not be taken as definitive mapping of flood risk from these as the conveyance effect of ordinary watercourses or drainage channels is not explicitly modelled. Also, structures (such as bridges, culverts and weirs) and flood risk management infrastructure (such as defences) are not represented.

The nationally produced surface water flood mapping does not consider the effect of pumping stations in catchments with pumped drainage. No allowance is made for tide locking, high tidal or fluvial levels where sewers cannot discharge into rivers or the sea."

5.9 The strategic flood risk for the Arun District Council confirms that the flood risk for the site is Very Low.

5.10 Based on the Environment Agency and the Strategic flood risk assessment's surface water mapping, together with the presence of surface water drainage systems at the site and surrounding area, it is concluded that the site is at Very Low risk of flooding from surface water sources.

Flooding from drainage systems in adjacent areas

5.11 The council records have been reviewed. The flooding from drainage incidents maps were not found in the Strategic Flood Risk Assessment. Therefore, for the purpose of this report, it has been assumed that the risk of flooding from drainage systems is low.

Reservoirs Risks

5.12 The Reservoir Flood Map (RFM) produced by the Environment Agency does not show the risk to individual properties of dam breach flooding. The maps do not indicate or relate to any particular probability of dam breach flooding. The maps were prepared for emergency planning purposes. They can be used to help reservoir owners produce on-site plans, and the Local Resilience Forum produce off-site plans and to prioritise areas for evacuation/early warning in the event of a potential dam failure. The RFM shows that the development could be outside of the possible dam breach flooding path. See Appendix C.

Groundwater flood risk

5.13 The British Geological Survey's flood risk susceptibility maps show that the development has the potential for groundwater flooding below ground level. Groundwater levels vary seasonally and are influenced by ground and meteorological conditions and proximity to water features. The groundwater flooding risk for this site is considered to be low. Refer to Appendix C for record drawings.

Critical Drainage Areas

5.14 The Strategic Flood Risk Assessment was reviewed as part of this assessment. However, it does not show the critical drainage areas within the council. For this report, it has been assumed that the site is outside of a notified critical drainage area.

6.1 The Flood hazard assessment has demonstrated that the site is:

- In Flood Zone 1, based on the Planning Flood Risk Map
- At Very Low risk of surface flooding
- At low risk of groundwater flooding
- Outside of a critical drainage area
- Outside of an area with sewer flooding

6.2 Under the NPPF it is necessary to demonstrate that, for any new development on the site, it is possible to provide an adequate level of flood protection for personnel working or living at the development.

Design Flood Level

6.3 The design flood level is the maximum estimated water level during the design storm event including an allowance for climate change in line with current best practice and the national planning policy guidance.

6.4 The Design Flood Level for this development has been determined by evaluating the levels from the Fluvial/Sea, Surface Water and Groundwater flood levels.

6.5 For this site, the Design Flood Level is 6.85m AOD. This is the highest level and corresponds to the Groundwater Flood Level.

Flood Protection

6.6 The National Planning Guidance standing advice and Environment Agency recommends that where possible, flood avoidance is provided by establishing the development's finished floor level 600mm above (freeboard) the design flood level. However, this level can be reduced if there is a high level of certainty about the estimated flood level. For this site the estimated free board has been determined to be 0.15m above the Design Flood Level due to the quality of the flood risk information available and the type of risk. The finished floor should be 7m AOD. The

site already complies with this level as the average external level is 6.85 m AOD, so this would correspond to a typical threshold level.

6.16 The general precautionary measures to mitigate the risk of groundwater flooding in this development, which is potentially below ground, are:

- Flow paths are provided around the proposed development, which groundwater will take in the event of groundwater emergence.

- It is proposed to add a tanking membrane up to 300mm above the ground level.

6.17 The Strategic Flood Risk Assessment shows that the site is outside of an area of sewer flooding, therefore no mitigation on sewer flood is required.

6.18 The Development Management Procedure Order (2015) requires that the Environment Agency is consulted on developments within Areas with Critical Drainage Problems (ACDPs). The Strategic Flood Risk Assessment does not show the development within a Critical Drainage Area.

7.1 The NPPF specifically stipulates that consideration should be given to potential off-site flood impacts of any proposed development. These off-site impacts are in relation to the following:

- Surface water management
- Flood flow conveyance, storage and climate change

Surface Water Management

7.2 The surface water run-off will be disposed of using SuDS techniques. The aim is to provide a sustainable design that accommodates the proposed attenuation volume and replicates the existing drainage regime using the SuDS hierarchy. See drainage strategy produced for this project for more information.

7.3 With no increase in the rate of surface water discharge from the site, compared to the site in its current configuration, the proposed development would have no adverse impact on surface water flood risk at the site or surrounding area. The SuDS should be further detailed at the detailed project stage.

The SuDS Hierarchy (Source:EA Thames region, SuDS a practical guide)

	SUDS technique	*Flood Reduction*	*Pollution Reduction*	*Landscape & Wildlife Benefit*
Most Sustainable	**Living roofs**	✔	✔	✔
↑	**Basins and ponds** - Constructed wetlands - Balancing ponds - Detention basins - Retention ponds	✔	✔	✔
	Filter strips and swales	✔	✔	✔
	Infiltration devices - soakaways - infiltration trenches and basins	✔	✔	✔
↓	**Permeable surfaces and filter drains** - gravelled areas - solid paving blocks - porous paviors	✔	✔	
Least Sustainable	**Tanked systems** - over-sized pipes/tanks - storms cells	✔		

Flood Flow conveyance and storage

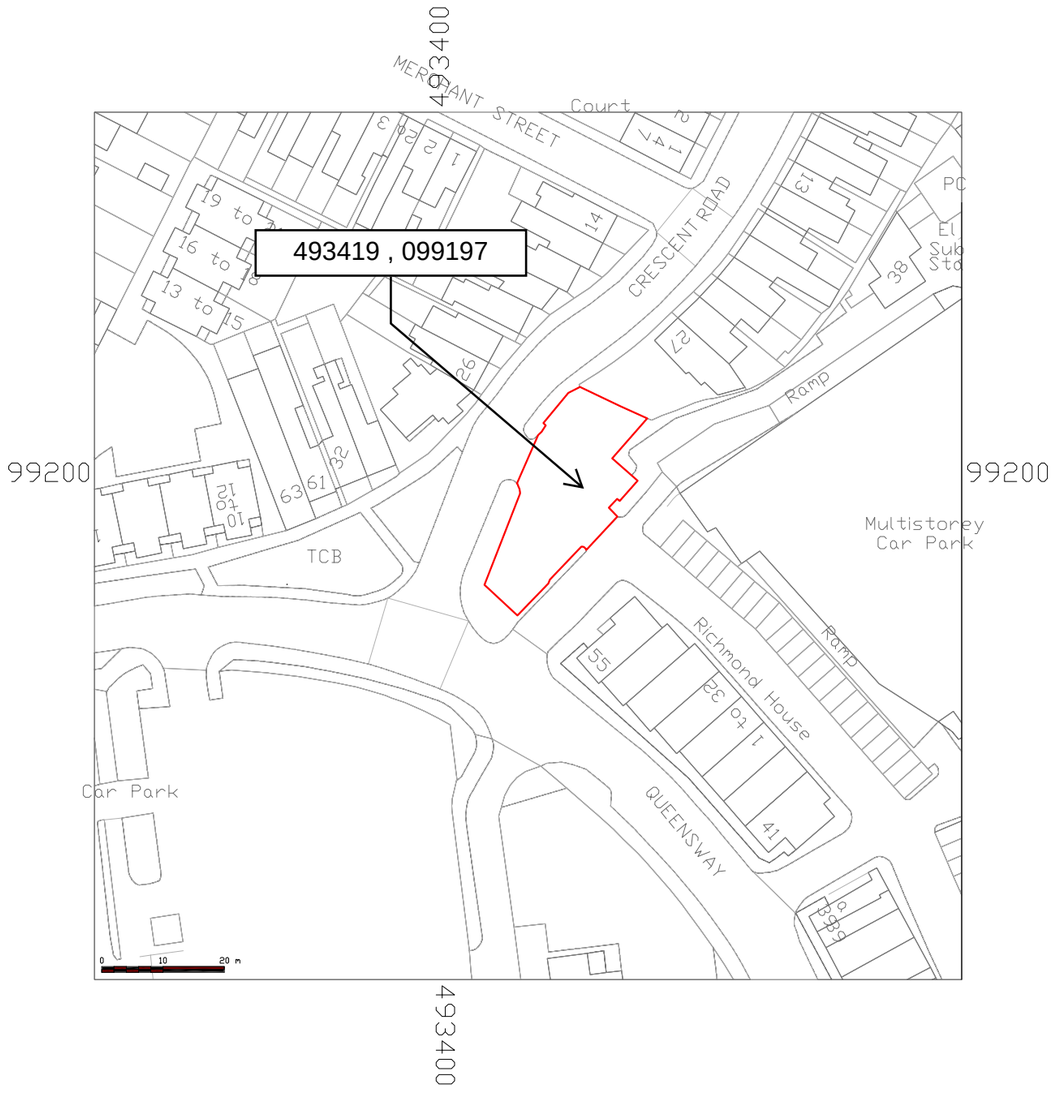
7.5 Due to the size of the development and its location in the flood risk zone, flood compensation for this development is not required.

Conclusions 9

9.1 It is concluded that subject to the proposed mitigation measures, the site can be developed in accordance with the provisions of the NPPF and the requirements of the Environment Agency and the local planning authority.

9.2 This report demonstrates that the proposal will be safe, in terms of flood risk, for its design life and will not increase the flood risk elsewhere.

Appendix A



REVISIONS

All dimensions and particulars are to be checked on site before work commences and any discrepancy to be reported to Hughes Jay & Panter Ltd.
DO NOT SCALE from this drawing, use written dimensions only

hjp

Grove House
64 Sutton Grove
Sutton, Surrey, SM1 4LP

Tel: 020 8661 2228
Fax: 020 8661 7551
mail@hjpsurveyors.com
www.hjpsurveyors.com

Operating throughout the UK
from London & West Sussex

hughes jay & panter ltd
chartered surveyors & property consultants

e-mail: mail@hjpsurveyors.com website: www.hjpsurveyors.com

Project
57 Queensway
P021 1QN
Bognor Regis

Drawing
Location plan

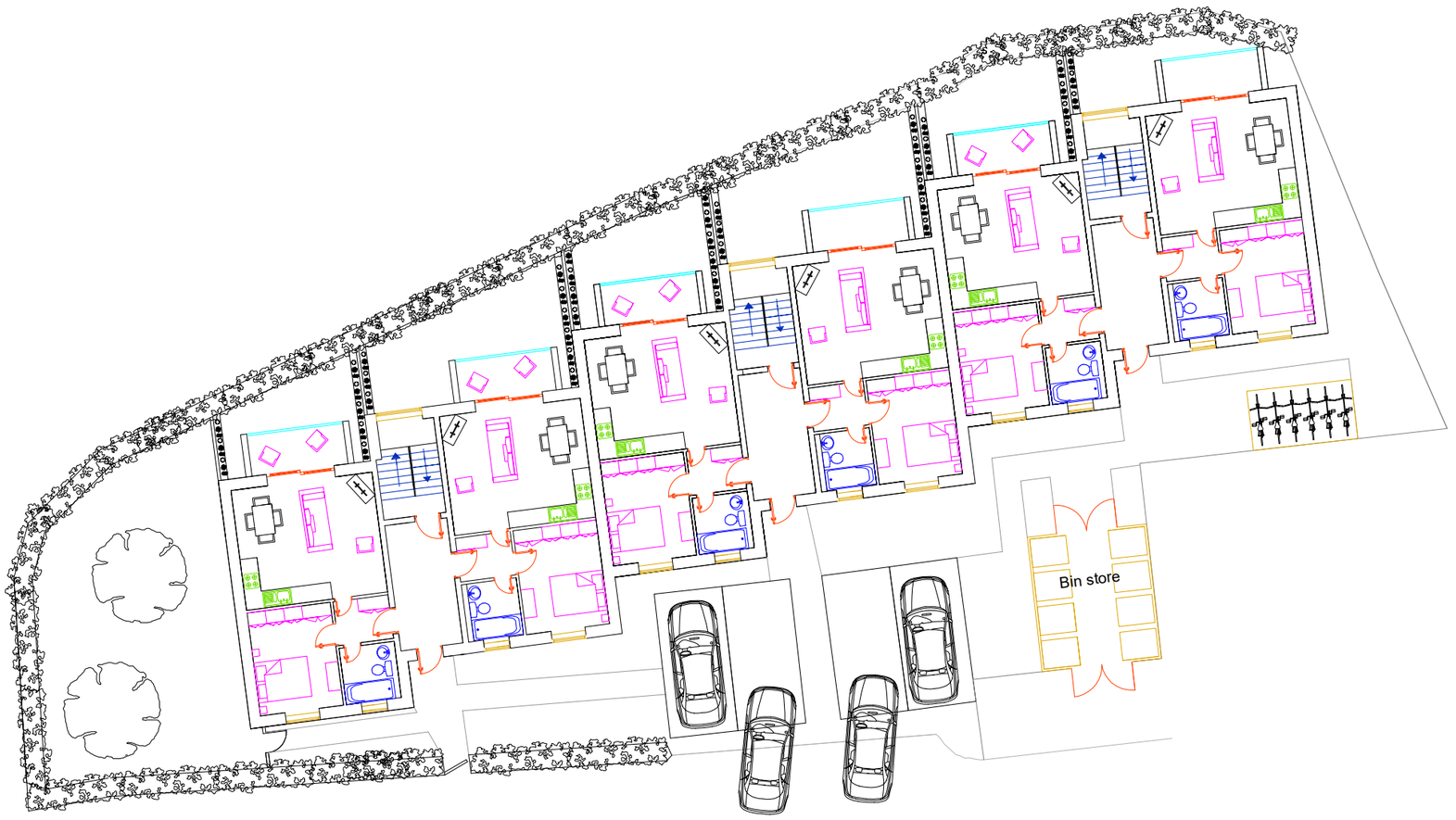
Job Number	Drawing Number
6304	N/A

Drawn	Computer Reference
RAF	-
Date	Scale
Jan 25	1:1250

Freshwater Group of Companies

A3

Appendix B



REVISIONS

All dimensions and particulars are to be checked on site before work commences and any discrepancy to be reported to Hughes Jay & Panter Ltd.
DO NOT SCALE from this drawing, use written dimensions only

hjp

hughes jay & panter ltd
chartered surveyors & property consultants

Grove House
64 Sutton Grove
Sutton, Surrey, SM1 4LP

Tel: 020 8661 2228
Fax: 020 8661 7551
mail@hjpsurveyors.com
www.hjpsurveyors.com

Operating throughout the UK
from London & West Sussex

e-mail: mail@hjpsurveyors.com website: www.hjpsurveyors.com

Project
57 Queensway
P021 1QN
Bognor Regis

Drawing
Ground Floor Plan

Job Number	Drawing Number
6304	1

Drawn	Computer Reference
RAF	-
Date	Scale
Jan 25	1:200

Freshwater Group of Companies

A3

REVISIONS

All dimensions and particulars are to be checked on site before work commences and any discrepancy to be reported to Hughes Jay & Panter Ltd.
DO NOT SCALE from this drawing, use written dimensions only

hjp

Grove House
64 Sutton Grove
Sutton, Surrey, SM1 4LP

Tel: 020 8661 2228
Fax: 020 8661 7551
mail@hjpsurveyors.com
www.hjpsurveyors.com

Operating throughout the UK
from London & West Sussex

hughes jay & panter ltd
chartered surveyors & property consultants

e-mail: mail@hjpsurveyors.com website: www.hjpsurveyors.com

Project
57 Queensway
P021 1QN
Bognor Regis

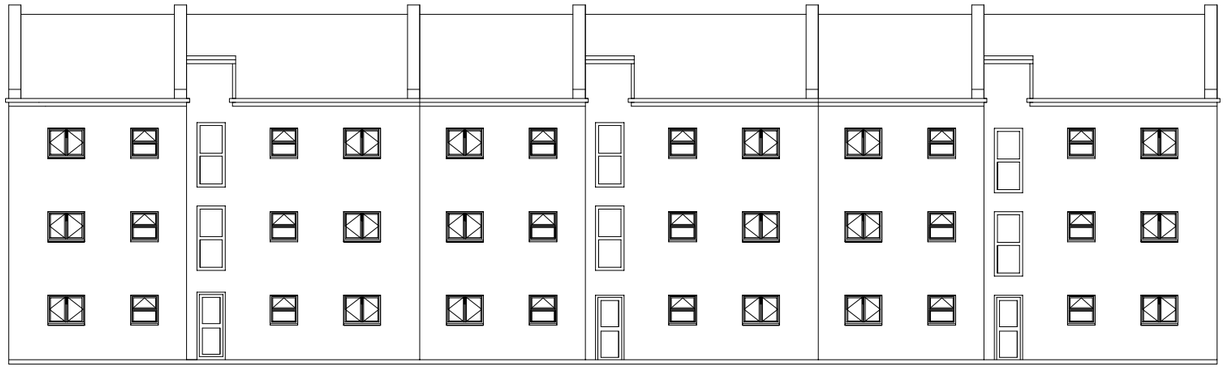
Drawing
Front Elevation

Job Number	Drawing Number
6304	2

Drawn	Computer Reference
RAF	-
Date	Scale
Jan 25	1:200

Freshwater Group of Companies

A3



REVISIONS

All dimensions and particulars are to be checked on site before work commences and any discrepancy to be reported to Hughes Jay & Panter Ltd.
DO NOT SCALE from this drawing, use written dimensions only

hjp

hughes jay & panter ltd
chartered surveyors & property consultants

Grove House
64 Sutton Grove
Sutton, Surrey, SM1 4LP

Tel: 020 8661 2228
Fax: 020 8661 7551
mail@hjpsurveyors.com
www.hjpsurveyors.com

Operating throughout the UK
from London & West Sussex

e-mail: mail@hjpsurveyors.com website: www.hjpsurveyors.com

Project
57 Queensway
P021 1QN
Bognor Regis

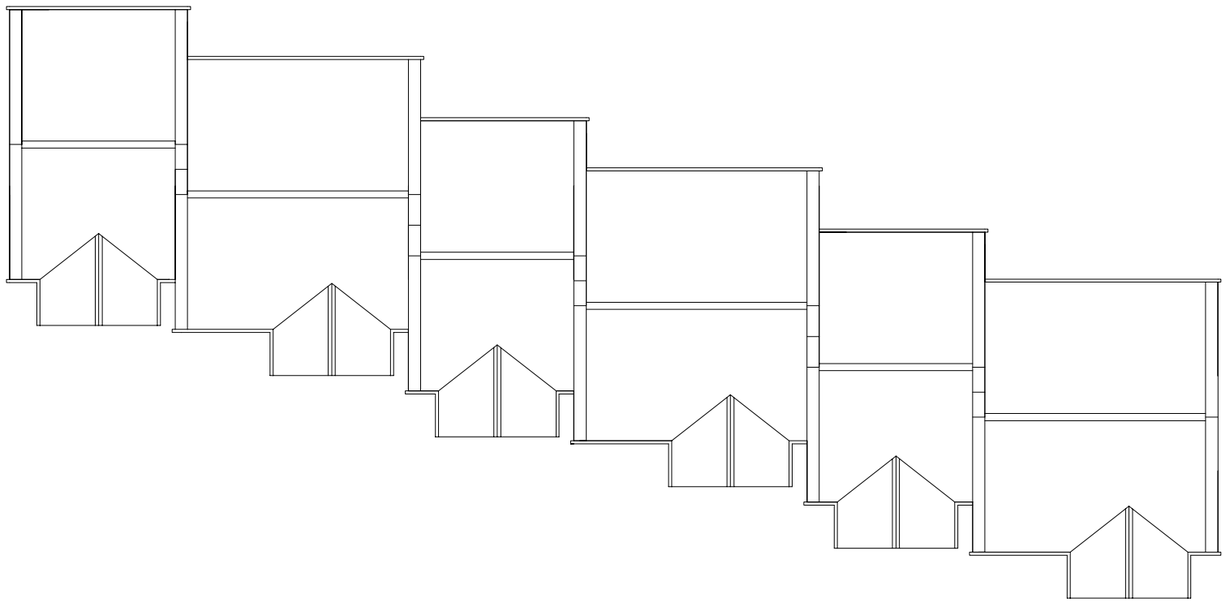
Drawing
Rear elevation

Job Number	Drawing Number
6304	3

Drawn	Computer Reference
RAF	-
Date	Scale
Jan 25	1:200

Freshwater Group of Companies

A3



REVISIONS

All dimensions and particulars are to be checked on site before work commences and any discrepancy to be reported to Hughes Jay & Panter Ltd.
DO NOT SCALE from this drawing, use written dimensions only

hjp

Grove House
64 Sutton Grove
Sutton, Surrey, SM1 4LP

Tel: 020 8661 2228
Fax: 020 8661 7551
mail@hjpsurveyors.com
www.hjpsurveyors.com

Operating throughout the UK
from London & West Sussex

hughes jay & panter ltd
chartered surveyors & property consultants

e-mail: mail@hjpsurveyors.com website: www.hjpsurveyors.com

Project
57 Queensway
P021 1QN
Bognor Regis

Drawing
Roof plan

Job Number	Drawing Number
6304	4

Drawn	Computer Reference
RAF	-
Date	Scale
Jan 25	1:200

Freshwater Group of Companies

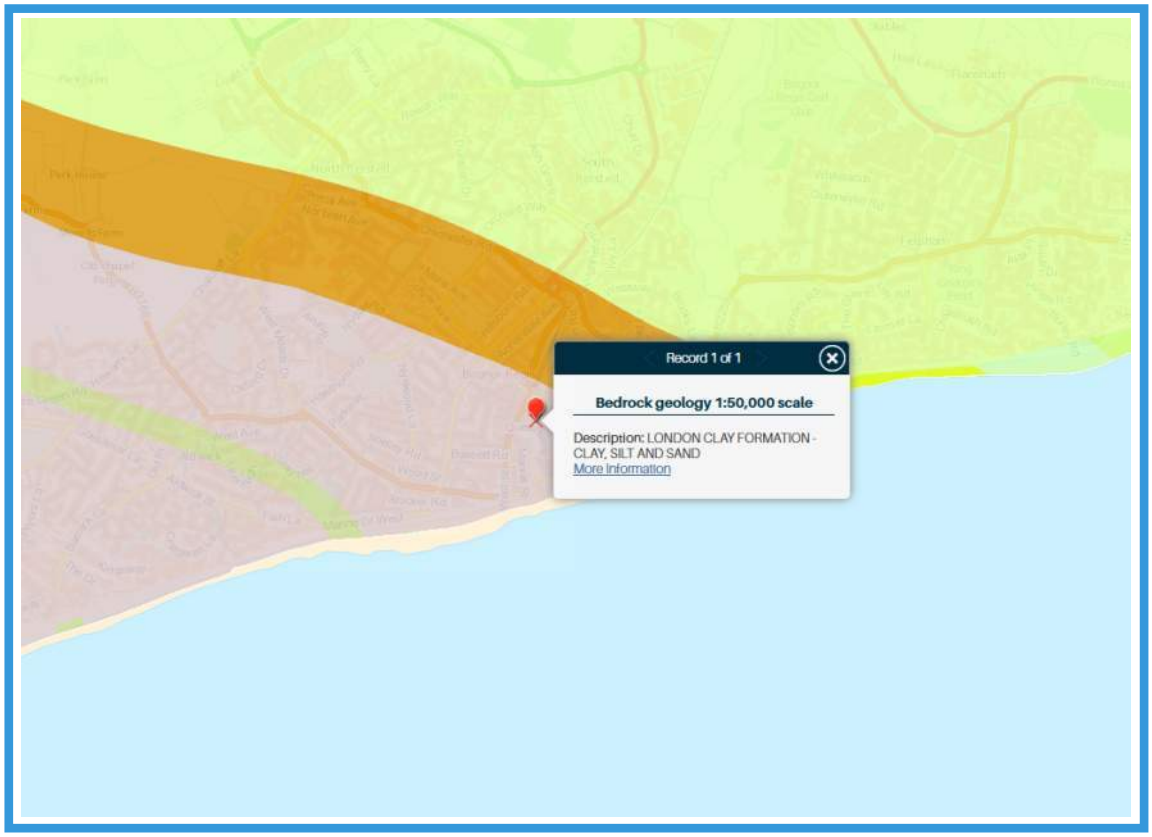
A3

Appendix C

SITE GEOLOGY

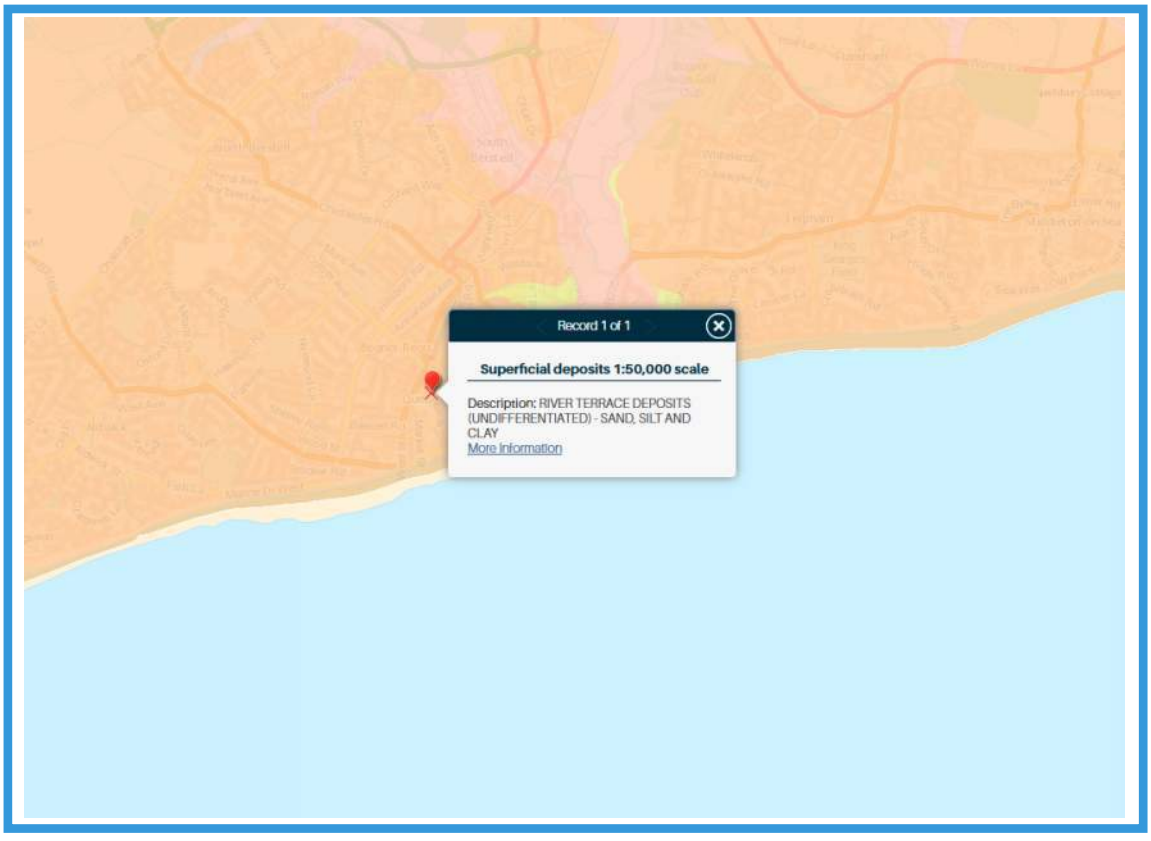
GEOINDEX ONSHORE

GEOLOGY - BEDROCK - LONDON CLAY FORMATION - CLAY, SILT AND SAND



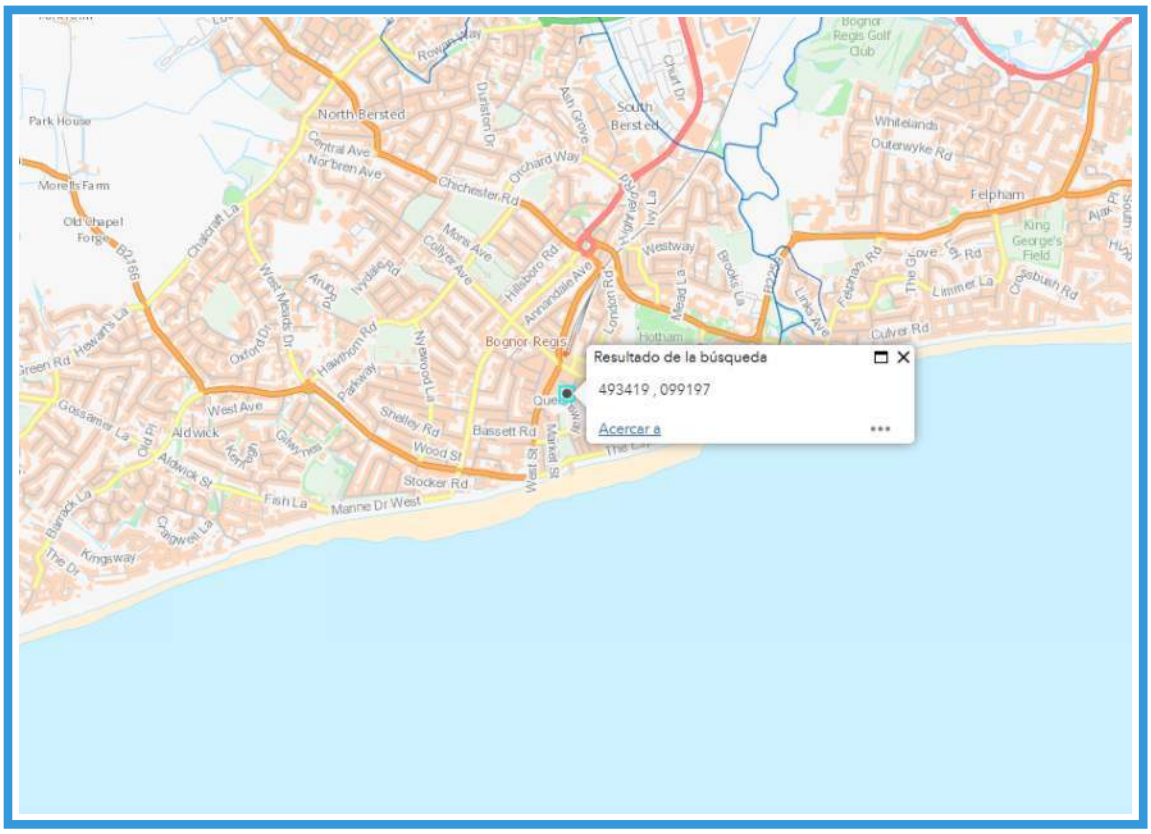
GEOINDEX ONSHORE

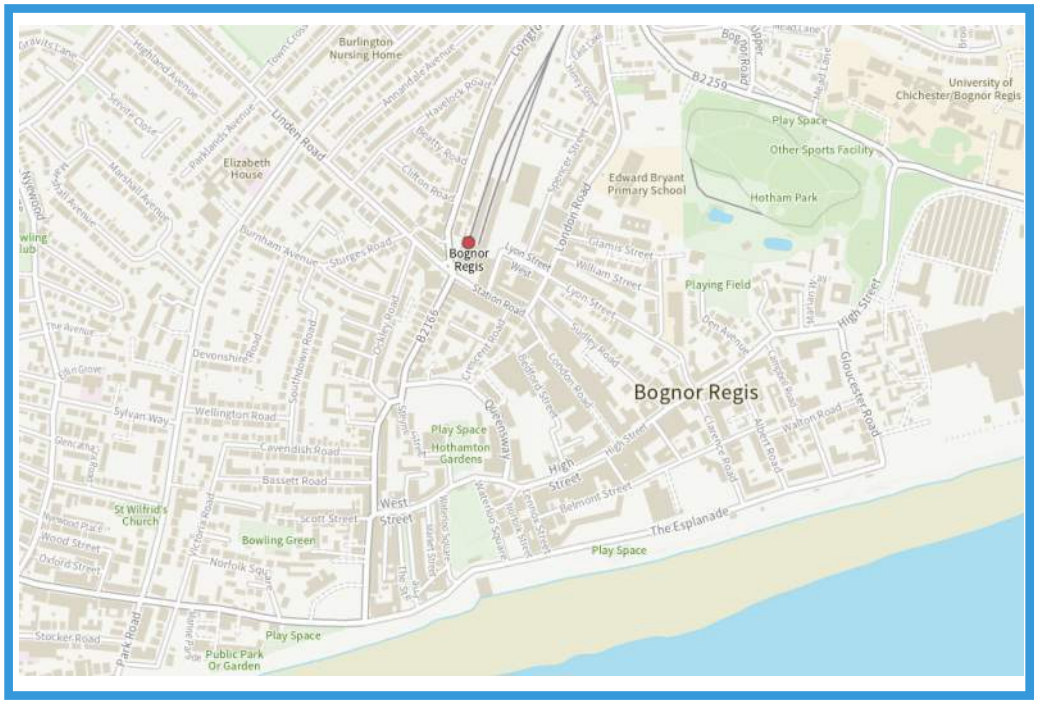
GEOLOGY - SUPERFICIAL DEPOSITS - RIVER TERRACE DEPOSITS (UNDIFFERENTIATED) - SAND, SILT AND CLAY



SITE HYDROGEOLOGY

Environment Agency Main River Map

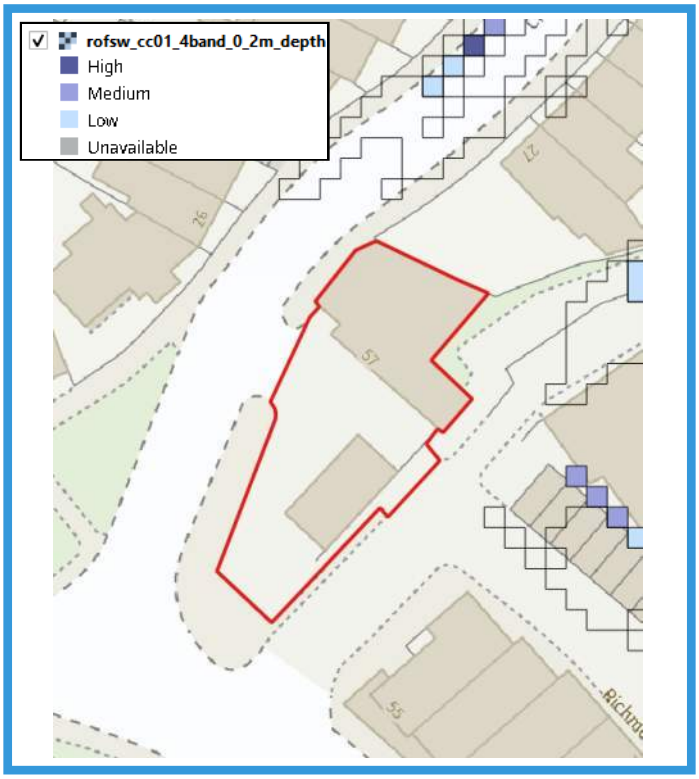


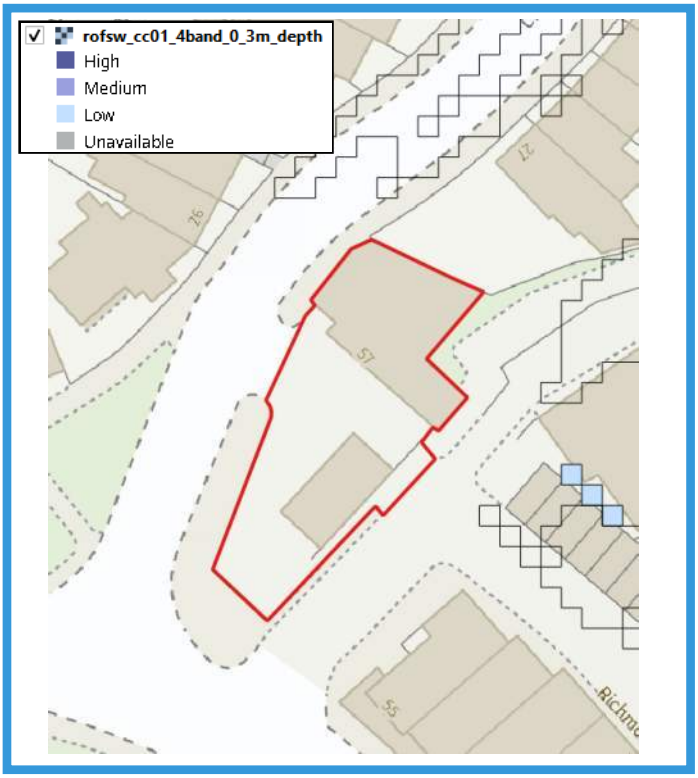


SITE SURFACE WATER FLOOD RISK

High risk means a chance of flooding greater than 3.3% (1:30)
Medium risk means a chance of flooding of btw 1% (1:100) and 3.3%
Low risk means a chance of flooding of btw 0.1% (1:1000) 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

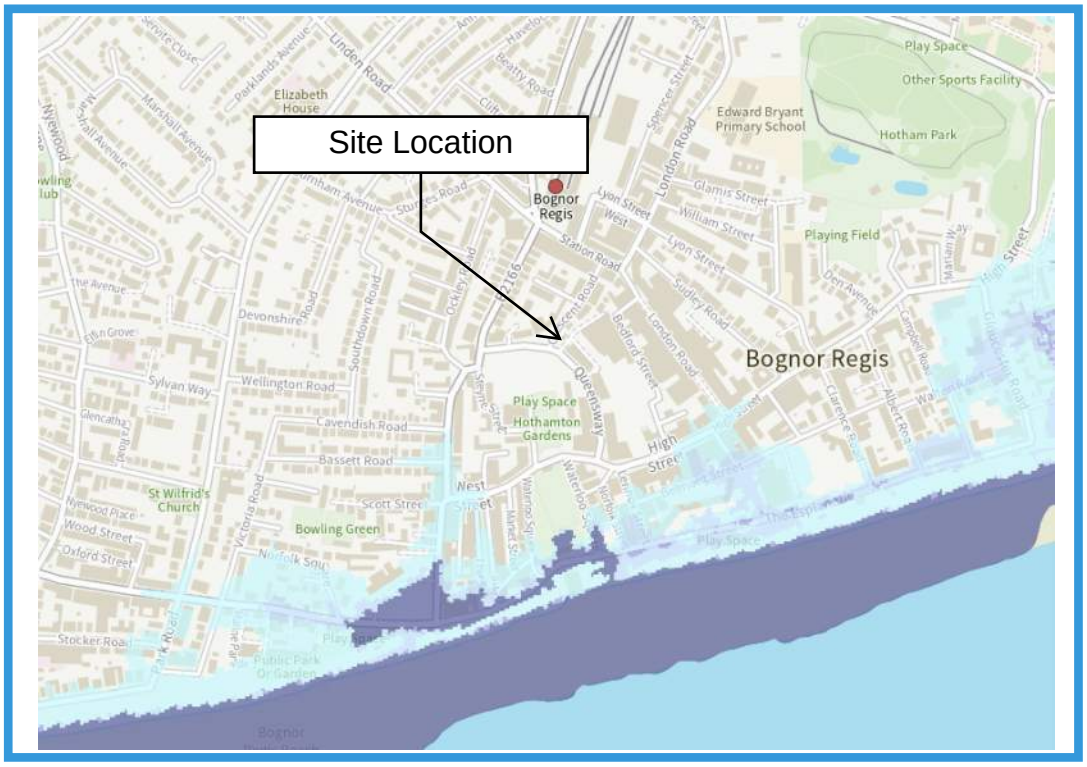
DEPTH





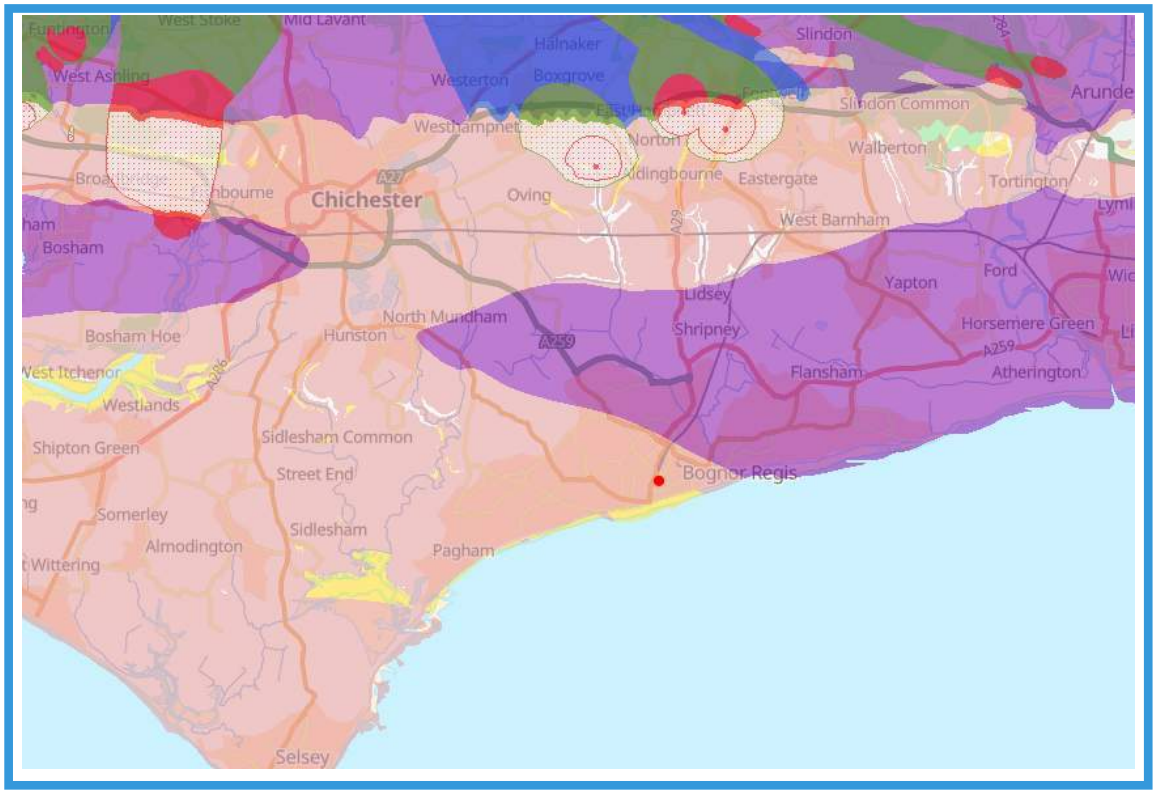
RIVER AND SEA FLOOD RISK MAP

- High - greater than or equal to 1 in 30 (3.3%) chance of flooding in any year
- Medium –Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance of flooding in any given year
- Low –Less than 1 in 100 (1%) but greater than or equal to 1 in 1000 (0.1%) chance of flooding in any given year
- Very low –less than 1 in 1000 (0.1%) chance of flooding in any given year



DEPTH

MAGIC RESULTS



Site Check Results

Site Check Report generated on Mon May 05 2025

The following features have been found in your search area:

You selected the location: Centroid Grid Ref: SZ93419919

Aquifer Designation Map (Superficial Drift) (England)

TYPOLOGY Secondary A

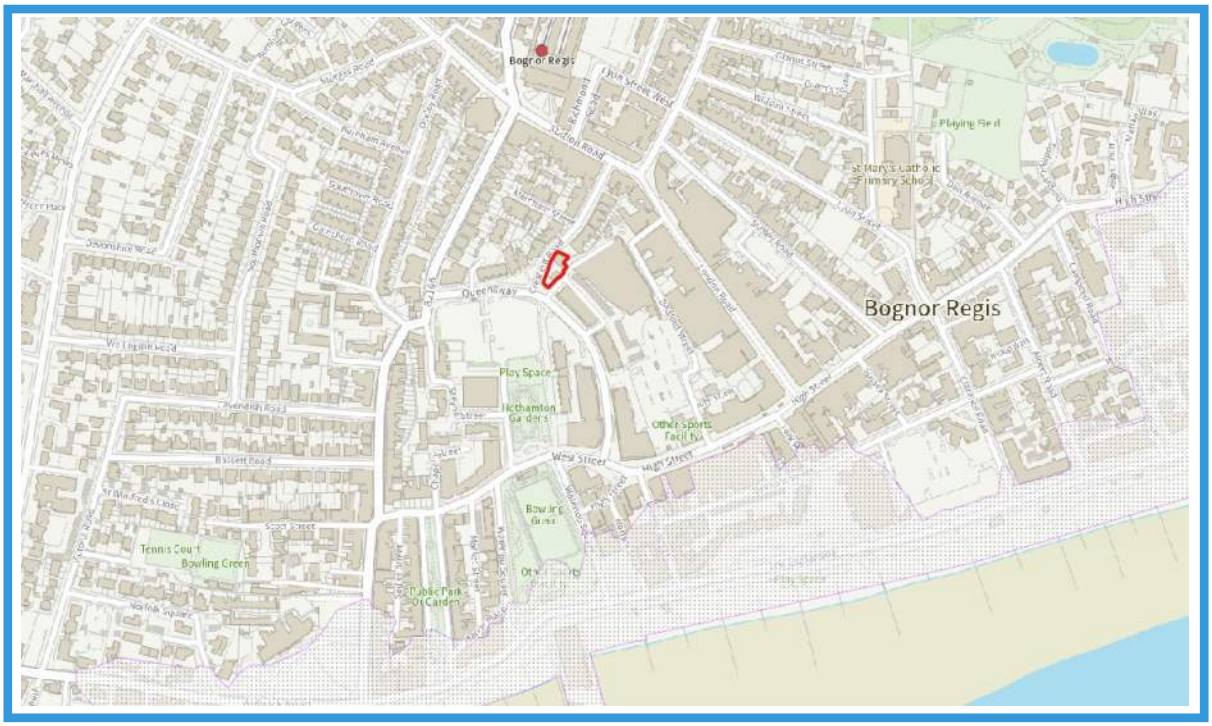
Aquifer Designation Map (Bedrock) (England)

TYPOLOGY Unproductive

Source Protection Zones merged (England)

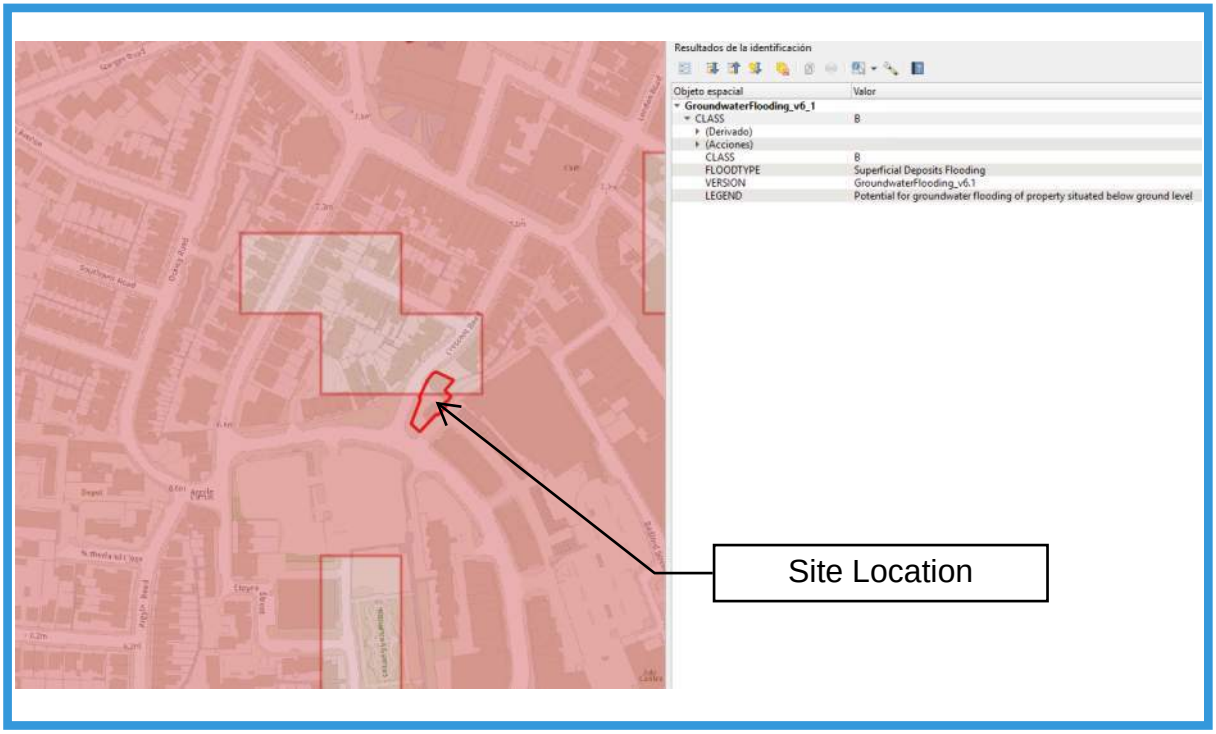
No Features found

FLOOD WARNING AREA

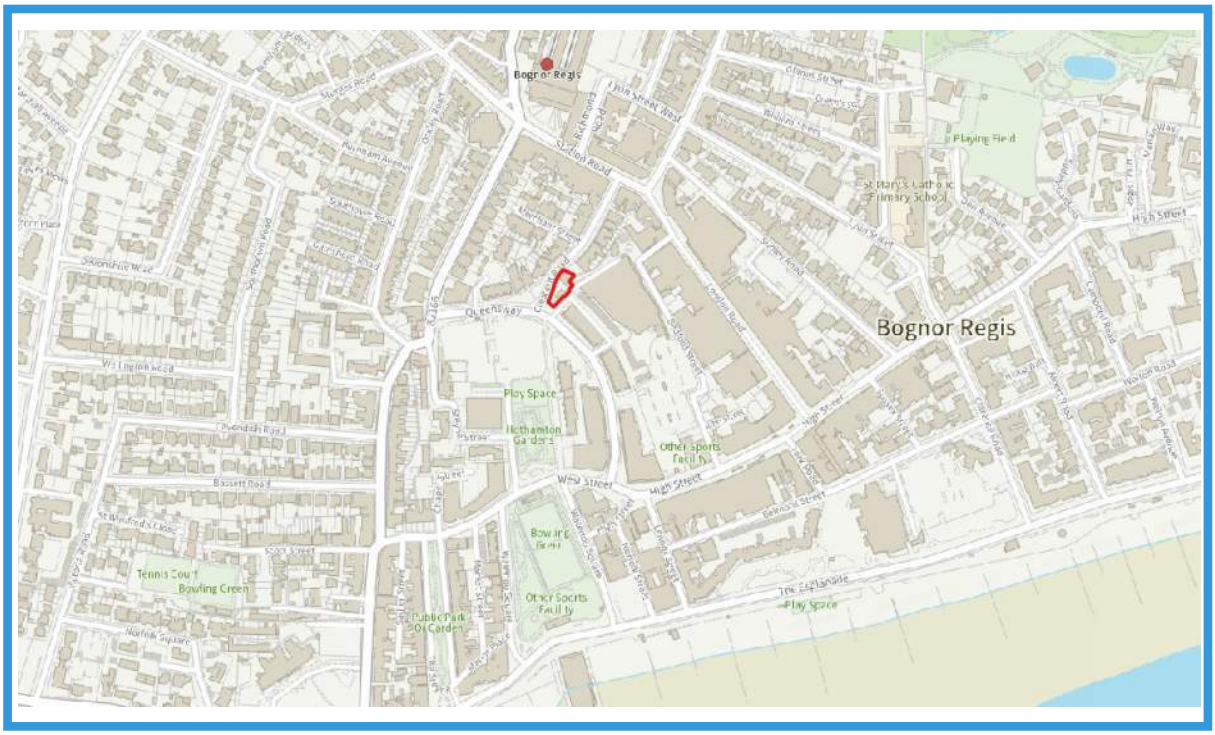


Flood Warning areas

GROUND WATER FLOOD RISK



HISTORIC FLOOD MAP



Historic Flood Outline

Flood map for planning

Your reference	Location (easting/northing)	Created
Unspecified	**493418/99196**	**5 May 2025 11:35**

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

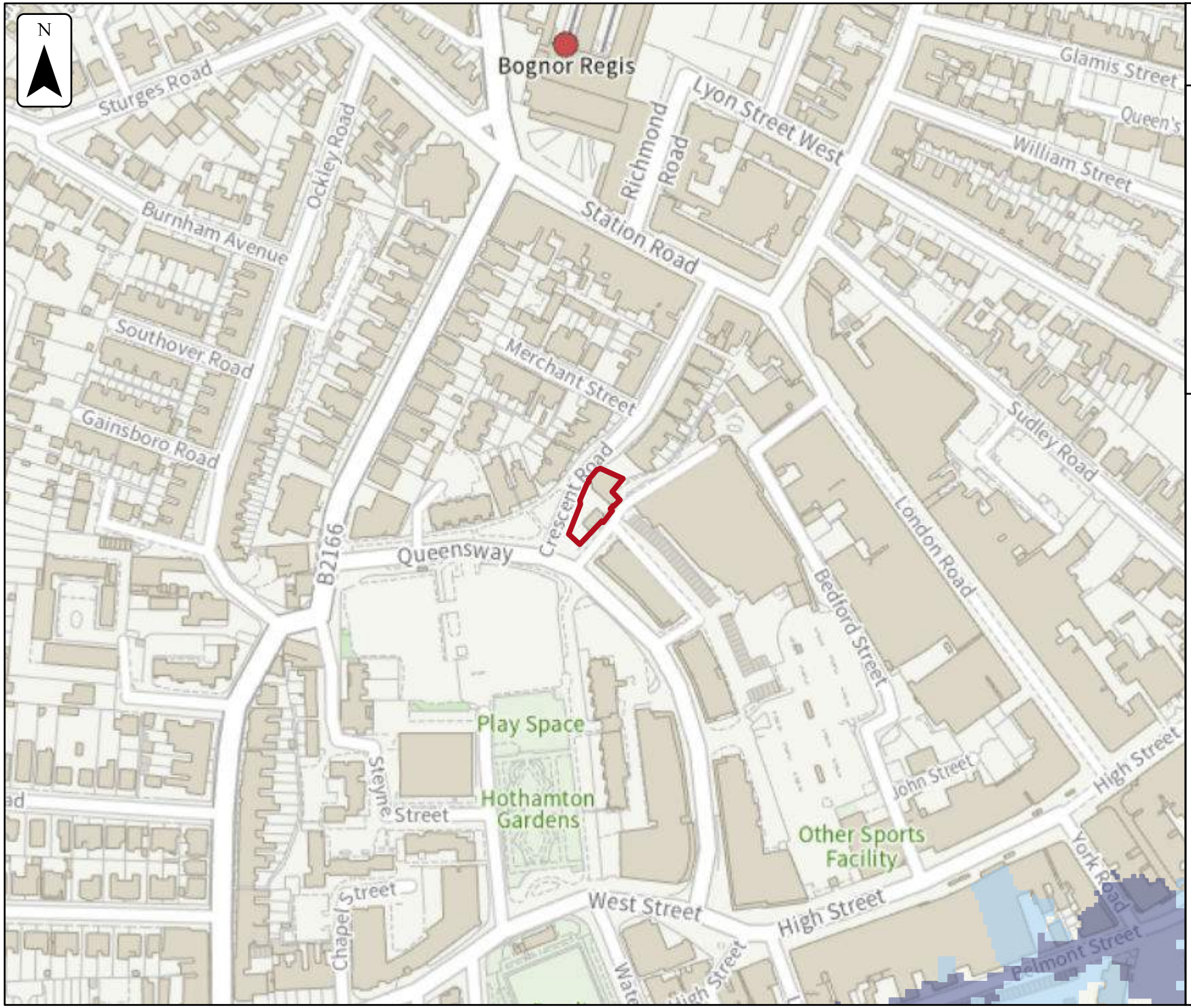
You will need to do a flood risk assessment if your site is **any of the following**:

- 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.



Environment Agency

Flood map for planning

Your reference
Unspecified

Location (easting/northing)
493418/99196

Scale
1:2,500

Created
5 May 2025 11:35

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

0 20 40 60 m