argyll ENVIRONMENTAL

FloodSolutions
Consult Residential

Sample, Road, Sample Town

Report Prepared for:
Sample client

Client Reference:
Not Supplied

Report Reference:
AEL-0000-FSCR-sample

National Grid Reference:
00000, 00000

Report Date:
13 April 2017

Landmark INFORMATION

Property Location

02

Report Prepared on:
Sample Road, Sample Town

Current use
Residential

Proposed use
Residential

Report Author:
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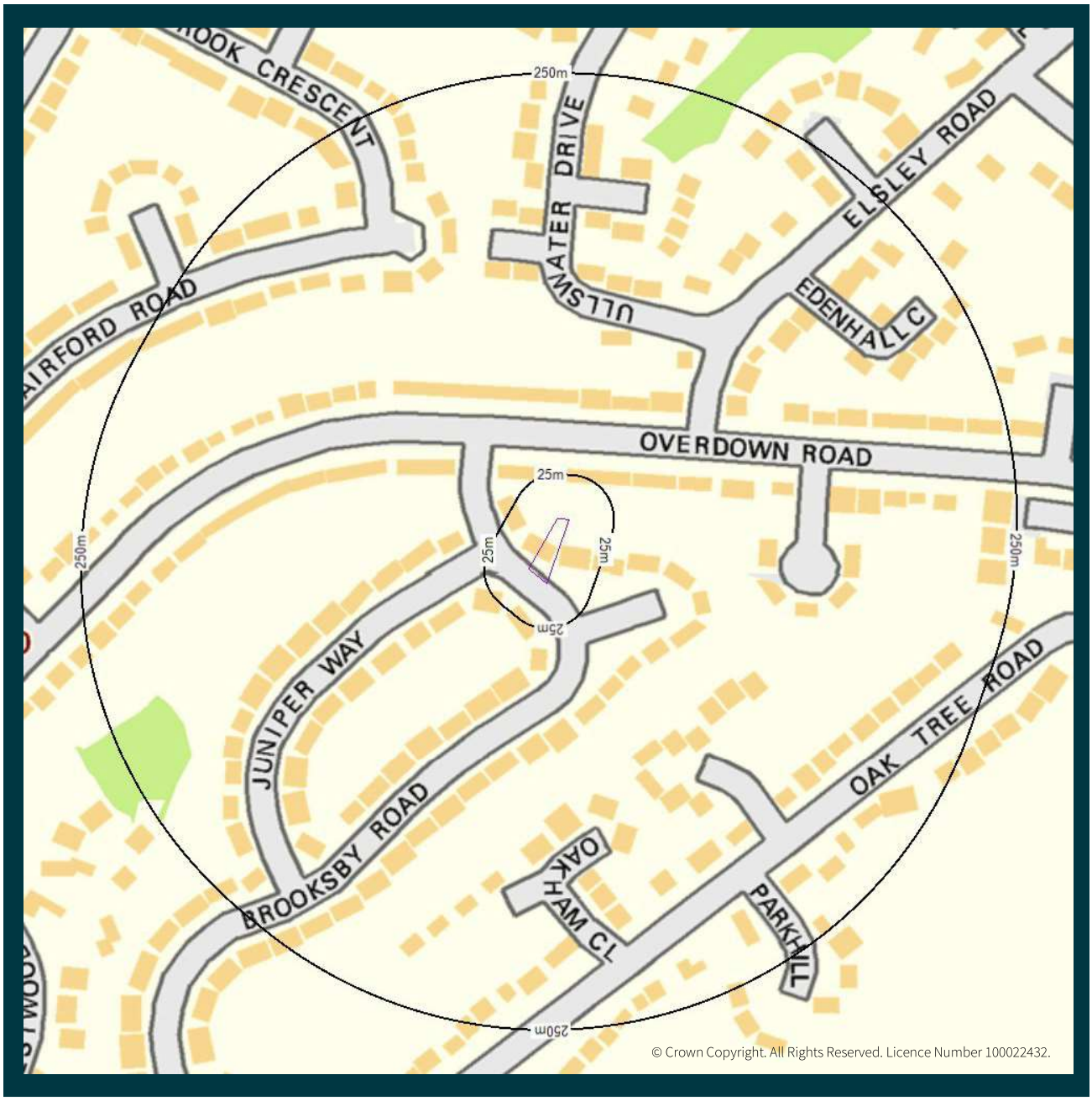
Telephone:
0845 458 5250



Overview

03

Initial Homecheck Flood Report

The initial Homecheck Flood report (HCF-sample) carried out at the Property identified a high risk of river and a moderate risk of surface water flooding in proximity to the Property, as such further assessment of data has been carried out in relation to the Property. Any flood risks identified within the 'Others' gauge in the initial report have been assessed in association with the relevant risk source; river, coastal, groundwater or surface water.

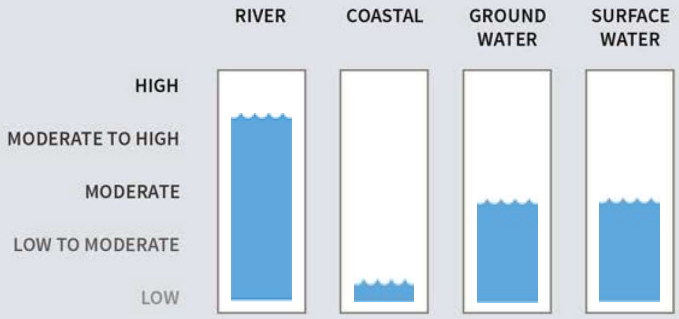
Insurance

Flood insurance for most residential properties should be available and affordable despite this level of flood risk due to the introduction of Flood Re. However, several types of residential property fall outside Flood Re and we cannot determine the eligibility of the Property from this assessment.

Professional Opinion

04

Further to our Homecheck Flood report (HCF-Sample), we have carried out a more detailed assessment at the Property. Our findings and recommendations are shown below.



Risk of Flooding

The overall risk of flooding has been identified as **Moderate to High.**

Flood type	Risk
River	The Property is at a moderate to high risk of river flooding. The depths of flooding are expected to reach up to 0.3m and are anticipated to impact the entire Property, which includes the house.
Surface Water	The risk from surface water flooding is considered to be moderate. Anticipated depths of flooding are expected to reach up to 0.3m and are expected to impact upon the south of the Property.

Summary

What type of flooding is the property at risk of?	River and surface water flooding
What proportion of the Property is at risk?	100%
Is the house at risk?	Yes
Maximum depth of flooding at the property?	0.3m
Maximum depth of flooding to the house?	0.3m
What should you do next?	Install property level protection Measures (See Recommendations)
Is access likely to be restricted?	Yes
Have defences been identified in proximity to the Property?	Yes
Has the Property historically flooded?	Yes

Recommendations

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Flooding can usually be managed by the installation of flood protection measures. Flood protection measures can be divided into two categories; flood resistance and flood resilience. Flood resistance measures can usually prevent/minimise the entry of water during a flood event if the depths do not exceed 0.6 metres. Where flood depths are likely to exceed 0.6 metres, flood resilience measures would be recommended.

Argyll's Recommendations

As river flooding at the property is not anticipated to exceed this level we would suggest the installation of property level flood resistance measures, which are outlined below. Furthermore, access may be restricted as Sample Road is likely to see flood depths up to 0.3m. As a result, we recommend preparing for this scenario.

Flood Protection Measures

Flood resistance measures are physical barriers designed to keep water out of your house, such as flood doors, air brick covers and non- return valves. Temporary flood resistance products are those that need deploying (fitting or activating) prior to flooding arriving, whereas permanent flood resistance products do not need activating.

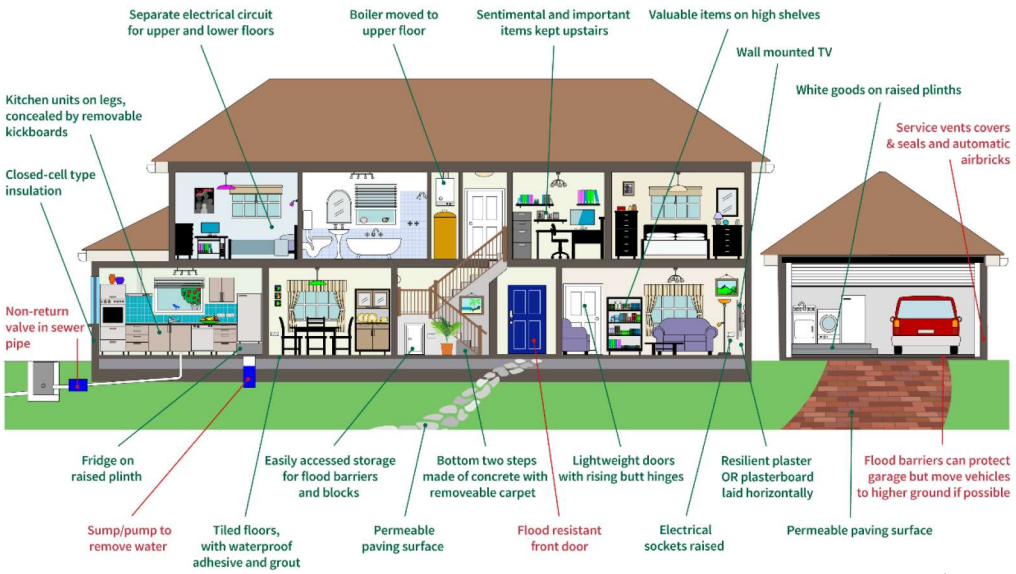
The flood source, likely depths and property design and age will inform the best choice of protection measures. Other factors will play a part in the decision making process, such as cost, visual impact, ease of deployment and product performance. The best answer for your home will most likely involve a combination of products. Please refer to the Know Your Flood Risk website for further information and suppliers of flood protection measures: www.knowyourfloodrisk.co.uk/flood-advice-guidance

Preparation

We recommend preparing for flooding to allow yourselves time to take action:

- Sign up to the Environment Agency's free flood warning service. For more information, see the Environment Agency's website;
- Develop a Flood Action Plan. This can include: shutting off building services and moving valuables to safe places;
- Develop a Flood Evacuation Plan to ensure safe access and egress from the Property;
- Ask the vendor, and neighbours, whether they are aware of any previous flood events in the area.

Combined resistance and resilience measures



River Flooding Analysis

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Summary

Following a review of detailed flood modelling, we have revised the risk of river flooding at the Property to moderate to high. The depths of flooding are expected to reach up to 0.3m and are anticipated to impact the entire Property, which includes the house itself. These depths are based on a 1 in 100 year return period event. Please see glossary for additional information on terminology.

Argyll's Analysis

Flood Defences

There are flood defences in place along the River Sample in the form of masonry walls. These have been recorded as having a 1 in 50 year standard of protection.

Historical Flood Events

A historic flood event was recorded at the site in December 1979, when the River Sample overtopped its banks. This event affected the entire Property, as well as nearby residential properties and access routes.

Flood Depths and Analysis

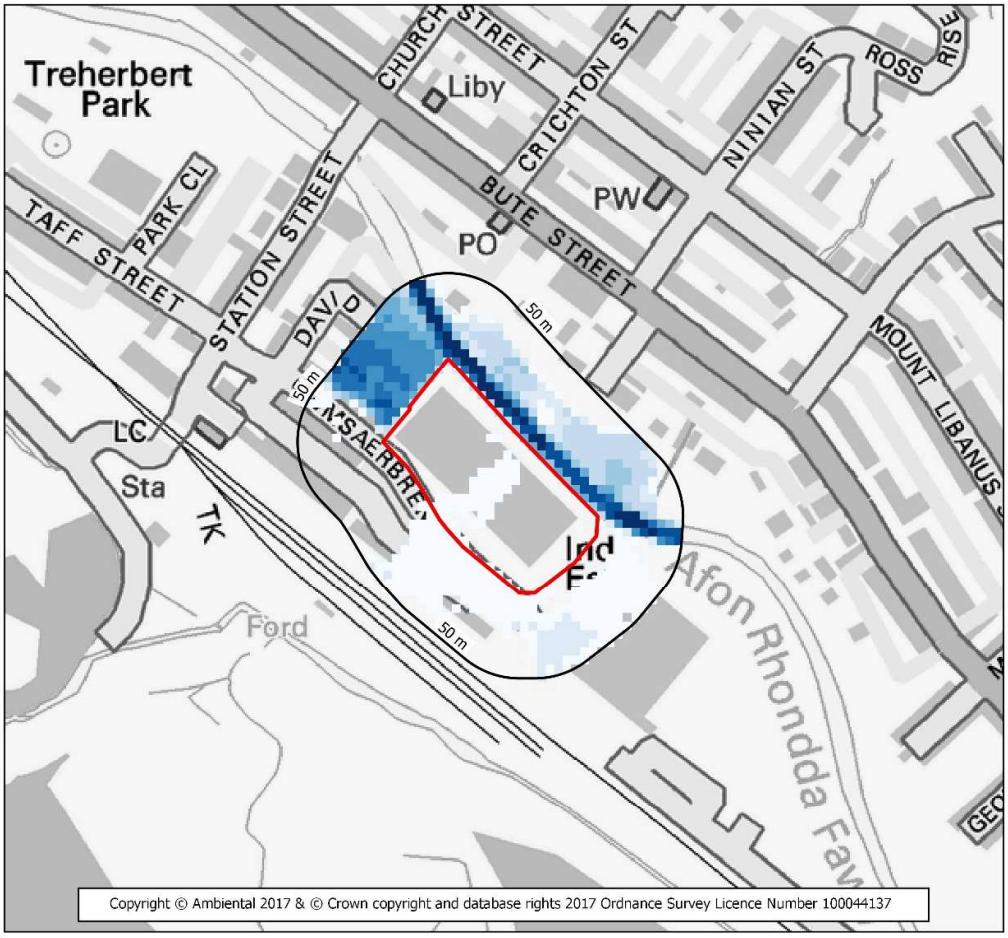
Detailed modelled flood data indicates that the entire Property could see depths of up to 0.3m. Access could be restricted during a storm event, so we would advise preparing for this scenario. Please see recommendations.

Safe Access/Escape

Due to the position of the Site within the floodplain it would be prudent to ensure a safe route from the Site in anticipation of a flood event. Please see recommendations.

River Flooding Depth Map (sample map) 07

The map below shows the likely flood depths anticipated to impact the property and surrounding area. Please see the River Risk Analysis section, which details the likely impacts of the flood water depths shown. Our recommendations section which provides the appropriate next steps.



Legend

Buffer

Site Extent

Fluvial Flood Depths (cm) 1:100 Year

- <= 0.222 cm
- 0.222 - 0.427 cm
- 0.427 - 0.633 cm
- 0.633 - 0.839 cm
- 0.839 - 1.04 cm
- 1.04 - 1.25 cm
- 1.25 - 1.44 cm
- 1.44 - 1.6 cm
- > 1.6 cm

Surface Water Flooding Analysis

08

Summary

The Property appears to be at a moderate risk of surface water flooding. This assessment is derived from data provided by JBA Risk Management and the Environment Agency.

Argyll's Analysis

JBA Risk Management Data

The Property has been identified as being at a moderate risk from surface water flooding, with the area of greatest risk situated in the south. The north of the Property could see lower depths, but has been identified at a moderate risk of surface water flooding.

Environment Agency Data

The Environment Agency Surface Water flood map shows the southern periphery of the Property to be at a risk of surface water flooding, with depths expected to reach up to 0.3m. Surface water flooding is restricted to the garden in the south of the Property and is not anticipated to impact upon the building.

Having considered both the JBA Risk Management and Environment Agency datasets, it is clear that the Property is at risk from surface water flooding. In this event, the southern section of the Property may be subject to flood depths of up to 0.3m.

Groundwater Flooding Analysis

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Summary

The Property appears to be at a moderate risk of groundwater flooding. This assessment is derived from the Geosmart information Ltd Groundwater Flood Risk map.

Argyll's Analysis

Due to the nature of the risk and topography of the property, if groundwater was to emerge, it is unlikely to extend beyond the area of river risk.

Owing to the elevation of the Site above the water table and the permeability of the underlying geology, the entire Property could be at risk of groundwater flooding during times of increased rainfall or rising river levels. This will be more of a problem if the Property has cellars or basements.

Additional Flooding Considerations 10

Development Control

The National Planning Policy Framework (NPPF) sets out Government policy on development and flood risk. Its aims are to ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas of highest risk. Where new development is exceptionally necessary, NPPF aims to make it safe, without increasing flood risk elsewhere, and, where possible, reducing flood risk overall.

A separate Drainage Impact Assessment may be required in addition to an FRA to demonstrate that development of the Property will not adversely affect flood risk elsewhere. Any Sites within 50m of a Main River where development is proposed are required to consult with the Environment Agency prior to the submission of any planning application.

Riparian Ownership

A riparian owner describes anyone who owns a property where there is a watercourse within or adjacent to the boundaries of their property. Under common law, a riparian owner has rights and responsibilities relating to the stretch of watercourse that falls within or beside the boundaries of their land. Their primary responsibility is to keep the watercourse free of any obstructions that could hinder normal water flow. If the riparian owner fails to carry out their responsibilities, this could result in civil action.

A riparian owner should also check before carrying out any works near to the edge of a river, as such works may be subject to byelaws. If infringed, this could lead to enforcement action by the Environment Agency. There is a presumption that the boundary between properties abutting a watercourse is the centre line of that watercourse. To confirm whether this is the case, a solicitor should check the deeds or the Index Map.

The Environment Agency has published useful guidance 'Living on the edge' for owners of land or property alongside a watercourse: **https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/454562/LIT_7114.pdf**.

Sometimes, the EA or other organisations managing flood risk, may have statutory rights of access to properties which adjoin a watercourse. This may be for maintenance, repair or rebuilding of any part of the watercourse or for access to or repair of monitoring equipment.

Flood Evacuation and Planning

Where a flood risk has been identified, creating and implementing a business continuity plan is integral to an organisations ability to respond to an incident and continue operations. It should provide actions for how it intends to operate in the wake of a flood event, and how it intends to revert back to 'business as usual'.

Advice for how an organisation should prepare themselves for flooding, and react after a flood can be found in the Know Your Flood Risk, 'Flood Advice for Businesses' **www.knowyourfloodrisk.co.uk/sites/default/files/FloodGuide_ForBusinesses.pdf**.

Flood Protection Measures

Flooding can usually be managed by the installation of flood protection measures either on/within the building(s) or across the Property. Flood protection measures can be divided into two categories; flood resistance and flood resilience. Specific flood protection packages can often include both resistance and resilience measures. What is suitable will depend on a number of factors including flood source, likely flood depths, property design and age.

Research conducted by CLG Sustainable Buildings Division and the Environment Agency revealed that installing flood resistance measures may be inappropriate where likely flooding will be deep (usually greater than 0.60m). Certain types of building construction are unable to resist the pressure load placed on the exterior skin of the building by retained flood waters. This is dependent on the age and construction of the property.

Sewer Flooding

In times of extreme rainfall events sewers can overflow and cause local flooding. Ofwat's 'DG5 - At Risk Registers' record properties that have flooded from sewers and are at risk of flooding again, with separate registers for internal and external flooding. The At Risk Registers are maintained by each of the ten water and sewerage companies in England and Wales and details of properties subject to sewer flooding are normally kept for between two and five years. These registers are not necessarily complete as not all episodes of past flooding may be recorded.

Glossary

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1 in 100 year return period

1 in 100 year flood event (1% Annual probability of flooding).

Flood Evacuation Plan

A flood evacuation plan sets out clear steps to ensure the safe evacuation of staff during a flood. It will form part of the Business Continuity Plan.

Coastal Flooding

Coastal flooding is the inundation of land areas along the coast caused by sea water rising above normal tidal conditions. Coastal flooding can arise from a combination of high tides, wind induced tidal surge, storm surge created by low pressure and wave action.

Flood Resistance Measures

These measures are designed to prevent flood water from entering the house and external areas at the Property.

Flood Resilience Measures

These measures are intended to make buildings more resilient to flood damage so that they recover more quickly from flooding. They are not designed to prevent flood water entering the property.

Flood Risk Assessment

A full Flood Risk Assessment (FRA) Report is a bespoke report required under NPPF for any development site within Environment Agency Flood Zones 2 or 3 and/or any development site larger than 1 hectare. These reports are generally prepared following liaison with the Local Planning Authority and the application of the sequential test.

Flood Zone 1

An area of low probability of flooding as defined by the Environment Agency – a flood return period of 1 in 1,000 or more.

Flood Zone 2

An area of medium probability of flooding as defined by the Environment Agency – a flood return period between 1 in 100 to 1 in 1,000 for river flooding and 1 in 200 to 1 in 1,000 for coastal flooding.

Groundwater Flooding

Groundwater flooding occurs when ground water levels increase sufficiently for the water table to intersect the ground surface. Groundwater flooding can occur in a variety of geological settings including valleys and in areas underlain by chalk, and in river valleys with thick deposits of alluvium and river gravels.

National Planning Policy Framework (NPPF)

This relates to the National Planning Policy Framework and the associated Technical Guidance.

Surface Water Flooding

Surface water flooding results from rainfall running over ground before entering a watercourse or sewer. It is usually associated with high intensity rainfall events (typically greater than 30mm per hour) but can also occur with lower intensity rainfall or melting snow where the ground is already saturated, frozen, developed (for example in an urban setting) or otherwise has low permeability.

Return Period

Return periods are a measure of how likely flooding is to occur. They are commonly expressed as a ratio (for example 1 in 75 or 1:75). This means that this level of flooding is expected once in every 75 years.

River Flooding

River flooding mainly happens when the river catchment (that is the area of land that feeds water into the river and the streams that flow into the main river) receives greater than usual amounts of water (for example through rainfall or melting of snow). The amount of runoff depends on the soil type, catchment steepness, drainage characteristics, agriculture and urbanisation as well as the saturation of the catchment. The extra water causes the level of the water in the river to rise above its banks or retaining structures.

RoFRS (Risk of Flooding from River and Sea)

A dataset provided by the Environment Agency, which takes into account defences to assess the risk of flooding in an area.

Useful Contacts

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Please see below the contact details of all those referred to within this report. For all other queries please contact:

Argyll Environmental Ltd
1st Floor
98 – 99 Queens Road Brighton
BN1 3XF

If you require any assistance, please contact our customer services team on:

0845 458 5250

or by email at:

orders@argyllenviro.com

or visit:

www.argyllenvironmental.com

Contact	Name	Address	Contact details
1	**Landmark Information Group**	Imperium Imperium Way Reading RG2 0TD	**T:** 0844 844 9966 **E:** helpdesk@landmark.co.uk
2	**British Geological Survey Enquiry Service**	British Geological Survey Kingsley Dunham Centre Keyworth Nottingham NG12 5GG	**T:** 0115 936 3143 **F:** 0115 936 3276 www.bgs.ac.uk
3	**British Insurance Brokers' Association** (For advice on flood insurance)	8th Floor John Stow House 8 Bevis Marks London EC3A 7JB	**T:** 0870 950 1790
4	**Environment Agency National Customer Contact Centre (NCCC)**	PO Box 544 Templeborough Rotherham S60 1BY	**General:** 08708 506 506 **Floodline:** 0845 988 1188 **E:** enquiries@environmentagency. gov.uk www.environment-agency.gov.uk
5	**JBA Risk Management - Head Office**	South Barn Broughton Hall Skipton North Yorkshire BD23 3AE	**T:** 01756 799 919 **F:** 01756 799 449 **E:** info@jbarisk.com

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Flood Risk Screening Methodology 13

The FLOODSOLUTIONS Consult Residential report is a desktop flood risk screening report, designed to enable property professionals and home buyers to understand the risk of flooding at the property.

The report outlines the overall risk of flooding, provides a clear summary of flood risk issues and the expected impact to the property. Specific steps to mitigate the impact of a flood event are included, as well as an indication of how flood risk affects the availability of insurance for the property. The report has been produced and quality-checked by a qualified consultant using the data contained in this report.

Overall Risk of Flooding

Argyll provides an overall flood risk rating based on an assessment of the data provided within this report.

Response	Meaning
Low	The overall flood risk rating for the property is assessed to be 'Low'. This is because we consider there to be minimal or no risk of flooding. It is not considered necessary to undertake any other further investigation into the flood risk to the property .
Low to Moderate	The overall flood risk rating for the property is assessed to be 'Low to Moderate'. Our analysis has revealed potential flood risks to the property. However, any resulting flooding would be expected to be infrequent, or have low predicted depths. It is not considered necessary to undertake any other further investigations into the flood risk to the property.
Moderate	The overall flood risk rating for the property is assessed to be 'Moderate'. Our analysis has revealed that the depths of expected flooding may present a risk to the property. Please refer to our recommendations at the front of the report.
Moderate to High	The overall flood risk rating for the property is assessed to be 'Moderate to High'. Our analysis has revealed that the depths of expected flooding may present a significant risk to the property and its occupants. Please refer to our recommendations at the front pf the report.
High	The overall flood risk rating for the property is assessed to be 'High'. Our analysis has revealed significant flood depths at the property and associated issues which need to be addressed as they are likely to impact the property and its occupants. Please refer to our recommendations at the front of the report

Flood Risk Screening Methodology 14

Insurance Availability

The response to the 'Insurance' question on the overview page assumes the Site is an existing domestic property and does not take into account previous claims arising from any type of flooding, nor for non-flood related risks such as subsidence. Based on the data assessed within this report, an indication of whether the Site is likely to be insurable for flood risk is provided. Our opinion does not take into account any historic episodes of flooding or previous insurance claims arising from flooding at the Site.

Since April 2016 insurers of residential property are all free to decide whether to offer insurance against flooding, at what price, and on what terms. They will have different attitudes to risk. This means there are no universal guidelines to whether insurance will be available against flood risk or not. Where an insurer is not willing itself to offer cover, it can arrange for flood insurance cover (for either or both of buildings and contents) to be provided by Flood Re, a government approved scheme which started in April 2016.

Properties will be eligible for Flood Re only if they meet all of the criteria – see details of eligible properties at **www.floodre.co.uk/eligibility** .

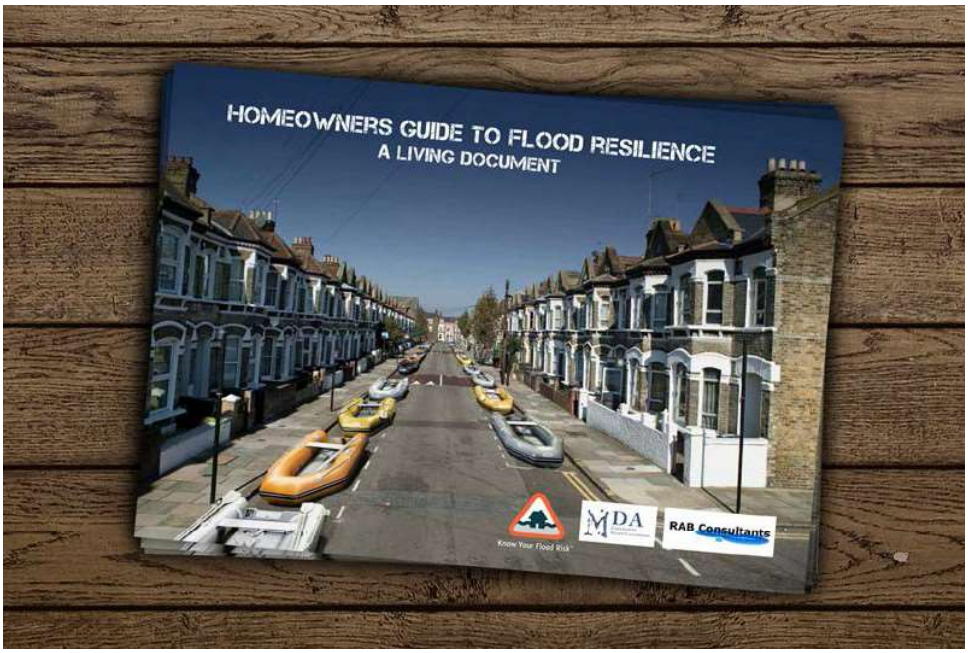
We do not know whether the Site falls into any of the excluded categories. Therefore, where we consider there to be a moderate or high risk of flooding to the Site, we will recommend that you consult your proposed insurer or broker prior to exchange of contracts, to establish the terms on which flood insurance would be offered.

For some properties, it is possible to reduce the risk of flooding by installing flood protection measures (either flood resistance or flood resilience measures). If these measures are appropriate to the Site, and have been installed properly, then an insurer may offer better terms.

Flood Analysis

The flood risk gauges provide a more detailed analysis of the risk from each of the four main types of flooding – river, coastal, groundwater and surface water. For surface water flooding, the overall assessment is generated from the JBA Risk Management 1:200 year rainfall event data, and is evaluated along with the Environment Agency Risk of Flooding from Surface Water 1:100 year rainfall event data.

This analysis takes into account any existing flood defences that are intended to protect the Site and assumes that these work as designed. The analysis also takes into account the other information contained in those data sections of the report which are relevant to that particular type of flooding. The assessment of the risk as shown in the flood gauge should therefore take priority over the information in the individual data sections of the report.



Further details of such measures can be found on page 4 or at **www.knowyourfloodrisk.co.uk/sites/default/files/FloodGuide_ForHomeowners.pdf**

Flood Risk Screening Methodology 15

Limitations of the Report

The FLOODSOLUTIONS Consult Residential report has been designed to satisfy basic flood-related environmental due-diligence enquiries for a property. It is a desktop review of information provided by the client and from selected private and public databases. It does not include a site investigation. Information is requested from relevant regulatory bodies, however Argyll cannot guarantee the accuracy of this information and therefore cannot guarantee that all issues of concern will be identified by this report. This report includes an assessment of surface water flooding which examines the risk of the general drainage network overflowing during periods of extreme rainfall. This report does not make a detailed site-specific assessment of the suitability of the existing drainage on the Site. If this is required, then a site survey should be considered. The assessment of surface water flooding does not take into account particular local or temporary factors that may cause surface water flooding such as the blockage or failure of structures on or within watercourses, drains, foul sewers, water mains, canals and other water infrastructure; and any history of drains flooding at the Site or in the locality. Surface water flooding can occur before surface water reaches the general drainage network, for example on hills and inclines.

JBA uses a bare earth terrain model to model surface water depths, whereas the Environment Agency model integrates buildings and roads that could act as barriers and channels.

Another difference between the models is that the Environment Agency use a maximum 6 hour storm duration, while JBA use a 10 hour storm duration.

As a result, JBA data is likely to have a larger extent of risk, and higher potential depths, as it is accounting for a more extreme rainfall event. As a result of these differences, we take both of these datasets into account, as well as street level photography, in order to analyse the likely impacts of surface water flooding at the Site.

The Risk of Flooding from Rivers or the Sea dataset provided by the Environment Agency does take account of failure of flood defences but does not take into account particular local or temporary factors such as blockage. Environment Agency data does not include flood risk from very small catchments as models of such small scale catchments are not considered to be reliable for UK-wide flood risk assessments. The potential impact of climate change on flood risk to the Property would require further study.

This report is provided under Argyll Environmental Limited Conditions of Contract for SITESOLUTIONS and FLOODSOLUTIONS Reports, July 2013, Version 3.3, a copy of which is available on our website, www.argyllenvironmental.com or by calling one of our team on 0845 458 5250.

Important Consumer Protection Information

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- sets out minimum standards which firms compiling and selling search reports have to meet;
- promotes the best practice and quality standards within the industry for the benefit of consumers and property professionals;
- enables consumers and property professionals to have confidence in firms which subscribe to the code, their products and services. By giving you this information, the search firm is confirming that they keep to the principles of the Code. This provides important protection for you.

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- at all times maintain adequate and appropriate insurance to protect consumers
- conduct business in an honest, fair and professional manner
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- ensure that products and services comply with industry registration rules and standards and relevant laws
- monitor their compliance with the Code

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If you have a query or complaint about your search, you should raise it directly with the search firm, and if appropriate ask for any complaint to be considered under their formal internal complaints procedure. If you remain dissatisfied with the firm's final response, after your complaint has been formally considered, or if the firm has exceeded the response timescales, you may refer your complaint for consideration under The Property Ombudsman scheme (TPOs). The Ombudsman can award up to £5,000 to you if the ombudsmen finds that you have suffered actual financial loss and/or aggravation, distress or inconvenience as a result of your search provider failing to keep to the Code.

Please note that all queries or complaints regarding your search should be directed to your search provider in the first instance, not to TPOs or to the PCCB.

TPOs Contact Details:

The Property Ombudsman scheme
Milford House
43-55 Milford Street
Salisbury
Wiltshire
SP1 2BP

Tel: 01722 333306
Fax: 01722 332296
Website: www.tpos.co.uk
Email: admin@tpos.co.uk

You can get more information about the PCCB from **www.propertycodes.org.uk.**

PLEASE ASK YOUR SEARCH PROVIDER IF YOU WOULD LIKE A COPY OF THE SEARCH CODE

SearchCode™

The Property Ombudsman

Complaints Procedure

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If you want to make a Complaint, we will:

- Acknowledge it within 5 working days of receipt.
- Normally deal with it fully and provide a final response, in writing, within 20 working days of receipt.
- Keep you informed by letter, telephone or e-mail, as you prefer, if we need more time.
- Provide a final response, in writing, at the latest within 40 working days of receipt.
- Liaise, at your request, with anyone acting formally on your behalf.

Complaints should be sent to:

Head of Consultancy and Customer Services
Argyll Environmental Ltd
1st Floor
98 - 99 Queens Road
Brighton
BN1 3XF

Telephone: 0845 458 5250
Email: orders@argyllenviro.com

If you are not satisfied with our final response, or if we exceed the response timescales, you may refer the complaint to The Property Ombudsman scheme (TPOs): Tel: 01722 333306, E-mail: admin@tpos.co.uk

We will co-operate fully with the Ombudsman during an investigation and comply with their final decision.