

## FloodSolutions Commercial

Overall Opinion  
**PASSED** ✓

Argyll's Overview  
The Site is not considered to be at a significant risk of flooding and buildings and contents insurance should be available and affordable.



Report on:

**Kirk House, 97-109 High Street, Yiewsley, West Drayton, UB7 7QH**

**Report prepared for:**

Quad Architects Ltd

**Client Reference:**

Kirk House

**Report Reference:**

AEL-4707-FLC-904772

**National Grid Reference:**

506004,180456

**Report date:**

5 May 2017



## Site Location

### Report prepared on

Kirk House, 97-109 High Street, Yiewsley, West Drayton, UB7 7QH

### Site Area (m<sup>2</sup>)

1,731.00

### Current Use

Commercial offices

### Proposed Use

Residential

### Report Author

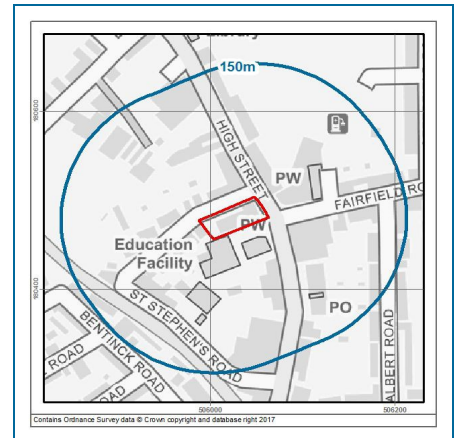
Keara Masrani MSci (Hons) PIEMA Associate Auditor

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### Estimated Building Coverage (%)

75.00







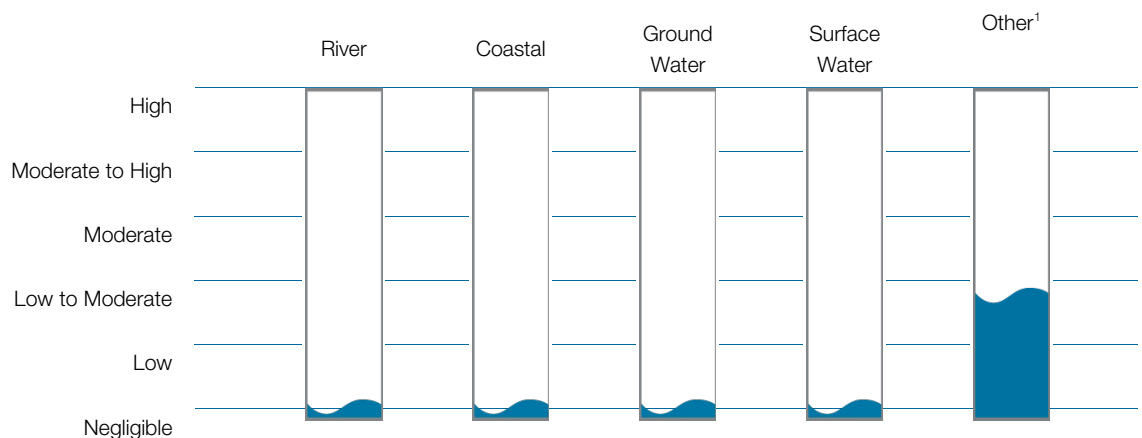
# Flood Risk Screening

| Risk             | Issue                                                                                      | Evaluation      |
|------------------|--------------------------------------------------------------------------------------------|-----------------|
| 1 Development    | If development is proposed would a detailed Flood Risk Assessment be required?             | No              |
| 2 Flooding       | What is the overall risk of flooding, assuming defences fail or are absent or over-topped? | Low to Moderate |
| 3 Flood Defences | Are there existing flood defences that might benefit the Site?                             | Yes             |
| 4 Effect         | What is the risk of flooding when these defences are operational?                          | Low to Moderate |

## Insurance

The flood risk identified is unlikely to affect obtaining buildings and contents insurance.

## Flood Analysis



## Argyll's Comment



The Site does not lie in flood zone 2 or 3. The Grand Union Canal is located 109m south west. Canals are managed by the Canal and River Trust who maintain water levels using reservoirs, feeders, boreholes and sluices. The risk of flooding is higher if a Site lies below the canal embankment. As cases of canal breach are infrequent, occurring only in exceptional circumstances, the risk from this canal is not deemed to be significant. However, you may wish to ascertain more information about canal management in your area from The Trust.

Information sourced from London Borough of Hillingdon Council indicates that the Site is not located within a critical drainage area. For further information, please contact the London Borough of Hillingdon Council.

As the Site does not lie in flood zone 2 or 3 and is not located in a critical drainage area, there is no trigger for a full flood risk assessment to be completed.



## Recommendations

1. You should speak to the seller to confirm whether the property or the surrounding area has flooded before. If it has, please contact us for advice.
2. Prior to exchanging contracts, establish the terms of buildings and contents insurance for the property.

<sup>1</sup>Other factors influencing flood risk include historic flood events, geological indicators of flooding, proximate surface water features and elevation above sea level.



## Other Flood-Related Issues

### Riparian Ownership

Is there a water feature located within or adjacent to the Site? **No**

### Argyll's Comment



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.

Sometimes, The Environment Agency 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.

### Development Control

Is there a water feature located within 250m of the Site? **Yes**

### Argyll's Comment



Sites which lie close to (but do not adjoin) a watercourse, may be subject to planning controls should redevelopment be considered. The Environment Agency are normally consulted regarding any development within 20m of a Main River and Internal Drainage Boards should be similarly contacted regarding developments close to drainage channels. Navigation authorities are normally consulted regarding any development within 250m of a canal, although this varies on a site by site basis. Please see The Environment Agency website to check if there is a Main River within 20m of your property.

The Environment Agency should also be contacted with regards to development (other than minor development) in Flood Zones 2 and 3.

### 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.

### Dam and Reservoir Failure

Could the Site be affected by dam or reservoir failure? **No**

### Argyll's Comment



The answer is based on detailed models provided by JBA Risk Management. These predict the areas liable to flood around approximately 1700 key dams and reservoirs across England and Wales (if that dam or reservoir were to fail).

## Risk Management Options

Flooding can usually be managed by the installation of flood protection measures either on/within the building(s) or across the Site. Flood protection measures can be divided into two categories; flood resistance and flood resilience.

Both flood resistance and flood resilience solutions can be integrated with design proposals for new build properties or retro-fitted to existing properties. 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. Certain types of building construction are unable to resist the pressure load placed on the exterior skin of the building by retained flood waters. Generally a flood depth between 0.6m and 1.0m above ground level is used as a benchmark to decide whether to consider flood resilience measures rather than rely on flood resistance measures. This is dependent on the age and construction of the property.

### Guideline Costs for Resistance Measures

| Building Feature                            | Cost Estimate for Baffles (+ VAT)  |
|---------------------------------------------|------------------------------------|
| Standard 900mm single door                  | £750                               |
| Standard 1800mm double entrance door        | £950                               |
| Large roller shutter door up to 2745mm span | £1420 including channel            |
| Standard garage door                        | £1400 - £1575                      |
| Standard window up to 1240mm span           | £750                               |
| Large window 1240mm to 2150mm span          | £550 - £700                        |
| Single air brick                            | £60 - £90                          |
| Double air brick                            | £80 - £230                         |
| Building Feature                            | Cost Estimate for Tanking (+ VAT)  |
| Tanking of basement, walls, or floors       | £25 - £50 per metre <sup>2</sup>   |
| System Component                            | Cost Estimate for Plumbing (+ VAT) |
| Simple non-return valve                     | £35 - £170                         |
| Sophisticated non-return valve              | £670 - £900                        |

The costs above are for indicative budget purposes only. They are based on installing components of a standard design and colour. If the Site requires bespoke products, these are likely to cost more (for example, if the Site is in a conservation area, different colours may be required).

If you require a property specific assessment of which measures are suitable, and a more accurate cost appraisal, Argyll will need to complete a FLOODSOLUTIONS Consult Report. Using the highest detail topographical data available and Environment Agency flood levels, the report will specify the expected flood depths at the property. This can be used to increase your understanding of the risk and the potential significance of a flood event, and to inform a flood survey. This report can usually be prepared within 10-20 working days, although may take up to 25 depending upon regulatory response times. Please contact us on 0845 458 5250 if you would like further assistance.

# Tabular Summary

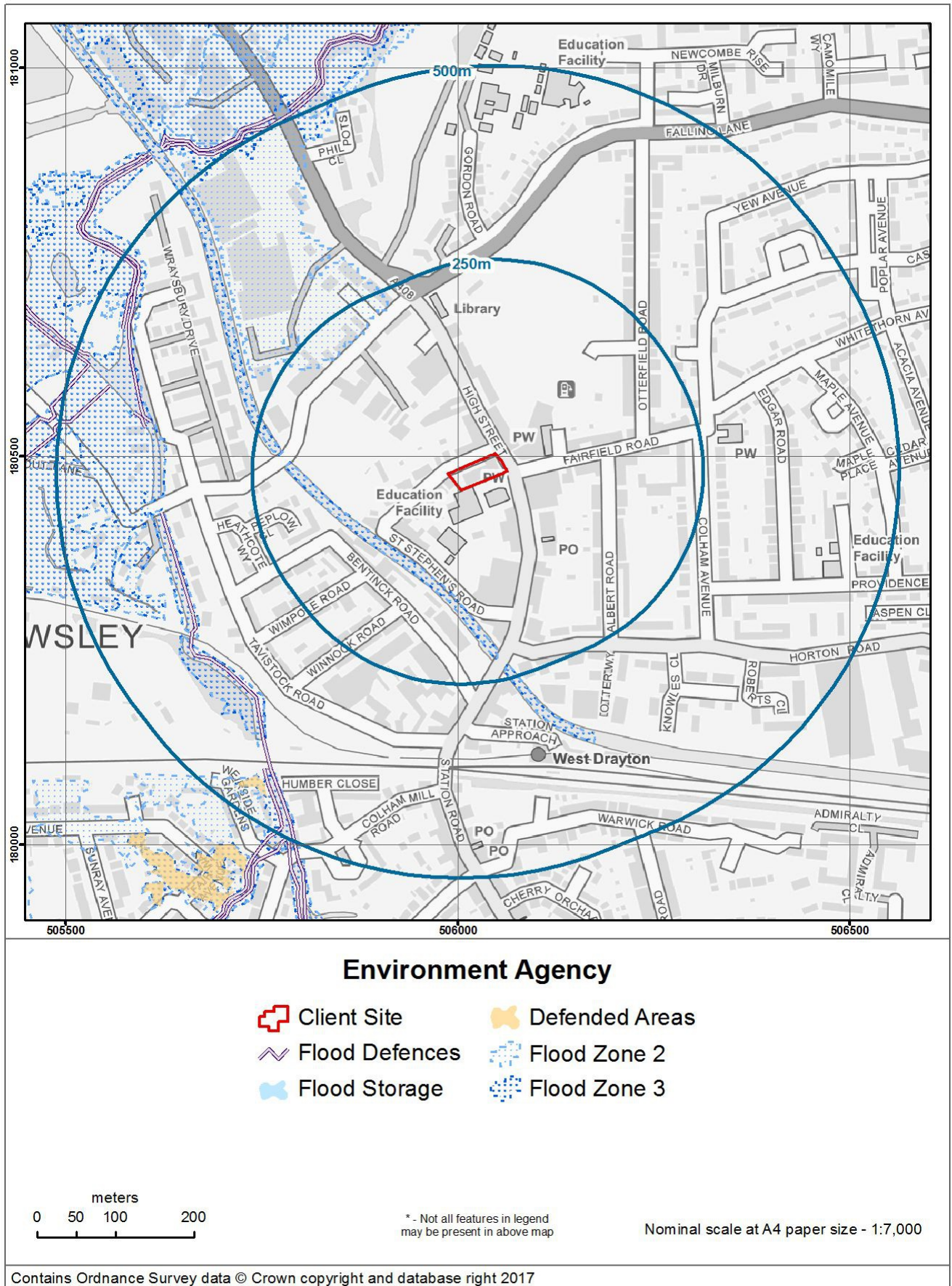
## Flooding

| Current Flood Risk                                  | Source                      | On-site | 1-250m | 251-500m |
|-----------------------------------------------------|-----------------------------|---------|--------|----------|
| Flooding From Rivers or Sea                         | EA                          | -       | YES    | YES      |
| Flooding From Rivers or Sea (in an Extreme Flood)   | EA                          | -       | YES    | YES      |
| Areas Benefiting from Flood Defences                | EA                          | -       | -      | YES      |
| Flood Storage Areas                                 | EA                          | -       | -      | -        |
| Flood Defences                                      | EA                          | -       | -      | YES      |
| Risk of Flooding from Rivers and Sea                | EA                          | -       | YES    | YES      |
| Groundwater Flooding Risk                           | GeoSmart<br>Information Ltd | -       | YES    | YES      |
| Surface Water Flooding (1:75 year rainfall event)   | JBA                         | -       | YES    | YES      |
| Surface Water Flooding (1:200 year rainfall event)  | JBA                         | -       | YES    | YES      |
| Surface Water Flooding (1:1000 year rainfall event) | JBA                         | -       | YES    | YES      |
| Dam or Reservoir Failure                            | JBA                         | -       | -      | -        |
| MasterMap Water Network                             | OS                          | -       | YES    | YES      |
| Historical Flooding                                 | Source                      | On-site | 1-250m | 251-500m |
| Historical Flood Events                             | EA                          | -       | -      | YES      |
| Geological Indicators of Flooding                   | BGS                         | YES     | YES    | YES      |
| Other Flood Information                             | Source                      | Reply   |        |          |
| Height of Site Above Sea Level                      | OS                          | 27.5m   |        |          |
| Distance of Site Boundary to Nearest Water Feature  | OS                          | 109.2m  |        |          |

## Tabular Summary Explanation

Argyll has carefully selected a range of datasets which are considered appropriate for the intended use of this report. Each dataset is searched to a set radius from the Site boundary and the tabular summary is divided into different search bands accordingly. If a database is searched and information is found, then the number of records available are detailed in the table above. If the database was searched and no data was found, then a zero will be present. If a database was not searched then the abbreviation N/A will be found, indicating this information was not available at the radius searched.

## Flooding from Rivers or Sea





# Flooding from Rivers or Sea

## Flooding from River or Sea (Flood Zone 3)

| Details                                                                               | Distance | Reply or Direction |
|---------------------------------------------------------------------------------------|----------|--------------------|
| Are there any flood plains within 500m?                                               | <501m    | YES                |
| Type: Fluvial Models, Source: The Environment Agency, Boundary Accuracy: As Supplied. | 111.7m   | SW                 |

## Flooding from River or Sea in an Extreme Flood (Flood Zone 2)

| Details                                                                               | Distance | Reply or Direction |
|---------------------------------------------------------------------------------------|----------|--------------------|
| Are there any flood plains (extreme flood) within 500m?                               | <501m    | YES                |
| Type: Fluvial Models, Source: The Environment Agency, Boundary Accuracy: As Supplied. | 111.7m   | SW                 |



The Site is at a low risk of flooding from rivers or the sea, as defined by the regulatory body's Flood Map. If the Site area is greater than one hectare, any planning application for development would need to be accompanied by a Flood Risk Assessment in accordance with NPPF.

## Flood Defences

| Details                                   | Distance | Reply |
|-------------------------------------------|----------|-------|
| Are there any flood defences within 500m? | <501m    | YES   |



There are flood defences within 500m of the Site. There may therefore be a small residual risk of flooding should the protection standard of the defences be exceeded (and the defences overtopped) or should the defences fail.

## Areas Benefiting from Flood Defences

| Details                                                             | Distance | Reply |
|---------------------------------------------------------------------|----------|-------|
| Does the Site or any areas within 500m benefit from flood defences? | <501m    | YES   |



The Site is within 500m of an Area Benefiting from a Flood Defence, as defined by the regulatory body. However, not all areas benefiting from a flood defence are mapped by the EA so the Site may fall within such an area after all. If so, then there is a small residual risk that the Site may flood if the protection standard of these defences is exceeded, or if the defences fail. Further investigations could be undertaken into the standard of these defences. Please contact us for further information.

## Flood Storage Areas

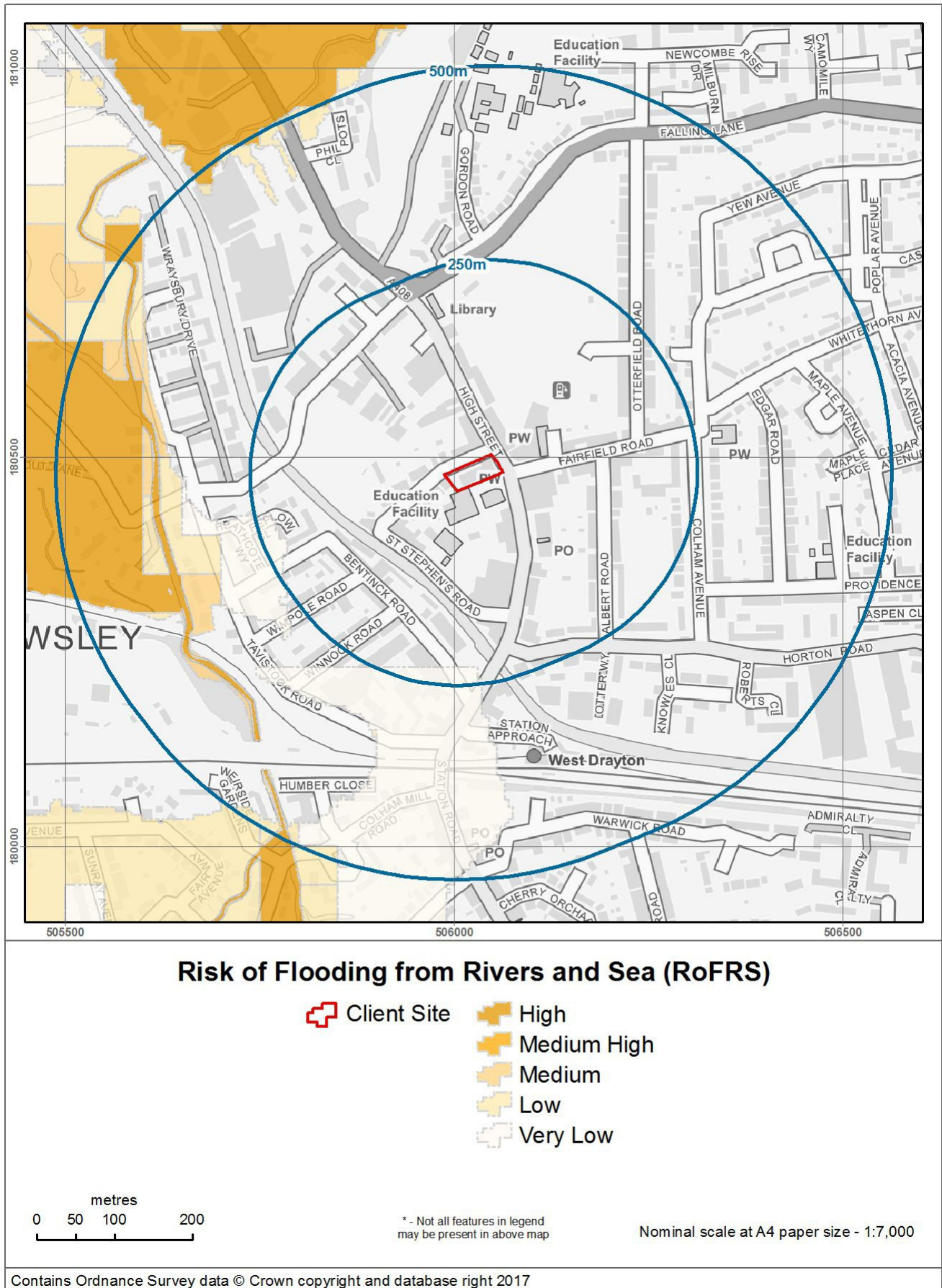
| Details                                        | Distance | Reply |
|------------------------------------------------|----------|-------|
| Are there any flood storage areas within 500m? | <501m    | NO    |



The Site is over 500m from a Flood Storage Area (FSA) as defined by the regulatory body. These areas store flood water during flood events. It is unlikely that any FSA presents any associated flood risk to the Site.



## Risk of Flooding from Rivers and Sea



## Risk of Flooding from Rivers and Sea

| Details                                             | Distance | Reply |
|-----------------------------------------------------|----------|-------|
| What is the flood likelihood category for the Site? | On Site  | -     |

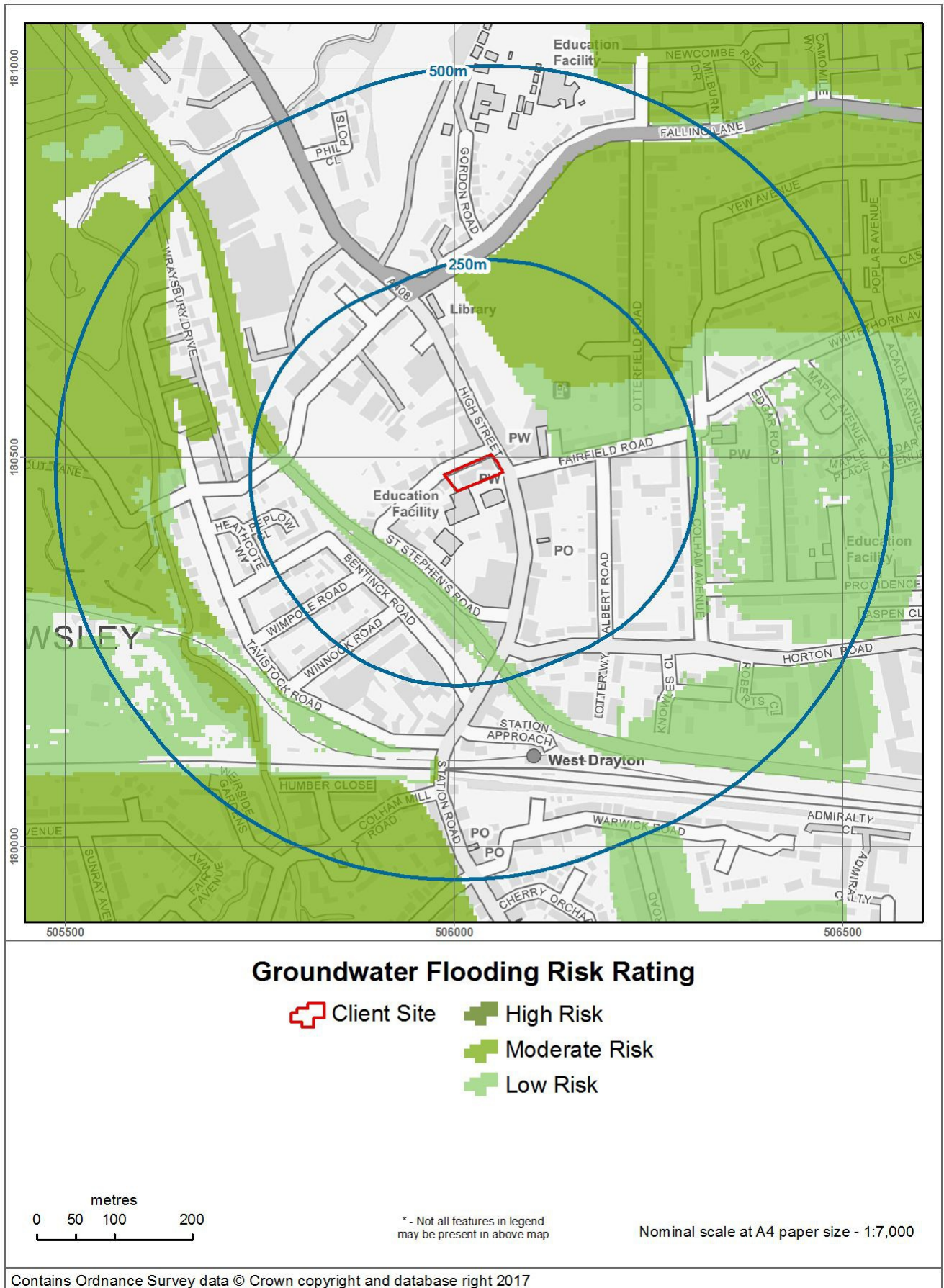


Some areas may be classified as having no result. This occurs where there is no output data from the regulatory body's risk assessment, but the area falls within the extreme flood outline (with a 0.1% or 1 in 1000 chance of flooding in any year).

### **The Environment Agency Data**

The data in the Risk of Flooding from Rivers and Sea Property Flood Likelihood Database is sourced from The Environment Agency's National Receptor Dataset (NRD). The information provided includes the flood likelihood category low, moderate, or significant according to the flood likelihood analysis. Some areas may be classified as having no result. This occurs where there is no output data from the analysis but the area falls within the extreme flood outline (with a 0.1% or 1 in 1000 chance of flooding in any year).

# Groundwater Flooding Risk





# Groundwater Flooding Risk

| Details                                               | Distance | Reply      |
|-------------------------------------------------------|----------|------------|
| What is the risk of groundwater flooding at the Site? | On Site  | Negligible |



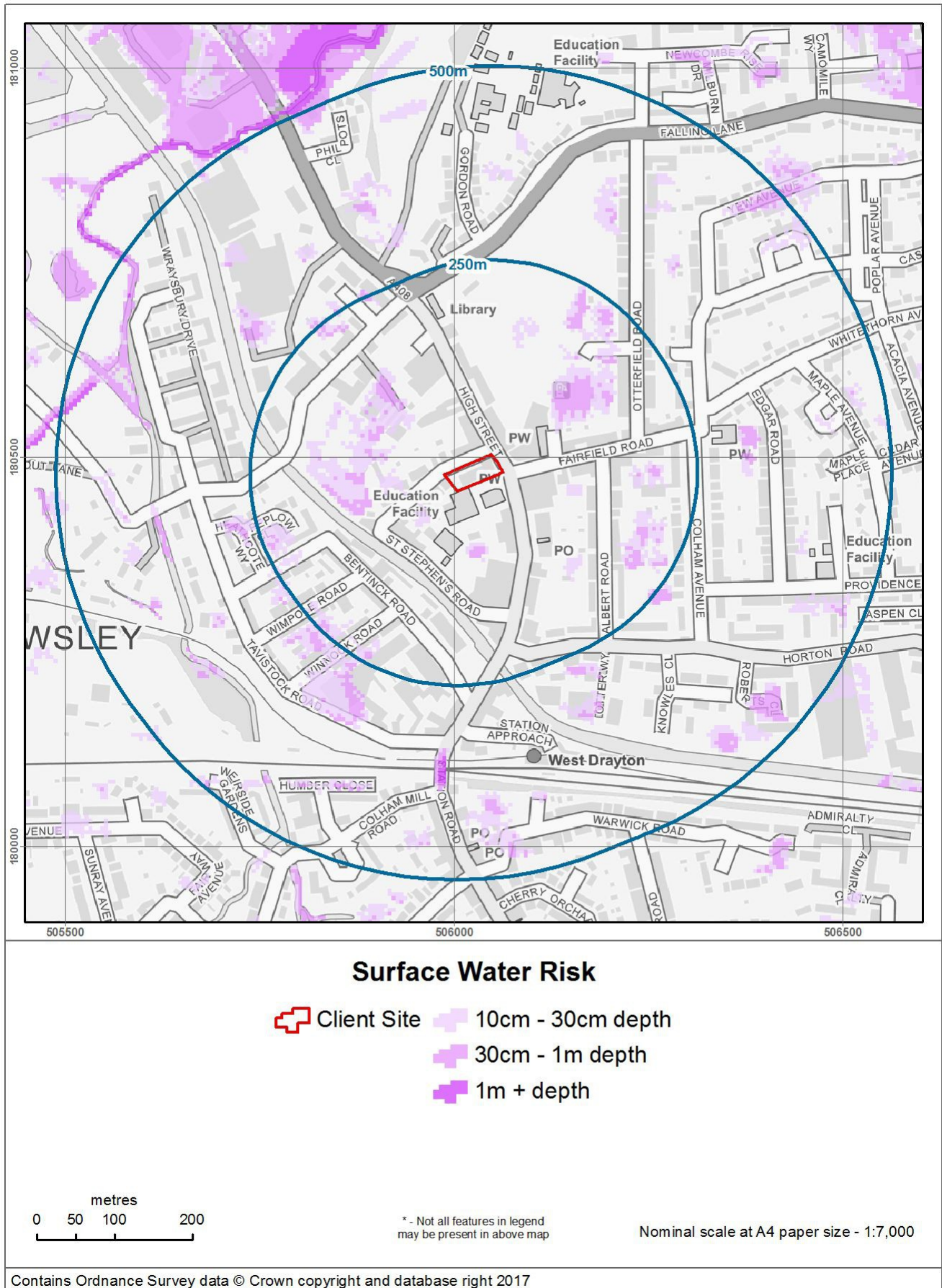
Information from GeoSmart Information Ltd indicates that there is a negligible risk of groundwater flooding in this area and any groundwater flooding incidence will be less frequent than 1 in 100 years return period. No further investigation of risk is deemed necessary unless the proposed site use is unusually sensitive. However, data may be lacking in some areas, so assessment as 'negligible risk' on the basis of the map does not rule out local flooding due to features not currently represented in the national datasets used to generate this version of the map.

## GeoSmart Information Ltd Data

GeoSmart Information Ltd provides data to Argyll in relation to groundwater flooding. Through research and development, building on their expertise in addressing groundwater flooding issues for The Environment Agency and other clients in the UK, GeoSmart Information Ltd has developed algorithms and calibrated predictions of the risk of groundwater flooding occurring in England and Wales. This differs from other suppliers of data regarding groundwater flooding which only report on the susceptibility of groundwater flooding. Susceptibility merely has to be identified, whereas risk must be quantified. The resulting map is a 5x5m classification of groundwater flooding risk into four categories (Negligible, Low, Moderate and High). GeoSmart Information Ltd's classifications are based on the level of risk, combining severity and uncertainty that a site will suffer groundwater flooding within a return period of about 100 years.

The map is a general purpose indicative screening tool, and is intended to provide a useful initial view for a wide variety of applications. However, it does not provide an alternative to a site specific assessment, and a detailed risk assessment should be used for any site where the impact of groundwater flooding would have significant adverse consequences.

## Surface Water Flooding (1:200 year rainfall event)



# Surface Water Flooding

## Surface Water Flooding

| Details                                                                                           | Distance | Reply      |
|---------------------------------------------------------------------------------------------------|----------|------------|
| What is the risk of surface water flooding at the Site following a 1 in 75 year rainfall event?   | On Site  | Negligible |
| What is the risk of surface water flooding at the Site following a 1 in 200 year rainfall event?  | On Site  | Negligible |
| What is the risk of surface water flooding at the Site following a 1 in 1000 year rainfall event? | On Site  | Negligible |

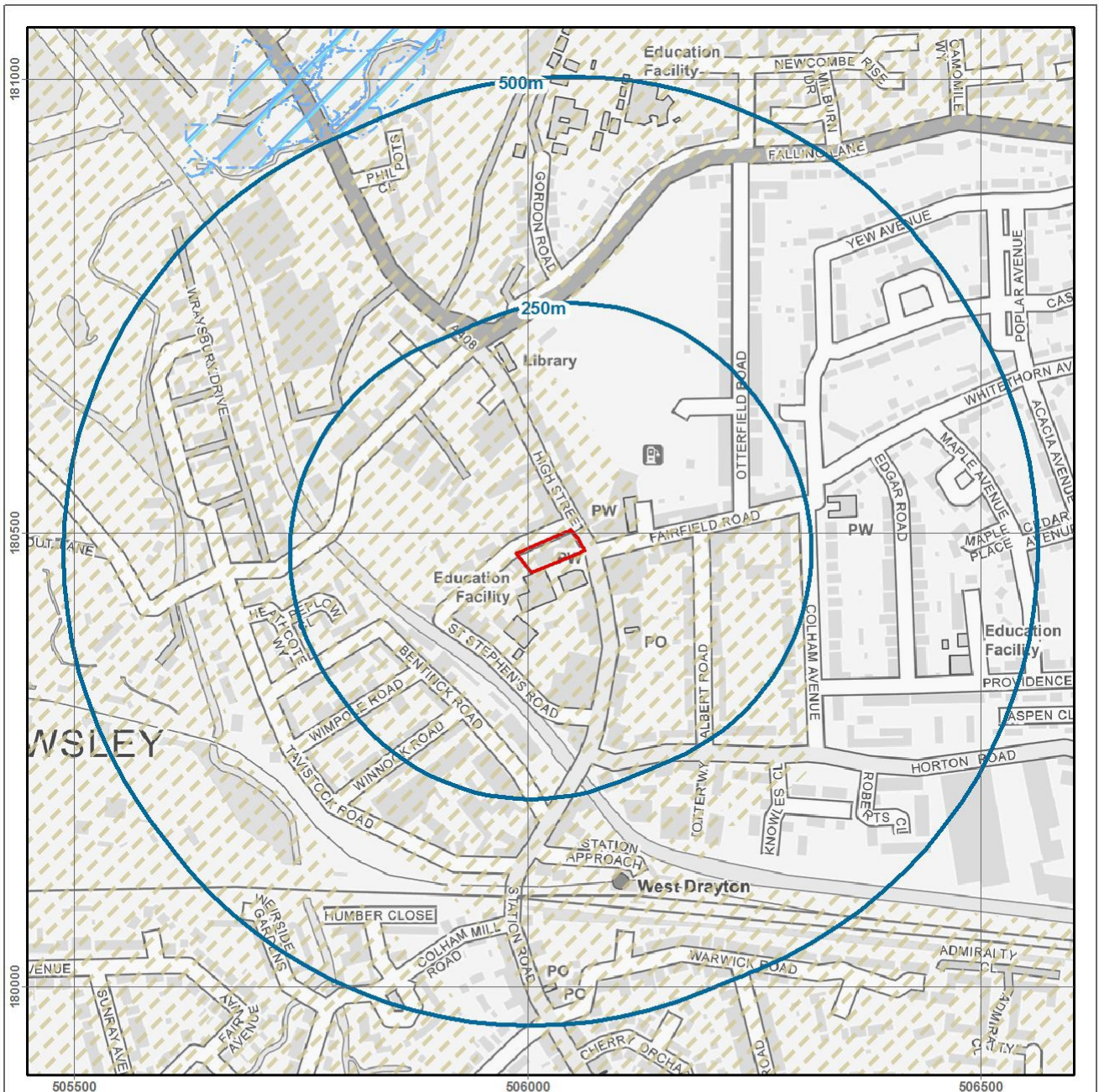


### JBA Risk Management Data

Surface Water Flooding - Information regarding the risk of natural surface water or pluvial flooding. The risk is classified by JBA into four categories, low (equal to 10cm), low to medium (more than 10cm), medium (more than 30cm) and high (more than 1m) which reflect varying depths of potential surface water flooding during a range of rainfall events including 1:75 year, 1:200 year, and 1:1000 year.



# Historical Flooding



## Historical Flooding

- Client Site
- Historic Floods
- Geo Indicators



\* - Not all features in legend may be present in above map

Nominal scale at A4 paper size - 1:7,000

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# Historical Flooding

## Historical Flood Events

| Details                                                               | Distance | Reply |
|-----------------------------------------------------------------------|----------|-------|
| Have any historical flood events occurred at the Site or within 500m? | <501m    | YES   |



The regulatory body's records indicate past flooding within between 250m and 500m of the Site. This suggests that there is only a minimal risk to the Site itself. As these records are not comprehensive, it may still be prudent to ask relevant authorities and the Site owner whether they are aware of any previous flooding at the Site or in the surrounding area.

### The Environment Agency Data

The Environment Agency has collated extensive records (including outlines) of flooding from rivers, the sea, or groundwater which have occurred in England and Wales since c.1950. This information comes from various sources including maps, aerial photographs, and private records. It is not necessarily comprehensive.

## Geological Indicators of Flooding

| Details                                                                                      | Distance | Reply or Direction |
|----------------------------------------------------------------------------------------------|----------|--------------------|
| Are there any geological deposits which indicate the Site may have been flooded in the past? | <26m     | YES                |
| Geological Indicators                                                                        | On Site  | N/A                |

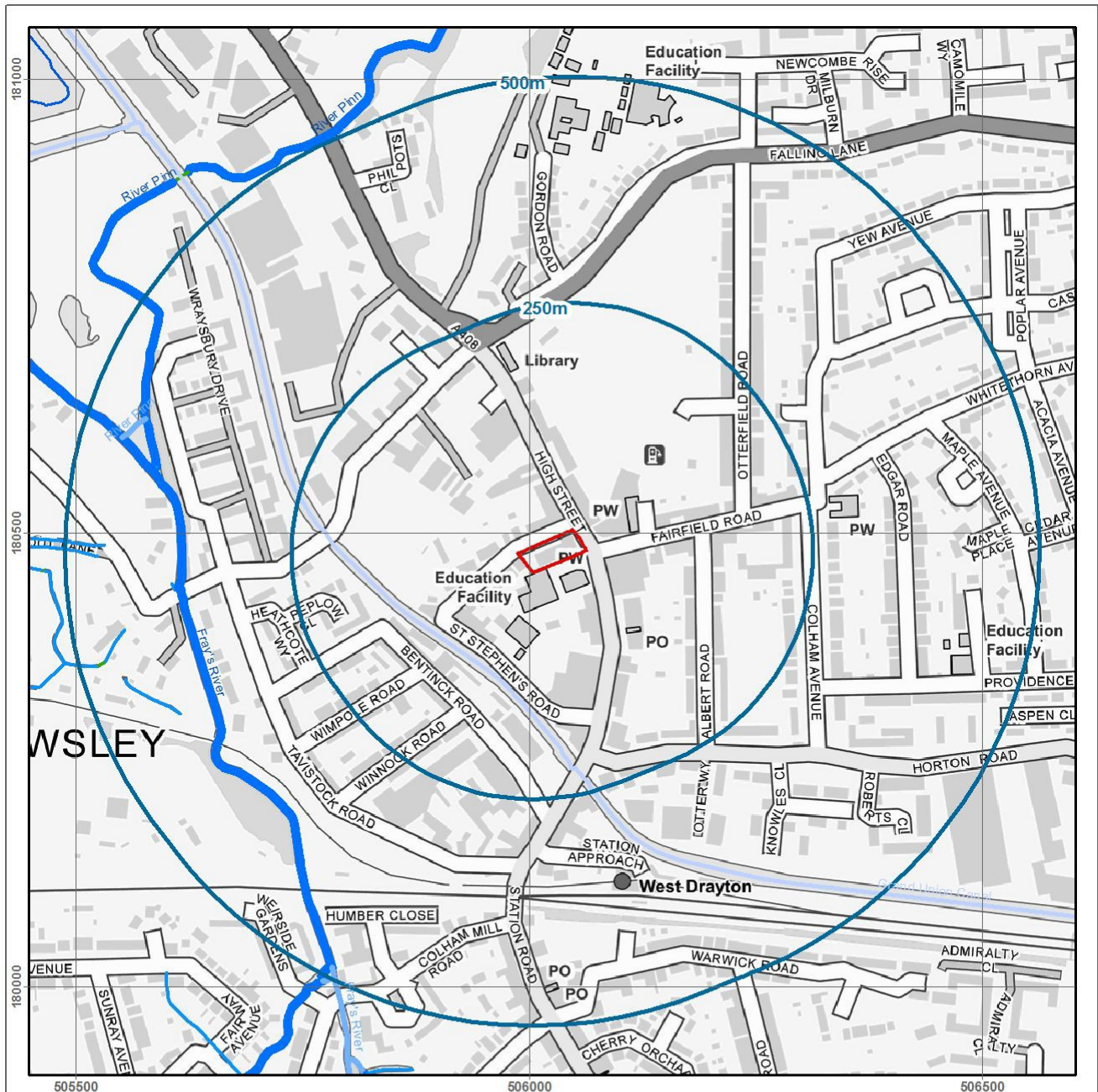


### British Geological Survey Data

Geological Indicators of Flooding – The BGS Geological Indicators of Flooding (GIF) data set is a digital map based on the BGS Digital Geological Map of Great Britain at the 1:50,000 scale (DiGMapGB-50). It was produced by characterising Superficial (Drift) Deposits on DiGMapGB-50 in terms of their likely vulnerability to flooding, either from coastal or inland water flow and reflects areas which may have flooded in the recent geological past. This normally relates to flooding which happened many thousands of years ago.



# OS MasterMap Water Network



## OS MasterMap Water Network

- |                                                                                                             |                                                                                                             |
|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
|  Client Site             |  Lake or Reservoir       |
|  Primary Flow (named)    |  Foreshore and Sea       |
|  Primary Flow (un-named) |  Underground River       |
|  Secondary Flow          |  Marsh                   |
|  Tidal River             |  Canal, Lock or Transfer |

metres  
0 50 100 200

\* - Not all features in legend  
may be present in above map

Nominal scale at A4 paper size - 1:7,000

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# OS MasterMap Water Network

## OS MasterMap Water Network

| Details                                                                     | Distance | Reply or Direction |
|-----------------------------------------------------------------------------|----------|--------------------|
| Is there any information from the OS's MasterMap Water Network within 500m? | <501m    | YES                |
| Grand Union Canal Watercourse Type: Canal, Lock or Transfer                 | 116.9    | SW                 |
| Fray's River Watercourse Type: Primary Flow (named)                         | 370.1    | W                  |
| Fray's River Watercourse Type: Primary Flow (named)                         | 370.9    | W                  |
| Fray's River Watercourse Type: Primary Flow (named)                         | 373.9    | W                  |
| Watercourse Type: Primary Flow (un-named)                                   | 376.4    | W                  |
| Watercourse Type: Primary Flow (un-named)                                   | 381.1    | W                  |
| River Pinn Watercourse Type: Primary Flow (named)                           | 409.9    | W                  |
| Watercourse Type: Primary Flow (un-named)                                   | 409.9    | W                  |
| Watercourse Type: Primary Flow (un-named)                                   | 412.8    | SW                 |
| Fray's River Watercourse Type: Primary Flow (named)                         | 412.9    | W                  |
| River Pinn Watercourse Type: Primary Flow (named)                           | 437.1    | W                  |
| River Pinn Watercourse Type: Secondary Flow                                 | 437.1    | W                  |
| Watercourse Type: Primary Flow (un-named)                                   | 442.5    | W                  |
| Watercourse Type: Secondary Flow                                            | 451.5    | W                  |
| Fray's River Watercourse Type: Primary Flow (named)                         | 455.1    | W                  |
| Watercourse Type: Primary Flow (un-named)                                   | 457.0    | W                  |
| Watercourse Type: Primary Flow (un-named)                                   | 463.8    | W                  |
| Watercourse Type: Underground River                                         | 471.2    | W                  |
| Watercourse Type: Primary Flow (un-named)                                   | 479.5    | W                  |
| Fray's River Watercourse Type: Primary Flow (named)                         | 488.5    | SW                 |
| Fray's River Watercourse Type: Secondary Flow                               | 488.5    | SW                 |
| Fray's River Watercourse Type: Secondary Flow                               | 497.9    | SW                 |
| Fray's River Watercourse Type: Secondary Flow                               | 497.9    | SW                 |



There is a water feature within 250m of the Site. This does not represent a flood risk in itself, but its presence has been taken into account in the overall risk assessment in this Report.

### OS Data

OS MasterMap Water Network is a three-dimensional digital representation of the watercourses in Great Britain. It includes rivers, streams, lakes, lochs and canals as a series of watercourse network lines. The network lines (links) are attributed to provide a range of information about the section of watercourse they depict. The OS MasterMap Water Network will significantly enhance systems used to manage waterways, river and the flood risk they pose.

## Other Information

### Height Above Sea Level

| Details                                    | Distance | Reply |
|--------------------------------------------|----------|-------|
| Minimum height of the Site above sea level | On Site  | 27.4m |
| Average height of the Site above sea level | On Site  | 27.5m |
| Maximum height of the Site above sea level | On Site  | 27.6m |



The Site is at a relatively high elevation above sea level. However, this is not in itself indicative of the absence of flood risk and reference should be made to other assessments within this report.

## Distance to Water Features

| Details                                   | Distance | Reply or Direction |
|-------------------------------------------|----------|--------------------|
| Are there any water features within 500m? | <501m    | YES                |
| Nearest surface water feature             | 109.2m   | SW                 |



The Site is less than 2m above a water feature (as shown on the Ordnance Survey maps). This does not represent a flood risk in itself, but other assessments of risk within this report should be consulted.

## Dam or Reservoir Failure

| Details                                                                                 | Distance | Reply |
|-----------------------------------------------------------------------------------------|----------|-------|
| Is there a risk of the Site being affected by the failure of a nearby dam or reservoir? | On Site  | NO    |



Neither the Site nor areas near to it will be likely to flood if a dam or reservoir in the surrounding area failed.

### JBA Risk Management Data

Dam or Reservoir Failure – JBA has modelled approximately 1700 dams and reservoirs across the UK which are considered to pose the greatest risks to people and property. These models are able to predict the areas likely to flood on all sides of a feature, should an element of it fail e.g. a wall, dam or earth bund.

# Glossary

## **Business Continuity Plan**

A business continuity plan is a strategic plan of action for a business to implement in an emergency (i.e. flood event). This plan ensures a business can continue to operate during emergency situations and reduces the risk of suffering avoidable losses. For example, it may cover such items as emergency accommodation and computer back up off site.

## **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 buildings on Site.

## **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 The 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**

The area where flooding from rivers or sea is very unlikely as defined by The Environment Agency. There is less than 0.1% (1 in 1000) chance of flooding occurring each year.

## **Flood Zone 2**

The area of medium probability of flooding as defined by The Environment Agency – a flood with an annual chance of occurring of between 1% (1 in 100) to 0.1% (1 in 1000) for river flooding and 0.5% (1 in 200) to 1% (1 in 1000) for coastal flooding.

## **Flood Zone 3a**

The area of high probability of flooding as defined by The Environment Agency – a flood with an annual chance of occurring of 1% (1 in 100) or greater for river flooding and 0.5% (1 in 200) or greater for coastal flooding.

## **Flood Zone 3b**

The boundary between 3a and 3b is a planning decision made by the Local Authority. This information is usually in the strategic flood risk assessment. This area is a functional floodplain as defined by The Environment Agency. It is an area which is designed to flood – a flood return period of 1 in 20 or less.

## **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.

## **NPPF**

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

## **Pluvial (Surface Water) Flooding**

Pluvial 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.

## **Rainfall Event**

A period of rainfall that is expected to occur on average once every 'X' years. A rainfall event is also measured in terms of duration (hours or days) and the intensity of the event may differ depending upon where it occurs.



## 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.

## Contacts

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### Argyll Environmental Limited

|                                                                     |                                                                                                                                                                                                       |                           |
|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| 1 <sup>st</sup> Floor<br>98 – 99 Queens Road<br>Brighton<br>BN1 3XF | Telephone 0845 458 5250<br><br>Email <a href="mailto:orders@argyllenviro.com">orders@argyllenviro.com</a><br><br>Website <a href="http://www.argyllenvironmental.com">www.argyllenvironmental.com</a> | For advice on this report |
|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|

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### GeoSmart Information Ltd

|                                                                 |                                                                                                            |                                    |
|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------|
| New Zealand House<br>60 Abbey Foregate<br>Shrewsbury<br>SY2 6FD | Telephone 01179 229 931<br><br>Website <a href="http://geosmartinfo.co.uk/">http://geosmartinfo.co.uk/</a> | For advice on groundwater flooding |
|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------|

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### The Environment Agency

|                                                     |                                                                                                                                                                      |                                      |
|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| PO Box 544<br>Templeborough<br>Rotherham<br>S60 1BY | General enquiries 08708 506 506<br>Floodline 0845 988 1188<br><br>Email <a href="mailto:enquiries@environment-agency.gov.uk">enquiries@environment-agency.gov.uk</a> | For advice on regulatory information |
|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|

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### Flood Protection Association

|                                      |                                                                                                                                               |                                         |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| 10 Cavalry Ride<br>Norwich<br>NR3 1U | Telephone 01603 633 440<br>Fax 01603 763256<br><br>Website <a href="http://www.floodprotectionassoc.co.uk">www.floodprotectionassoc.co.uk</a> | For advice on Flood Protection Measures |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|

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### British Geological Survey

|                                                              |                                                                                                                      |                                                         |
|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| Kingsley Dunham Centre<br>Keyworth<br>Nottingham<br>NG12 5GG | General enquiries 0115 936 3143<br>Fax 0115 936 3276<br><br>Website <a href="http://www.bgs.ac.uk">www.bgs.ac.uk</a> | For advice on geological causes of groundwater flooding |
|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|

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### British Insurance Brokers' Association

|                                                                     |                                 |                               |
|---------------------------------------------------------------------|---------------------------------|-------------------------------|
| 8th Floor<br>John Stow House<br>8 Bevis Marks<br>London<br>EC3A 7JB | Consumer helpline 0870 950 1790 | For advice on flood insurance |
|---------------------------------------------------------------------|---------------------------------|-------------------------------|

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### JBA Risk Management - Head Office

|                                                                        |                                                                                                                |                                   |
|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-----------------------------------|
| South Barn<br>Broughton Hall<br>Skipton<br>North Yorkshire<br>BD23 3AE | General enquiries 01756 799 919<br>Fax 01756 799 449<br><a href="mailto:info@jbarisk.com">info@jbarisk.com</a> | For advice on JBA flood risk data |
|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-----------------------------------|

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# Flood Risk Screening Methodology

The FloodSolutions Commercial report is a desktop flood risk screening report, designed to enable property professionals to assess the risk of flooding at commercial sites. It examines three areas; how flood risk might affect the availability of insurance for a site; how flood risk affects the potential to redevelop a site; and the overall risk of flooding at a site (taking into account any flood defences present). The report considers current Government guidance including the National Planning Policy Framework (NPPF). The report has been produced and quality-checked by a qualified consultant using the data contained in this report.

## Front Page Overview

In this section Argyll will summarise if any significant flood risks have been identified and whether the level of flood risk identified could affect obtaining insurance.

The following table describes the possible outcomes of the report:

| Assessment                                                                                                   | Risk Rating and Meaning                                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PASSED</b><br>           | <b>Low and Low to Moderate</b> - The site is not considered to be at significant risk of flooding. No further action is considered necessary.                                                                                                                  |
| <b>PASSED</b><br>           | <b>Moderate</b> - Data suggest that there are features which may present a flood risk to the site and its occupants during an extreme flood event. However, buildings and contents insurance should easily be available in most cases.                         |
| <b>FURTHER ACTION</b><br> | <b>Moderate to High and High</b> - This report reveals significant flood risk issues which should be addressed. Further assessment is recommended in order to clarify the risk of flooding at the site and to determine appropriate flood protection measures. |

## Development Risk

Argyll comments on whether a full or partial Flood Risk Assessment (FRA) would be required in accordance with National Planning Policy Framework (NPPF). The answer to Question 1 (on page 3) is indicative only and is based on the size of the Site (as supplied by the client) and the information in the data section of this report.

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 Site will not adversely affect flood risk elsewhere.

| Response       | Meaning                                                                                                                                                           |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Yes (Full)     | If the Site was redeveloped, a full Flood Risk Assessment is likely to be required which should include a Drainage Impact Assessment.                             |
| Yes (Drainage) | If the Site was redeveloped, a full Flood Risk Assessment may not be required however, given the size of the Site, a Drainage Impact Assessment may be necessary. |
| No             | If the Site was to be redeveloped, no further flood assessment is likely to be required.                                                                          |

## Flood Risk Rating

Argyll provides an overall flood risk rating based on an assessment of the data provided within this report. It does so by asking two questions:

1. What is the overall risk of flooding, assuming flood defence fail or are absent or overtopped?
2. What is the overall risk of flooding, assuming flood defence fail or are absent or overtopped?

The answer to Question 2 (page 3) provides a worst case scenario assuming there are either no defences in the area, that any defences in the area could fail, primarily as a result of river or coastal flooding, or are overtopped by excessive flood volumes.

### 3. Are there existing flood defences which might benefit the Site?

The answer to Question 3 (page 3) is based on the presence of any flood defences in the dataset provided by the Environment Agency within 500m of the Site. It should be noted that a residual risk of flooding may be present if such defences failed. Flood defences do not generally protect the Site against groundwater and surface water flooding.

If defences are present within 500m, a further question is asked (also on page 3):

### 4. What is the risk of flooding when these defences are operational?

This assesses the risk from flooding, assuming these defences work as intended and neither fail nor are overtopped.

Questions 2 and 4 are answered by one of six standard responses:

| Response         | Meaning                                                                                                                                                                                                                                                                                                                                         |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Negligible       | The overall flood risk rating for the Site is assessed to be 'Negligible'. Existing datasets do not indicate any risk at the Site itself, or any feature within the locality of the Site, which would be expected to pose a threat of flooding. It is not considered that any further investigations are necessary in regard to flood risk.     |
| Low              | The overall flood risk rating for the Site is assessed to be 'Low'. Although large sites (over 1 ha) would require a Drainage Impact Assessment to accompany any planning application, it is not considered necessary to undertake any other further investigations into the flood risk to the Site.                                            |
| Low to Moderate  | The overall flood risk rating for the Site is assessed to be 'Low to Moderate'. The presence of such features as flood defences, flood storage areas and watercourses within the locality of the Site suggests that there may be a risk of flooding to the Site itself. Further investigations could be undertaken to further assess this risk. |
| Moderate         | The overall flood risk rating for the Site is assessed to be 'Moderate'. Information from existing datasets suggests that there are certain features which may present a risk to the Site and its occupants. Further assessment would normally be suggested as a prudent measure to clarify the risk of flooding at the Site.                   |
| Moderate to High | The overall flood risk rating for Site is assessed to be 'Moderate to High'. Information from existing datasets suggests that there are certain features which may present a significant risk to the Site and its occupants. Further assessment is usually recommended in order to clarify the risk of flooding at the Site.                    |
| High             | The overall flood risk rating for Site is assessed to be 'High', with a consequent risk to life and property. This means that existing datasets reveal significant flood risk issues which need to be addressed. Further assessment is usually recommended in order to clarify the risk of flooding at the Site.                                |

## Insurance

Argyll provides an indication of whether the level of flood risk at the site is likely to affect your ability to obtain insurance or if premiums could be high. The response is based on:

- (a) the assumption that the site is used for commercial purposes (not residential)
- (b) consideration of the following datasets and information only:
  - Environment Agency: Risk of Flooding from Rivers and the Sea
  - JBA: Surface Water Risk 1:200

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 commercial 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 is no set of universal guidelines to whether insurance will be available against flood risk or not. This is why we may have recommended you consult your proposed insurer prior to exchange of contracts, to establish the terms on which flood insurance would be offered.

The Flood Re scheme, which came into operation from April 2016, does not cover commercial property or mixed use property. So it will not assist the buyer or tenant of such sites, who is seeking cheaper or less restricted flood insurance.



For some sites, 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 (lower premium, lower excess or fewer conditions to cover).

## 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. In addition, a fifth gauge provides an analysis of other factors (i.e. historic flood events, geological deposits which are indicative of past flooding, proximity to surface water features and elevation above sea level) that may affect the overall flood risk. For surface water flooding, only the risk rating generated from the 1:200 year rainfall event data is included in the overall risk assessment. The data on 1:75 year and 1:1000 year rainfall events is provided for information only.

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.

## Limitations of the Report

The FloodSolutions Commercial report has been designed to satisfy basic flood-related environmental due-diligence enquiries for commercial properties. 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, nor are specific information requests made of the regulatory authorities for any relevant information (other than local water and sewerage providers). Therefore, Argyll cannot guarantee that all issues of concern will be identified by this report, or that the data and information supplied to it by third parties is accurate and complete.

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 pluvial 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.

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 Site would require further study.

When answering any questions within this report, current applicable legislation is taken into account. The data used in this report may have inherent limitations and qualifications. For further details you can our technical team on 0845 458 5250.

This report is provided under The Argyll Environmental Terms and Conditions for Flood Solutions Reports, a copy of which is available on our website, [www.argyllenvironmental.com](http://www.argyllenvironmental.com) , or by calling one of our technical team on 0845 458 5250



## Important Consumer Protection Information

This search has been produced by Argyll Environmental Ltd, 1<sup>st</sup> Floor, 98 – 99 Queens Road, Brighton, BN1 3XF. Telephone: 0845 458 5250, e-mail: [orders@argyllenviro.com](mailto:orders@argyllenviro.com) which is registered with the Property Codes Compliance Board (PCCB) as a subscriber to the Search Code. The PCCB independently monitors how registered search firms maintain compliance with the Code.

### The Search Code:

- provides protection for homebuyers, sellers, estate agents, conveyancers and mortgage lenders who rely on the information included in property search reports undertaken by subscribers on residential and commercial property within the United Kingdom
- 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.

### The Code's core principles

Firms which subscribe to the Search Code will:

- display the Search Code logo prominently on their search reports
- act with integrity and carry out work with due skill, care and diligence
- at all times maintain adequate and appropriate insurance to protect consumers
- conduct business in an honest, fair and professional manner
- handle complaints speedily and fairly
- ensure that products and services comply with industry registration rules and standards and relevant laws
- monitor their compliance with the Code

### Complaints

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 Ombudsman 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  
Web site: [www.tpos.co.uk](http://www.tpos.co.uk)  
Email: [admin@tpos.co.uk](mailto:admin@tpos.co.uk)

You can get more information about the PCCB from [www.propertycodes.org.uk](http://www.propertycodes.org.uk).

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



### Complaints procedure

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:

Legal Director  
Argyll Environmental Ltd  
1<sup>st</sup> Floor  
98 – 99 Queens Road  
Brighton  
BN1 3XF

Telephone: 0845 458 5250  
Email: [orders@argyllenviro.com](mailto: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](mailto:admin@tpos.co.uk)

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