FLOOD RISK ASSESSMENTS & DRAINAGE STRATEGIES

3a Dawlish Drive, HA4 9SF

Reference: 0168 - FRA- 001

FLOOD RISK ASSESSMENT

Dec-20

www.rida-reports.co.uk

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Introduction 1

Purpose of this report

1.1 RIDA Reports Ltd has been appointed to undertake a Level 1 Flood Risk Assessment for a development located at HA4 9SF.

Objectives

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

* Whether the proposed development is likely to 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/or 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
Harrow Council Surface Water Maps
Environment Agency flood maps
The CIRIA publication 'C635 Designing for exceedance in urban drainage— Good practice'

Site Development Assessment 2

Development Site and Location

2.1 The site is located at Dawlish Drive, Ruislip. The nearest post code is HA4 9SF. Refer to appendix A for site location plan.

2.2 The current use of the site is developed, there are extensive concrete surfaces used as parking areas and an outbuilding at the back of the site. The current use vulnerability clasification of the site is Water compatible. 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 construction of a new dwelling house including new external surface areas and landscaping. Refer to Appendix B for 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

Surface Water 2.5 There is a culverted watercourse located approximately 320 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.

Ground Water Levels 2.8 The ground water levels for this site are unknown. However it is likely that the water table is low.

Site Geology

Bedrock 2.9 The British Geological Society records of the site show that it is located within the Lambeth Group - Clay, silt and sand.

Superficial Deposits 2.10 The British Geological Society records show that the superficial deposits are None.

Contaminated Land 2.11 The contaminated land register suggest that the site is not contaminated

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 to contribute to the achievement of sustainable development. As part of it, they ensure that flood risk and sustainability are taken into account 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 the suitability of land for development in flood risk areas. The NPPF also encourages developers to seek opportunities to reduce the overall level of flood risk through the layout of the development and the application of Sustainable Drainage Systems (SuDS). Adoption of these principles at early stages of the project can ensure that the developments take into account appropriate mitigation which is included within the detailed design of the schemes.

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 a robust management of flood risk for people, homes and businesses and also encourages the use of SuDS for developments. A robust SuDS strategy should take into account the recommendations given in this Flood Risk Assessment. The drainage strategy should incorporate SuDS within the design and also attenuate all flows to either the greenfield or brownfield run off and take into account the risk from other sources as necessary.

Level 1 Strategic Flood Risk Assessment (SFRA)

3.3 The West lOnd Strategic Flood Risk Assessment (SFRA Level 1) identifies flood risk constraints in the local Area. It gives procedures that should be followed in planning to tackle flood risk during any development. This document was followed for the production of this flood risk assesment.

Level 2 Strategic Flood Risk Assessment (SFRA)

3.4 The SFRA Level 2 provides more information on the area identified in the SFRA Level 1, in order to show whether the Exception Test can be passed.

Assessment and Mitigation of Flood Risk 4

4.1 The flood risks were determined by identifying the sources of flooding and assessing their possible impact and likelihood to the development.

Fluvial Flood Risk - Assessment

4.2 Fluvial flood risk was assessed using the Environment Agency Flood Zone Maps and the sequential risk-based approach recommended in the NPPF. The sequential test takes into account the flood risk vulnerability of land uses in relation to the flood zone categorisation. These parameters are assessed in order to determine whether the development is appropriate. Under certain circumstances the exception test is applicable.

Sequential Test

Step 1
Flood Zone categorisation

4.3 The proposed development is less than 1Ha and falls within the Environment Agency Flood Zone 1.Therefore, this Flood Risk Assessment Level 1- Screening report should be sufficient under the NPPF. The 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 greater.

Step 2
Flood risk vulnerability

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

Step 3
Sequential Test Results

4.5 The Flood Risk vulnerability and Flood Zone Compatibility table of the NPPF Planning Practice Guide states that More vulnerable developments are appropriate in this area.

The Exception Test

4.6 The exception test is not required.

Surface water (overland flows) flood risk

4.7 The Environment Agency maps show that the flood risk from surface water is very low. A residual risk of localised ponding remains unlikely.

4.8 The council's Surface Water maps confirms that the flood risk for the site is very low. No flood risk mitigation in regards to surface water flooding is required for this site. See appendix C for details.

Reservoirs Risks

4.9 The Reservoir Flood Map (RFM) produced by the Environment Agency do 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 and 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 within the possible dam breach flooding path. It is recommended that the Local Resilience Forum is contacted during detailed design. See Appendix C.

Groundwater flood risk

4.10 The British Geological Survey records show that the development has limited susceptibility to ground water flooding.

4.11 The risk from groundwater flood to the site is considered very low. No interventions required.

Flooding from drainage systems in adjacent areas

4.12 The SFRA Level 1 shows that the site is within an area of 61 to 80 sewer flooding incidents. The site is also within a critical drainage area. See appendix C for details. The risk of flooding from adjacent drainage systems in considered to be medium, due to the site location within a critical drainage area, it is recommended that a sustainable system is applied to the site. The principles for this draiange system are given

Critical Drainage Area - Risk Mitigation

4.13 The surface water run-off will be disposed using SuDS techniques. The aim is to provide a sustainable design that accommodates the proposed attenuation volume and replicated the existing drainage regime using the SuDS hierarchy is shown in the figure 4 below.

4.14 The SuDS techniques highlighted in red below can be used on site. This assessment is based on the ground conditions and the potential discharge points available. This will be sized during detailed design

Figure 4: The SuDS Hierarchy (Source:EA Thames region, SuDS a practical guide)

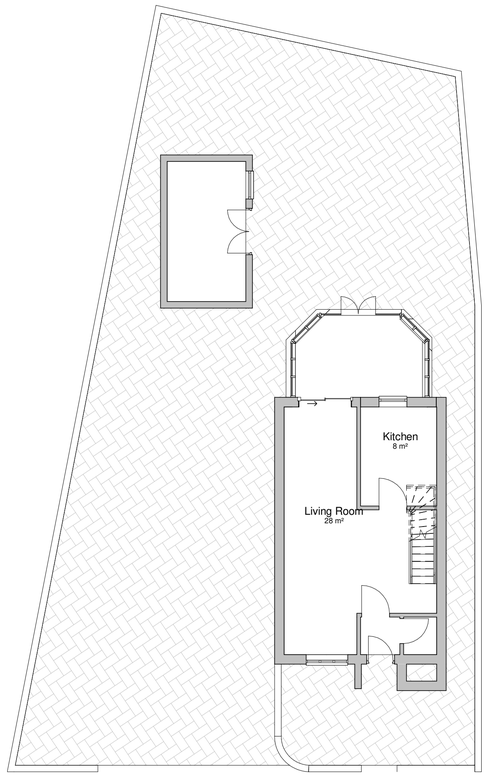
	SUDS technique	Flood Reduction	Pollution Reduction	Landscape & Wildlife Benefit
Most Sustainable	Living roofs	✔	✔	✔
	Basins and ponds - Constructed wetlands - Balancing ponds - Detention basins - Retention ponds	✔	✔	✔
	Filter strips and swales	✔	✔	✔
	Infiltration devices - soakaways - infiltration trenches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

Conclusions 5

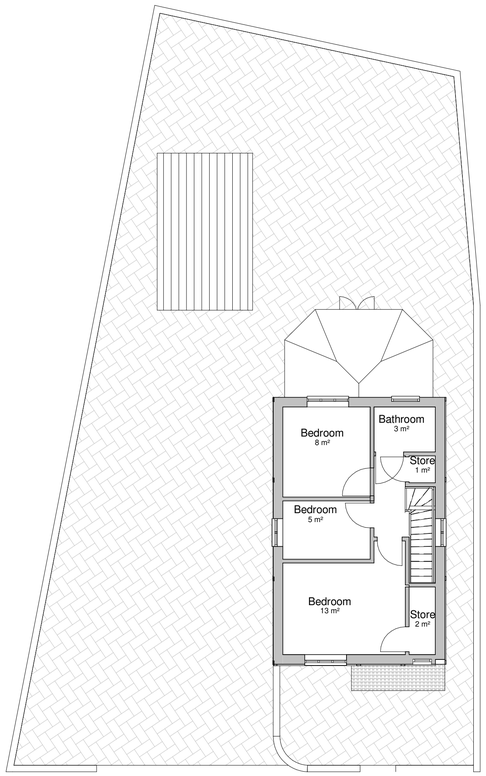
5.1 The development is outside of the Environment Flood Risk zones from rivers. However is within a critical drainage area. As such the development should incorporated SuDS pricipals to manage the surface water flows. Under the NPPF the development is development use is appropriate within the flood zone.

5.2 The development fully complies with the NPPF as it has been designed to not result in net loss of floodplain storage; not impede water flows, not increase flood risk elsewhere and be safe for use.

Appendix A & B



Existing - Ground Floor Plan
1 : 100



Existing - First Floor Plan
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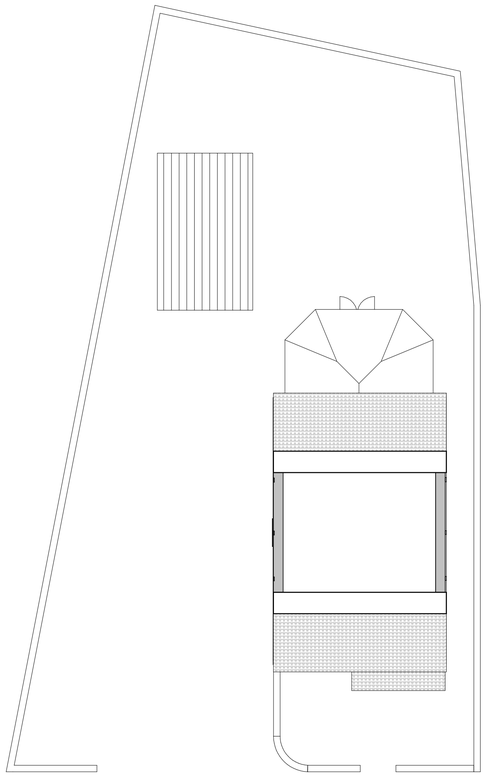

Existing - Loft Plan
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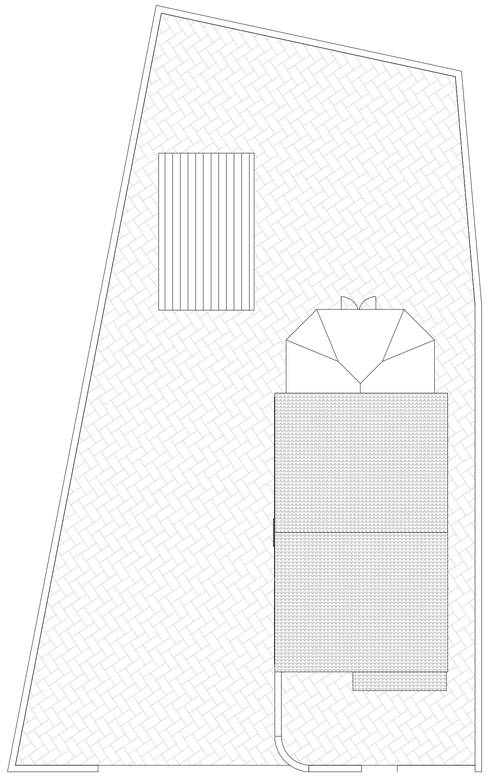


Existing - Roof Plan
1 : 100

CLIENT:
Owner

Roktom Limited

0 10 20 30 40 50mm
PRINT REDUCTION BAR | A1 SHEET

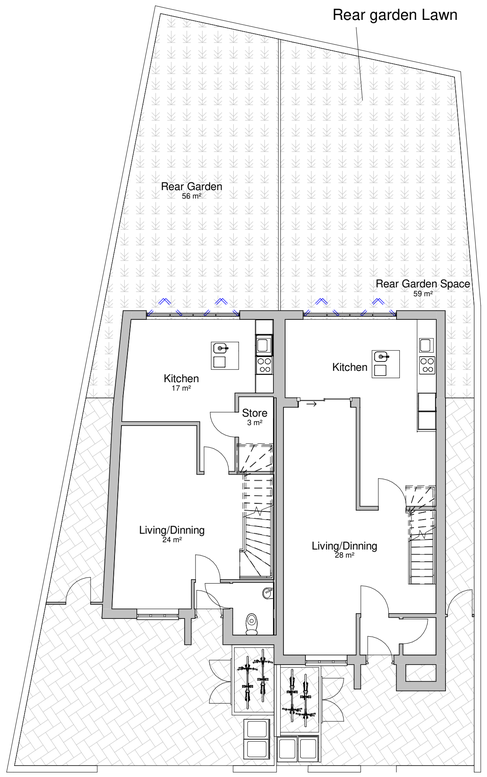
AMENDMENT

No.	DESCRIPTION	DATE

New Build
3a Dawlish Drive
Existing Floor Plan

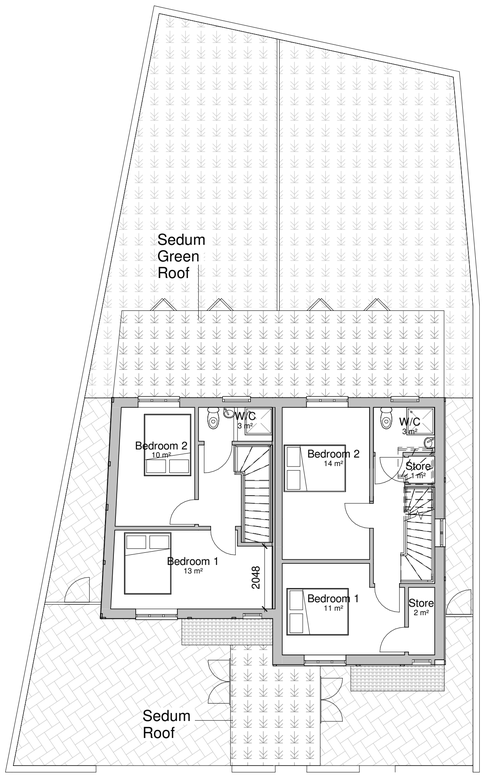
SCALE 1 : 100
DRAWN Author
APPROVED

DRAWING No. DWL - A101
REVISION



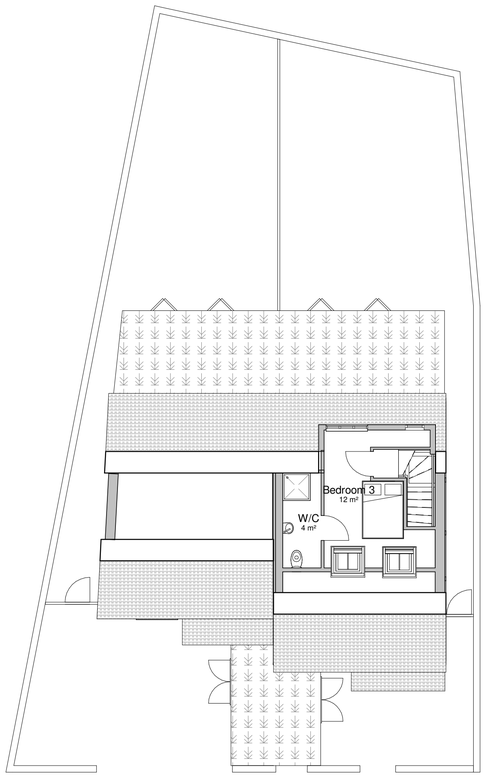
Proposed - Ground Floor Plan

1 : 100



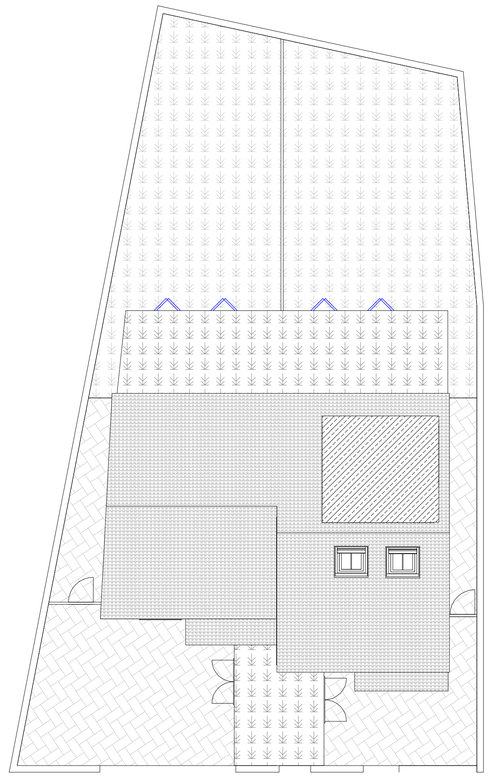
Proposed - First Floor Plan

1 : 100



Proposed - Loft Plan

1 : 100



Proposed - Roof Plan

1 : 100

CLIENT:

Owner

Roktom Limited

0 10 20 30 40 50mm

PRINT REDUCTION BAR | A1 SHEET

AMENDMENT

No.	DESCRIPTION	DATE

New Build
3a Dawlish Drive
Proposed Floor Plan

SCALE 1 : 100

DRAWN Author

APPROVED

DRAWING No. DWL - A101.5

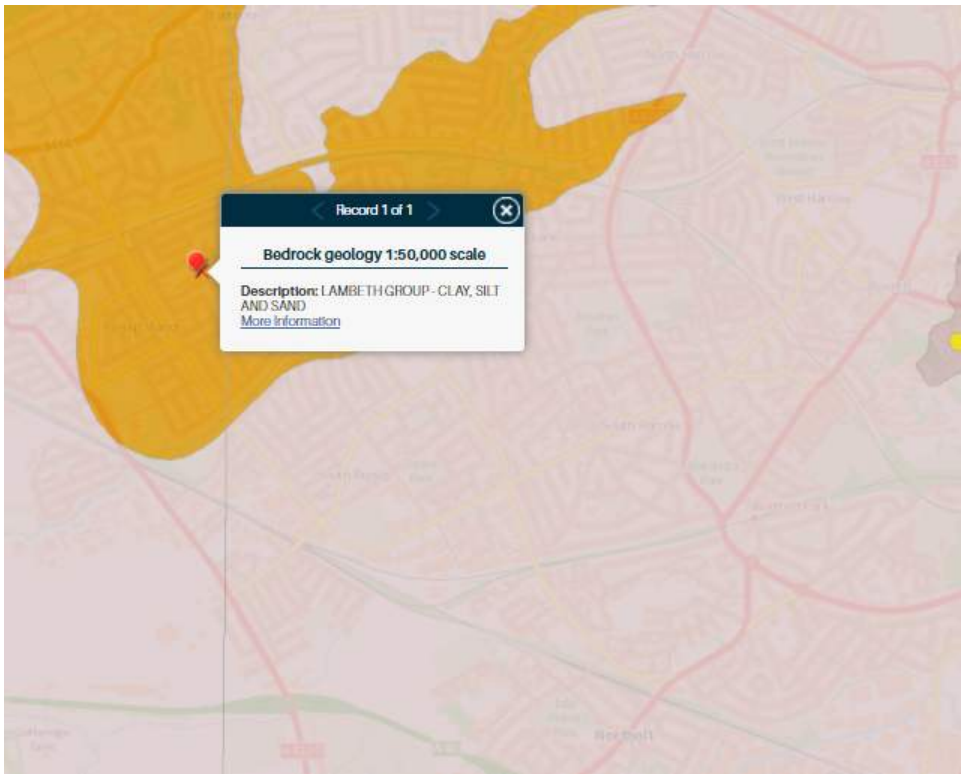
REVISION

Appendix C

SITE GEOLOGY

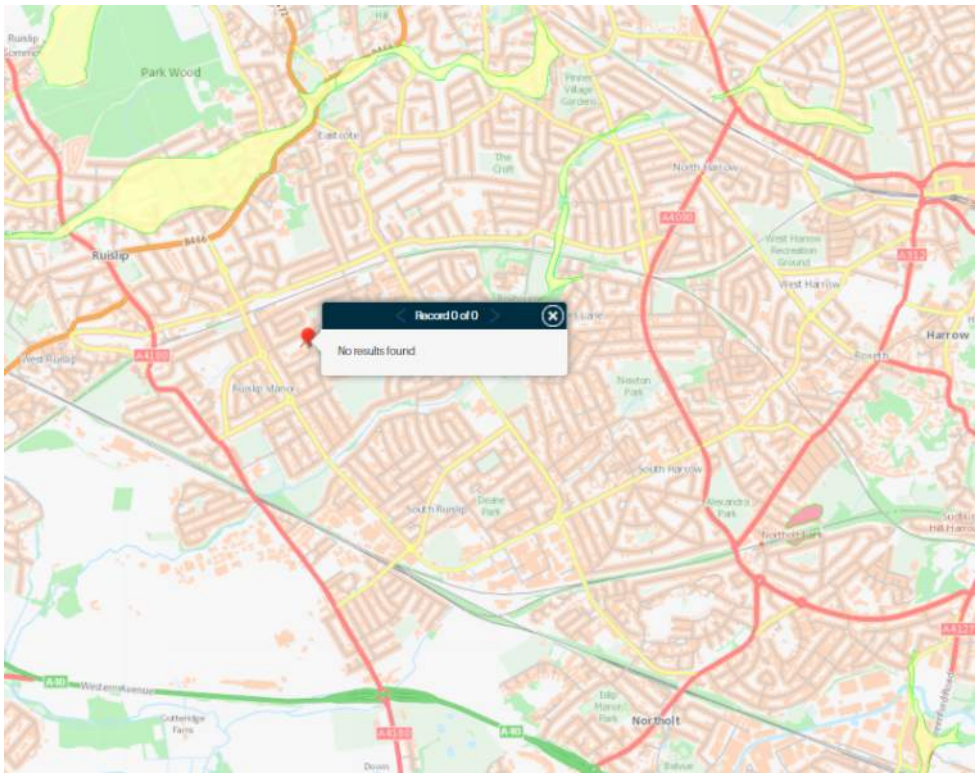
GEOINDEX ONSHORE

GEOLOGY - BEDROCK - LAMBERTH GROUP -CLAY, SILT SAND

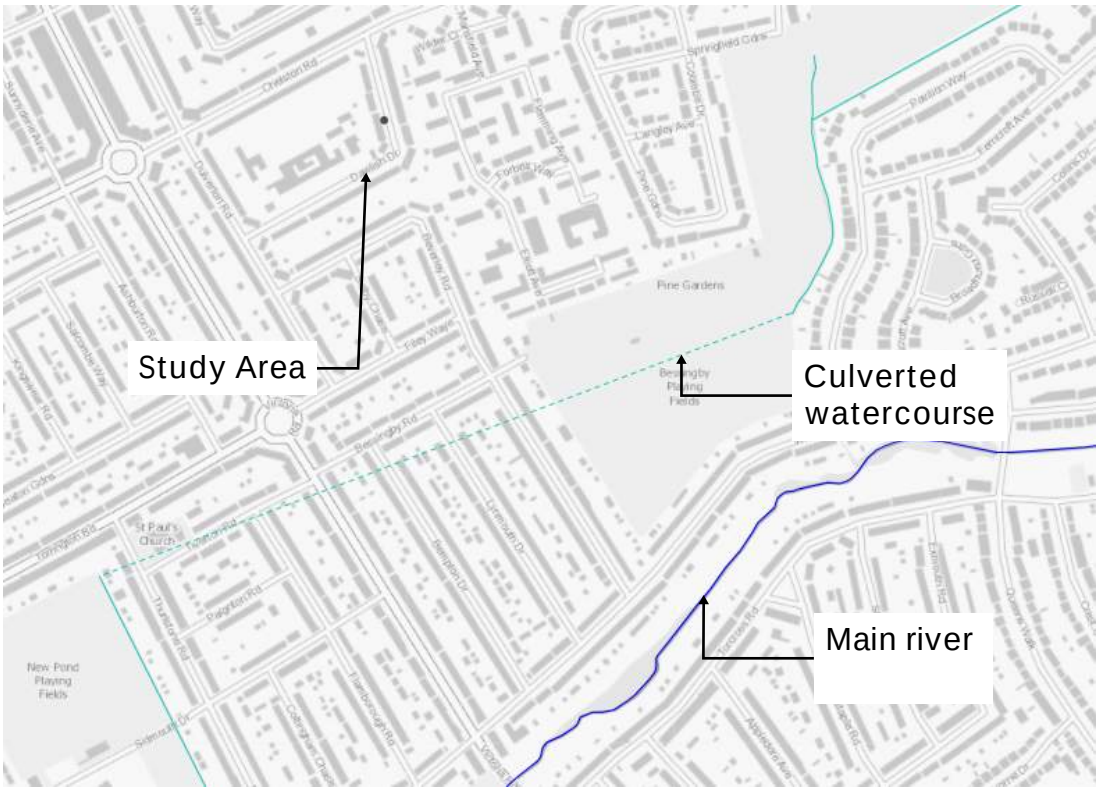


GEOINDEX ONSHORE

GEOLOGY - SUPERFICIAL DEPOSITS - NONE



Environment Agency Main River Map



SITE FLOOD RISK

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

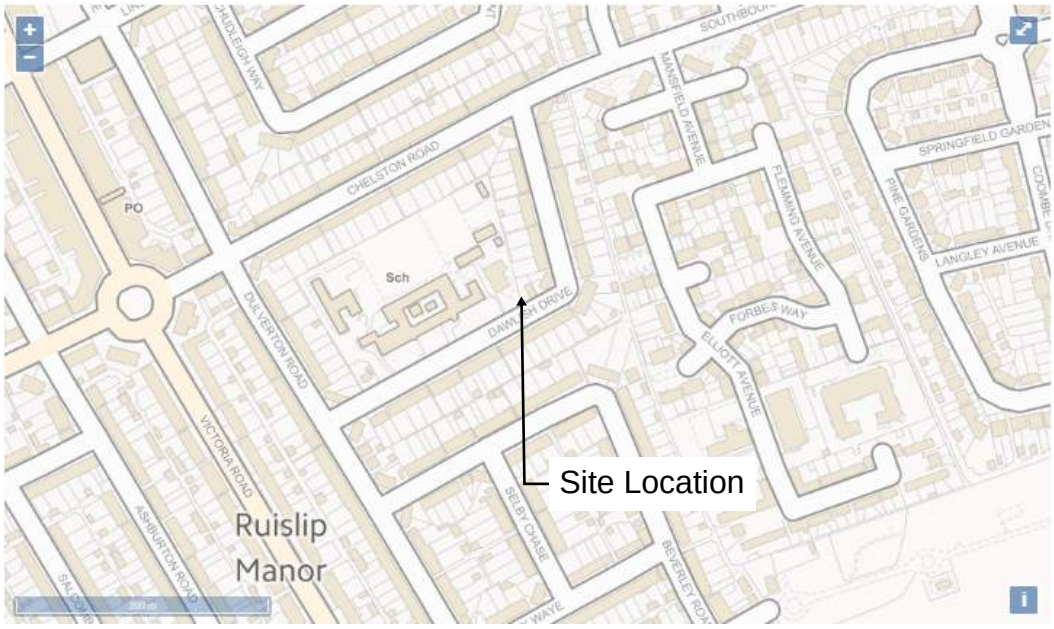
Flood risk from surface water

Extent of flooding

Map taken from:
https://flood-warning-information.service.gov.uk/long-term-flood-risk/map?easting=384177&northing=255346&address=10000852442&map=RiversOrSea © Crown copyright and database rights 2019 OS 100024198. Use of the address and mapping data is subject to the terms and conditions.

Flood risk from reservoirs

Extent of flooding



Map taken from:
https://flood-warning-information.service.gov.uk/long-term-flood-risk/map?easting=384177&northing=255346&address=10000852442&map=RiversOrSea © Crown copyright and database rights 2019 OS 100024198. Use of the address and mapping data is subject to the terms and conditions.

Flood map for planning

Your reference	Location (easting/northing)
3aDawlishDr	**510533/186938**

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

This means:

- you don't need to do a flood risk assessment if your development is smaller than 1 hectare and not affected by other sources of flooding
- you may need to do a flood risk assessment if your development is larger than 1 hectare or affected by other sources of flooding or in an area with critical drainage problems

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
3aDawlishDr

Location (easting/northing)
510533/186938

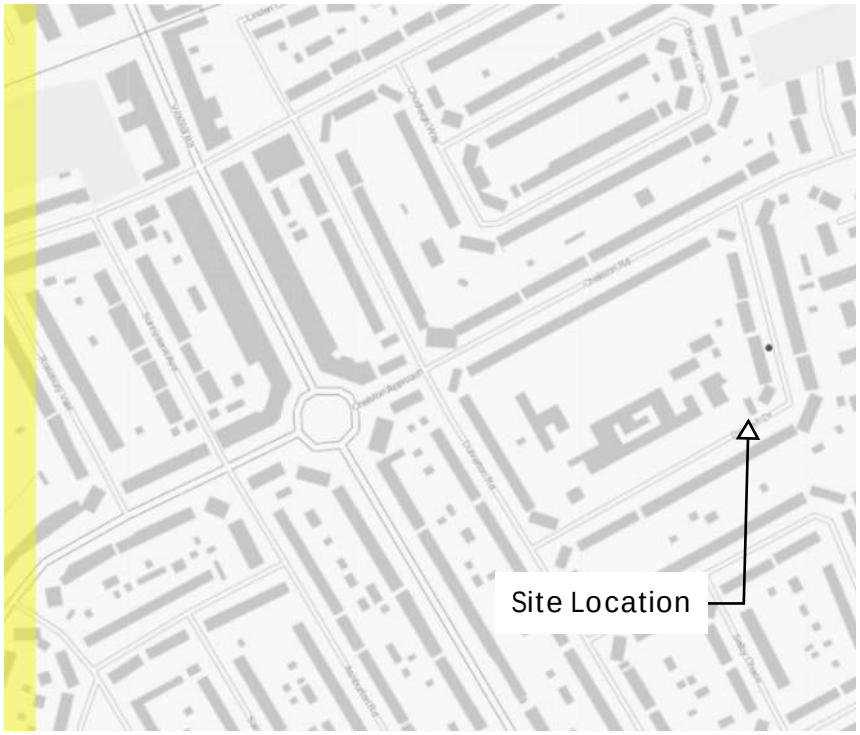
Scale
1:2500

- Selected point
- Flood zone 3
- Flood zone 3: areas benefitting from flood defences
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Flood storage area

0 20 40 60m

WEST LONDON STRATEGIC FLOOD RISK ASSESSMENT

Sewer, Groundwater & Artificial Flood Risk



WEST LONDON STRATEGIC FLOOD RISK ASSESSMENT

Sewer, Groundwater & Artificial Flood Risk