

Cooper Associates

Consulting Structural Engineers



CA5085.07

November 2018

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5 Cleve Road, London NW6 3RN.

Flood Risk Assessment.



Rear Elevation

It is intended to construct a basement level below this five story detached house, that is currently converted into flats.

The British Geological Survey maps show that the property is founded on 'London Clay Formation'. This agrees with our experience of trial holes in the area, including foundation works at other properties in this road.

A soil investigation report prepared by Southern Testing has shown that, below a layer of top soil, London Clay extends to at least 6 m depth. The soil report records water in the trial holes and in the bore hole. As the clay is largely impermeable, it is likely that the majority of the ground water is perched in the top soil. Pumps will however be provided by the contractor, to ensure that any significant water ingress can be quickly removed.

The existing and proposed landscaping and surface treatment is shown in outline, in Architects drawings 1238/ESP-001 and ASP-001. Although the new construction will extend over part of the rear garden, and as a light well over the front of the property, any increase in rain water that might be run into the combined sewerage, will be mitigated by providing a green roof over the flat roof areas of the new rear extension and by installing a rainwater harvesting system within the rear garden. This will be designed by a specialist to accommodate the likely rain water run-off. The water will be used for garden irrigation during the summer months, but may be released into the local drainage system, in a controlled 'off peak' discharge of the storage tanks.

The new hardstanding - at the front and at the rear, will be formed with permeable paving over a compacted ballast hardcore.

Information from the environmental agency (Page 10 below) shows that the property is at a very low risk of flooding from rivers or seas.

The risk of flooding from surface water in the surrounding area is considered to be very low (page 11). The risk from Reservoirs is considered to be very low (page 12).

Two local floods in 1975 and 2002, did not impact on Cleve Road, as notes in Camden's flooded roads publication provided on sheet 8.

Although the Environment Agency has published the above and appended information, the London Borough of Camden have since published more detailed records in their London Borough of Camden Strategic Flood Risk Assessment dated July 2014. We have reproduced these in our accompanying document CA5085.06:

<u>Map Title</u>	<u>CA5085.06</u>	<u>Risk level</u>
Surface water flooding	sheet 4	Cleve Rd, very low
1 in 1000 Year Flood Event	sheet 5	Cleve Rd, Low
Internal Sewer Flooding	Sheet 6	8 Properties affected
External Sewer Flooding	Sheet 7	19 Properties affected
Critical Drainage Area	Sheet 8	In CDA area

The property is hence at risk because of local sewer flooding.

The occupants of the development can mitigate any residual risk by using the Flood Warning Service subscribing to the Floodline Warning Direct and listening to the available information (www.gov.uk/sign-up-for-flood-warnings), although this may not help with Sewage Flooding.

Escape from the front and rear of the property can be achieved via a fixed ladder in each of the front lightwells and via conservatory doors on each side of the rear of the existing lower ground floor levels and from other windows in the side elevations. The small areas of basement at the centre of the rear of the property have large rear facing windows that allow escape.

The lower ground floor level will be closed in times of flooding and the central internal stairwell access from the basement to the ground floor can be utilised should an evacuation be necessary. Safe refuge is also provided on the upper floors of the building should this be necessary.

Flood resilience measures will be incorporated into the design of the lower ground floor to prevent the ingress of water. This will include concrete ground slabs and appropriate waterproofing methods etc. Page 12 illustrates a typical waterproofing method. Page 13 indicates a typical pumping detail.

Mitigation against the ingress of any surface water from the street to the basement level will be incorporated in the detailed design surface water drainage strategy. This will include fitting non-return valves to the foul and surface water system to prevent sewers surcharging into the dwelling should the outlet become submerged under extreme floor conditions.

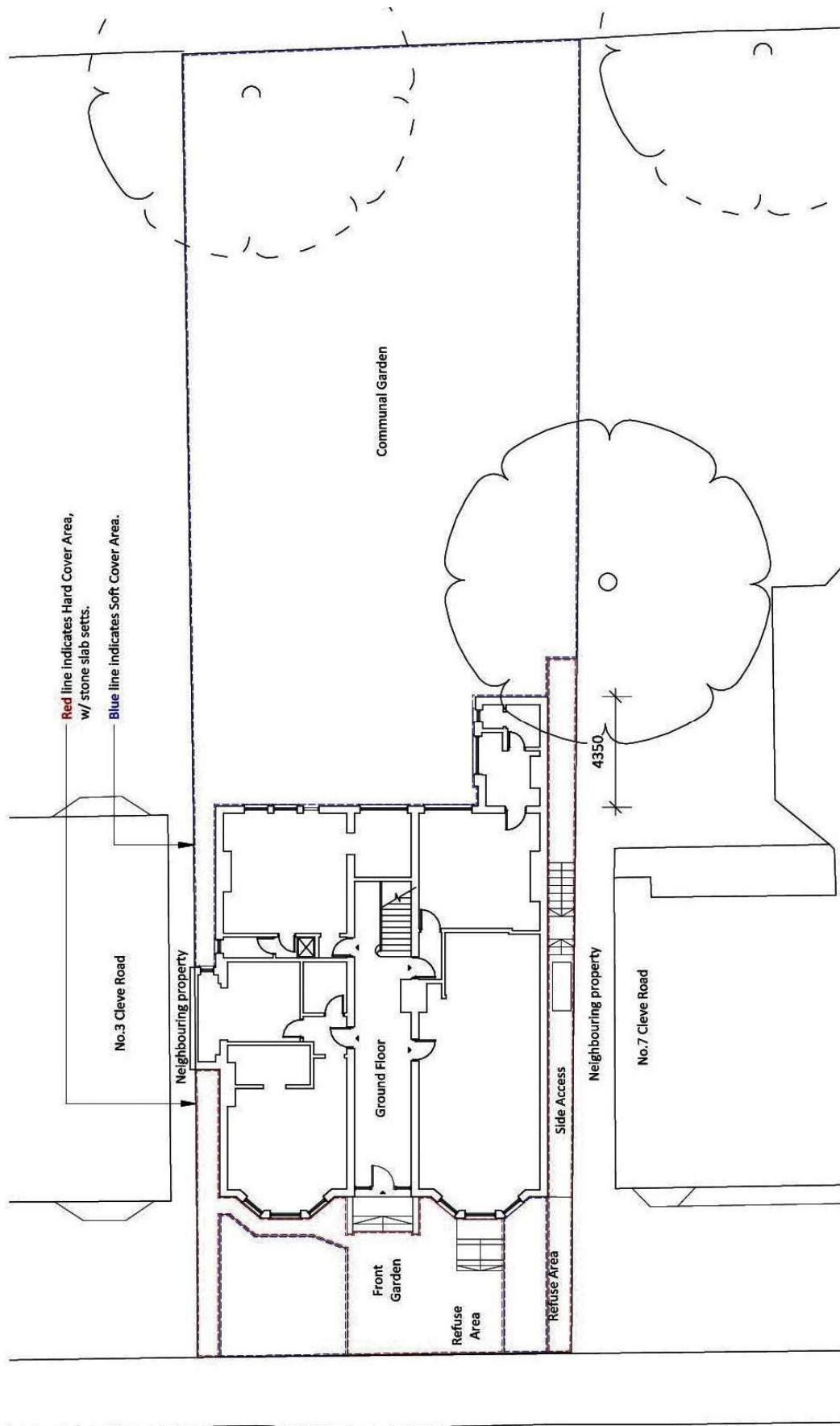
Flood resilient building materials and fittings will be used. All service ducts / gaps etc., to accommodate utilities such as gas, electricity and telephone cables to the lower ground floor level, will be sealed with silicone.

This FRA meets the requirements of the EAs Flood Risk Standing Advice for Minor Extensions in Flood Zones 2 and 3; the external footprint is less than 250sqm (the property is in Flood Zone 1).

Report prepared by

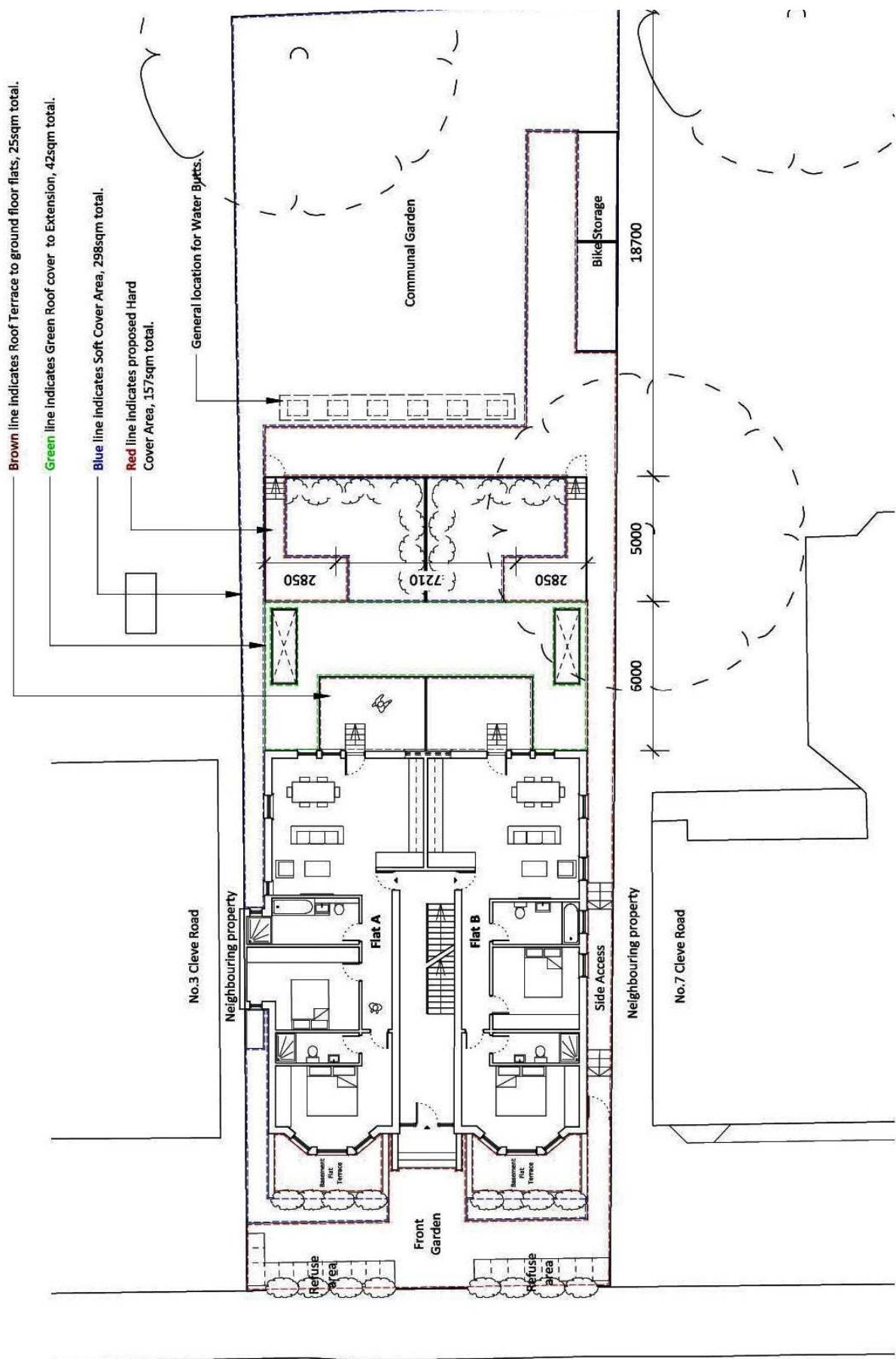
Eur Ing **Martin Cooper**, BSc, CEng, MICE, MStructE.

Cooper Associates.



Existing Site Plan

Existing lower Ground Floor Plan



Proposed lower ground floor with garden

Proposed Site Plan

Flood map for planning

Your reference
5 Cleve Road

Location (easting/northing)
525558/184364

Created
2 Dec 2018 4:32

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

This means:

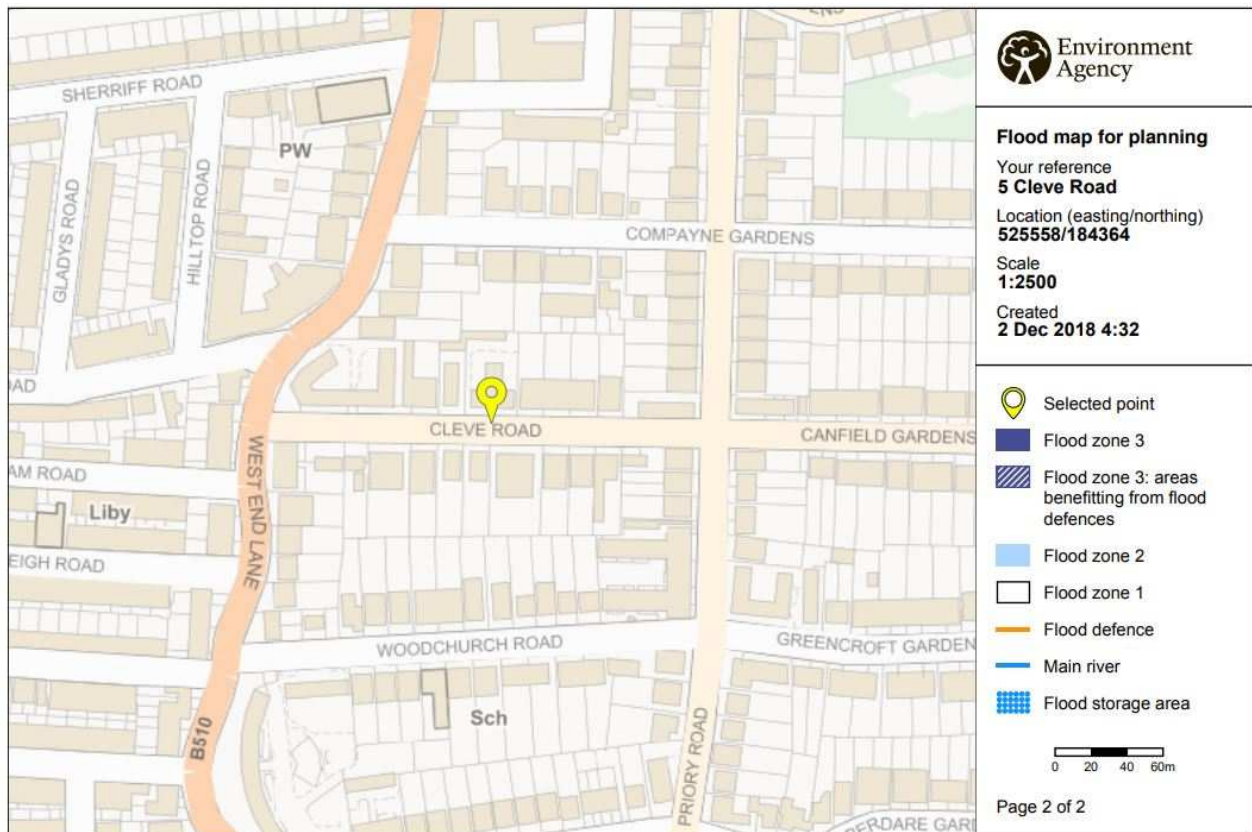
- you don't need to do a flood risk assessment if your development is smaller than 1 hectare and not affected by other sources of flooding
- you may need to do a flood risk assessment if your development is larger than 1 hectare or affected by other sources of flooding or in an area with critical drainage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

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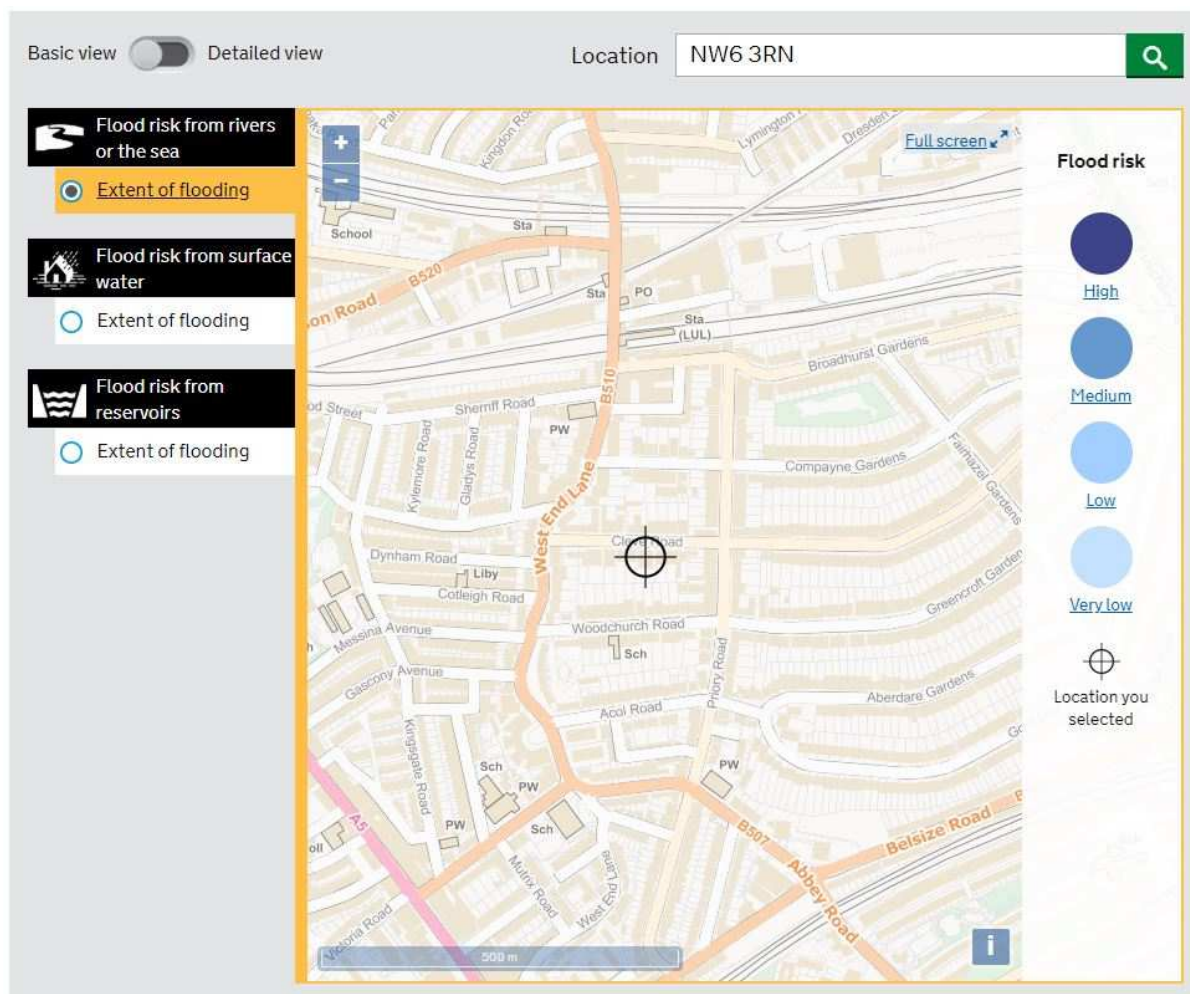
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Streets at risk of surface water flooding

Abbey Road	1975
Aberdare Gardens	1975
Achilles Road	2002
Adamson Road	2002
Agamemnon Road	2002
Ajax Road	2002
Aldred Road	2002
Arkwright Road	1975 and 2002
Arkwright Road	1975 and 2002
Avenue Road	2002
Belsize Lane	1975 and 2002
Belsize Park Gardens	1975
Belsize Road	1975 and 2002
Boundary Road	1975
Broadhurst Gardens	1975
Broomsleigh Street	1975
Bullbarrow, Abbey Road Estate	1975
Canfield Gardens	1975 and 2002
Cannon Hill	1975 and 2002
Caversham Road	2002
Chalcot Gardens	1975
Chesterford Gardens	2002
Cotleigh Road	1975
Dennington Park Road	1975 and 2002
Edis Street	1975
Egbert Street	1975
Fairfax Road	2002
Fairhazel Gardens	1975 and 2002
Fellows Road	1975
Femcroft Avenue	1975
Finchley Road	2002
Fleet Road	2002
Fordwych Road	1975
Frognaal Gardens	1975
Gaisford Street	2002
Glenhurst Avenue	2002
Gloucester Avenue	1975
Goldhurst Terrace	1975 and 2002
Gospel Oak Estate	1975
Greencroft Gardens	1975 and 2002
Hampstead Lane N6	1975
Harben Road	2002
Harley Road	1975
Hawley Road	1975
Heath Street	1975
Hemstal Road	1975
Highgate Road	1975
Hillfield Road	1975 and 2002
Holmdale Road	1975 and 2002
Ingestre Road	2002
Inglewood Road	2002

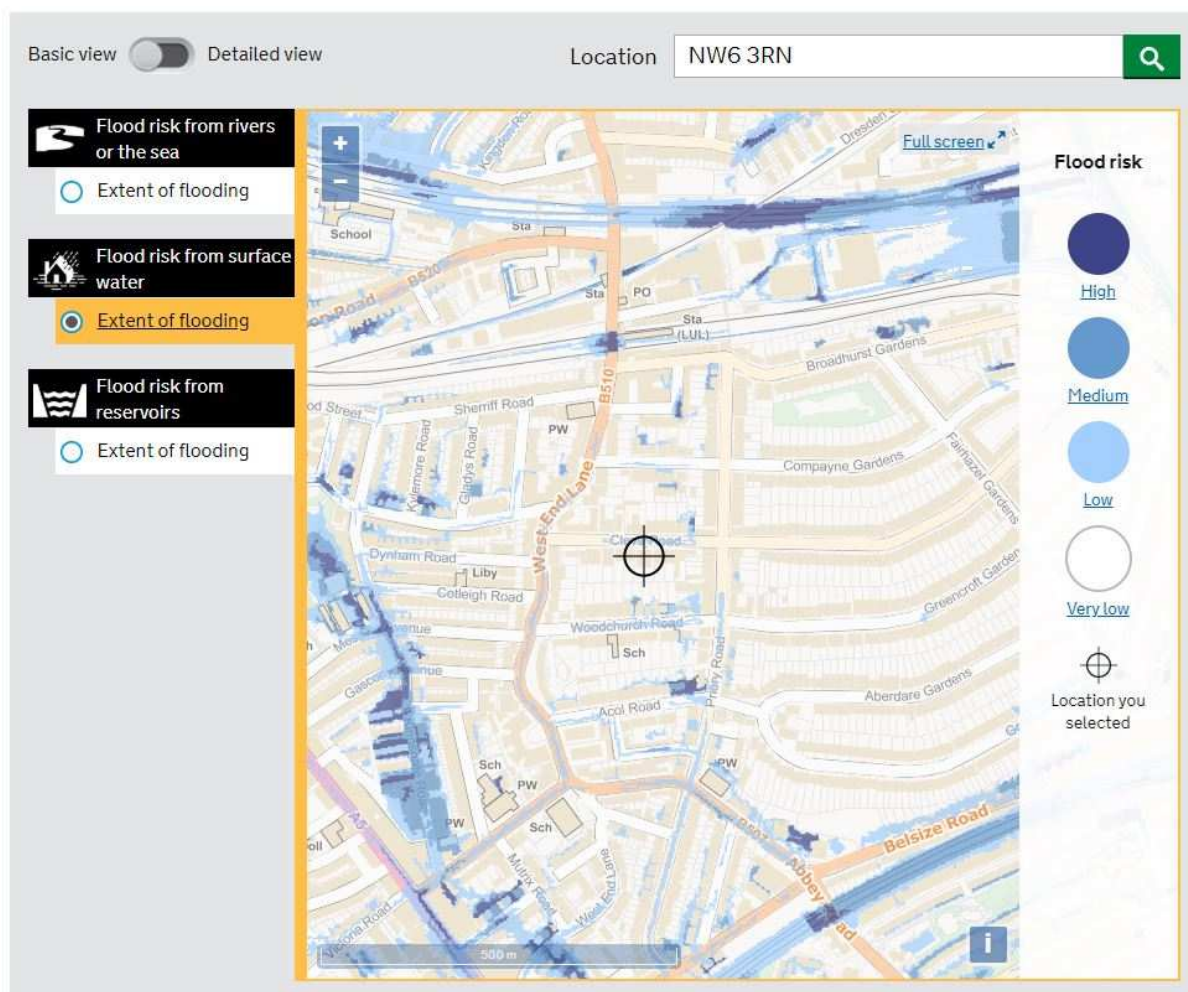
Jeffreys Street	2002
Kelly Street	1975 and 2002
Kentish Town Road	1975
Kidderpore Gardens	1975
Kilburn High Road	1975
Kilburn Priory	1975
Kingdon Road	2002
Kingsgate Road	1975
Lady Margaret Road	2002
Lambolle Road	1975
Lancaster Drive	2002
Lancaster Grove	1975 and 2002
Langland Gardens	1975
Lowfield Road	1975
Lyncroft Gardens	2002
Lyndurst Gardens	1975
Mansfield Road	1975
Maygrove Road	1975
Menelik Road	2002
Messina Avenue	1975
Mill Lane	1975 and 2002
Nassington Road	2002
Oak Village	1975
Ornan Road	2002
Pandora Road	1975 and 2002
Park End	1975
Parkhill Road	1975 and 2002
Parliament Hill	2002
Platt's Lane	1975 and 2002
Primrose Hill Road	1975 and 2002
Prince of Wales Road	2002
Princess Road	1975
Priory Road	2002
Priory Terrace	1975
South End Road	2002
South Hill Park	2002
South Hill Park Gardens	2002
Sumatra Road	1975 and 2002
Swains Lan	1975
Tanza Road	2002
Templewood Avenue	2002
Templewood Gardens	2002
Wendling, Haverstock Road	2002
West End Lane	2002
Westbere Road	2002
Willow Road	1975 and 2002
Winchester Road	1975
Windmill Hill	1975
Woodchurch Road	2002
Woodsome Road	1975
York Rise	1975

Source: Floods in Camden, Report of the Floods Scrutiny Panel, London Borough of Camden 2003, Appendix 4, Flooded Roads in Camden 1975 and 2002.



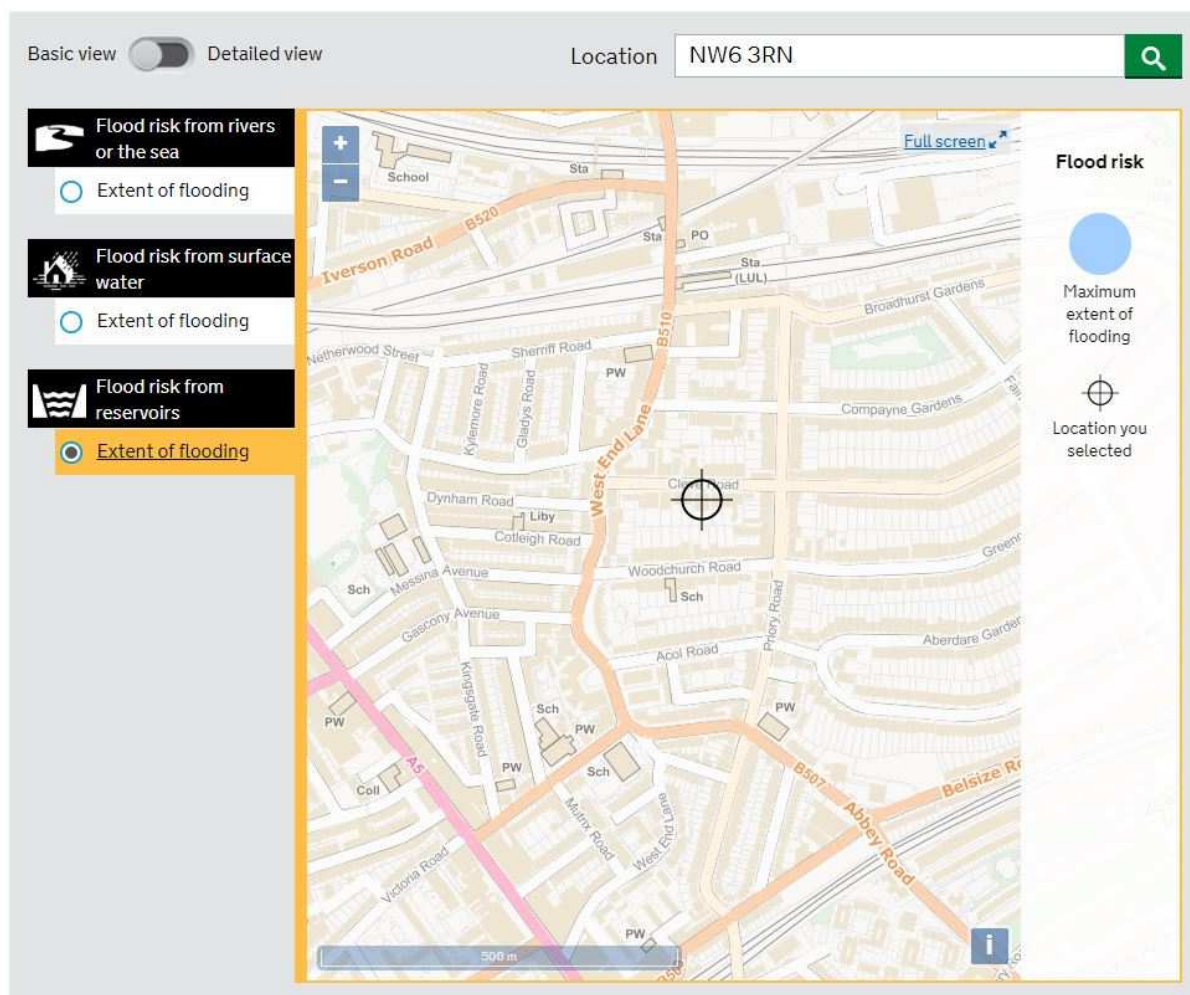
Flood risk from rivers or the sea

Very low risk means that each year this area has a chance of flooding of less than 0.1%. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.



Flood risk from surface water

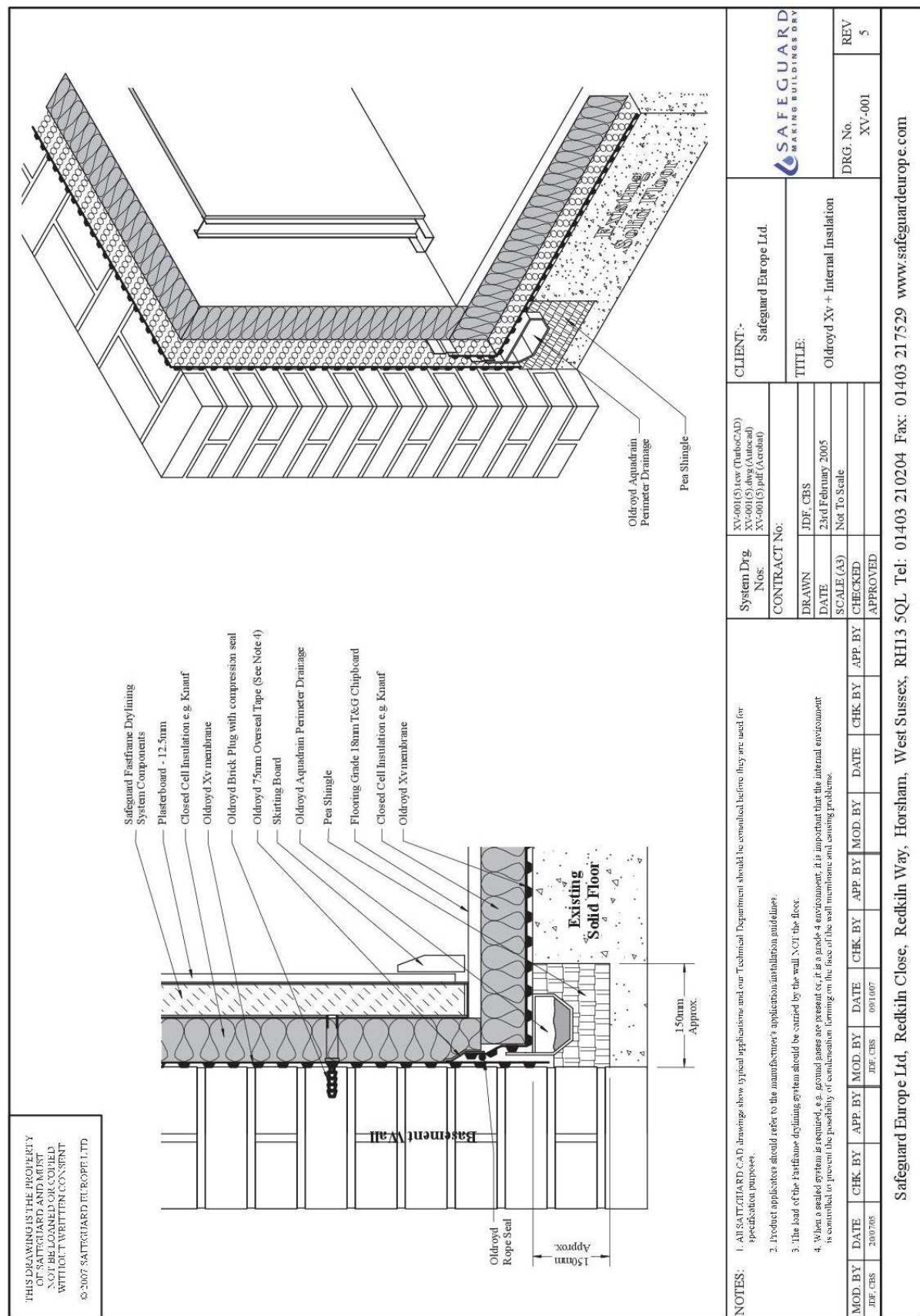
Very low risk means that each year this area has a chance of flooding of less than 0.1%. Flooding from surface water is difficult to predict as rainfall location and volume are difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding.

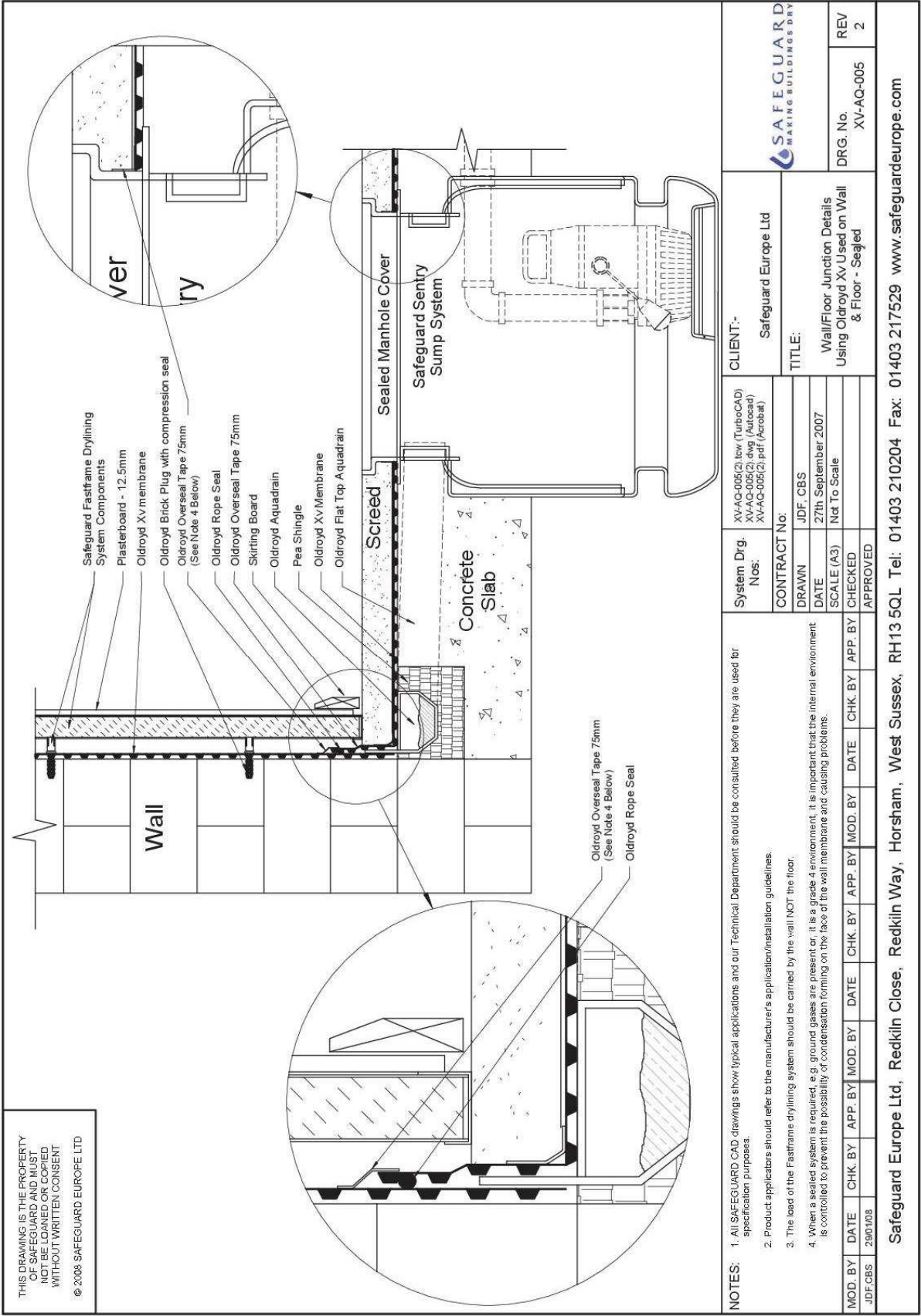


Flood risk from reservoirs

If a location is at risk, flooding from reservoirs is extremely unlikely. There has been no loss of life in the UK from reservoir flooding since 1925.

Typical waterproofing detail





Typical pump detail