



71, Goldhurst Terrace

Camden, London, NW6 3HA

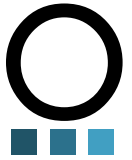
Flood Risk Assessment Report (FRA)

Rev 00 – 24/05/2018



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1. Plan identification

Date of issue: 24/04/2018

Address of the site: 71 Goldhurst Terrace
London, Camden
NW6 3HA

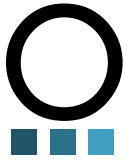
Planning permission reference number:

Description of the works:

- Excavation of a basement and creation of a lightwell to the front of the property
- Erection of a single storey side infill extension and the erection of a single storey rear extension to the property.
- Repositioning of the existing iron railings to the front of the property

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2. Report Introduction

Opera Architects Ltd has been appointed to provide the documentation in support of the planning submission for the proposed basement extension and the other works to the existing residential property.

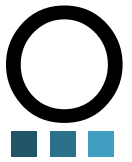
This report is to describe the flood risk associated with the proposed works and propose suitable mitigation, if required, to reduce the flood risk to a more acceptable level.

The Flood Map attached in the detail documentation requested to the Environmental Agency Website shows that this site lies within the outline of Flood Zone 1. Therefore, having a less than 1 in 1,000 annual probability of river or sea flooding.

A more detailed description of the current state of the site in relation to its hydrogeological setting can be found in the Basement Impact Statements from G.S.E. and Gabriel Geo Consulting Limited submitted together with this document.



FIGURE 1



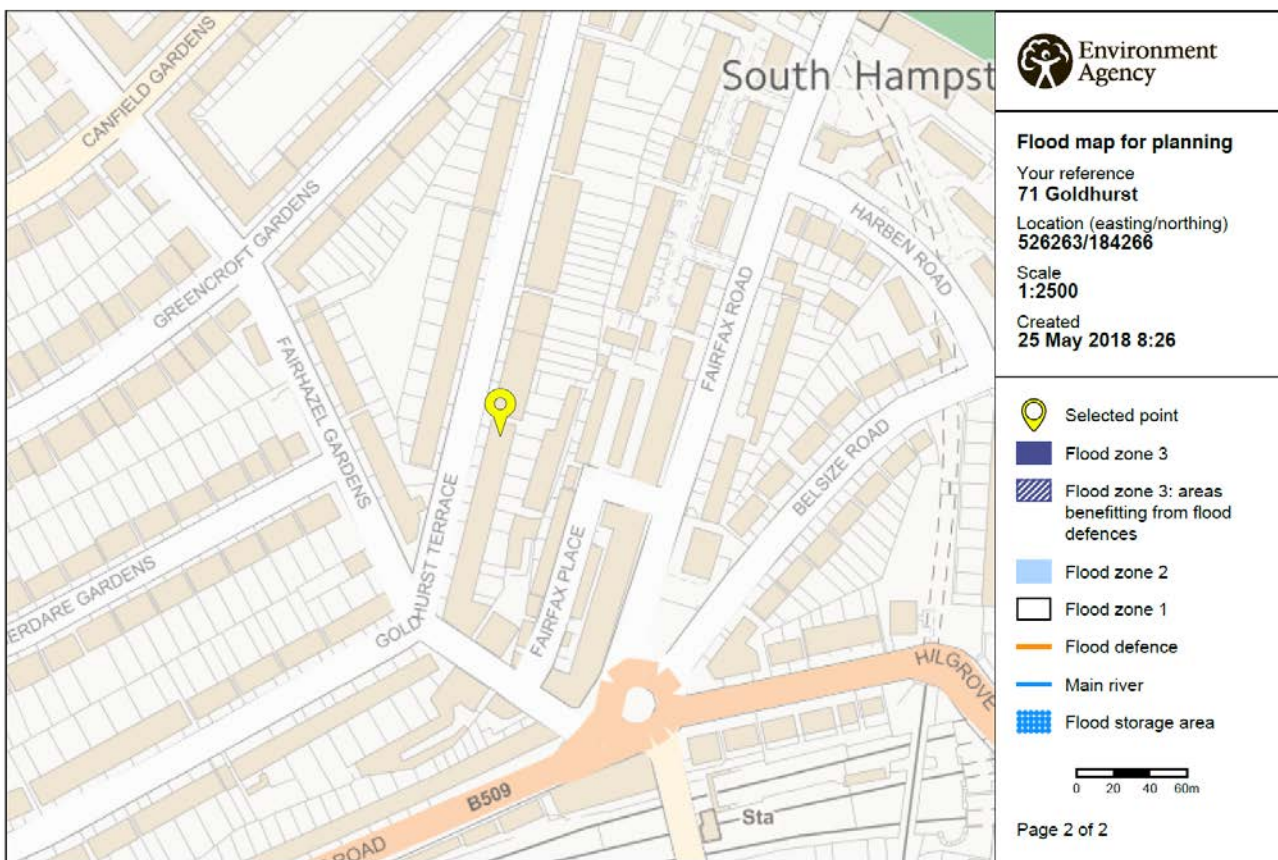
3. Sources of Flooding

A more detailed description of the various sources of flooding that may be incurred is present in the BIA by Gabriel Geo Consulting Limited to which this document refers to.

3.1 Fluvial and tidal Flooding

3.1.1 Overview

The current published EA flood zone map indicates that the site lies in the flood zone 1 (figure 2), with less than a 0.1 per cent (1 in 1000) chance of such flooding occurring each year.



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FIGURE 2

Reference to Figure 2 demonstrates that the EA’s modelling shows a ‘Very Low’ risk of surface water flooding for the entire site of No.71 Goldhurst Terrace, the neighbouring properties and along the Goldhurst Terrace carriageway outside the site. The Risk of tidal or fluvial flooding affecting the site is assessed as **very low** (Figure 3).

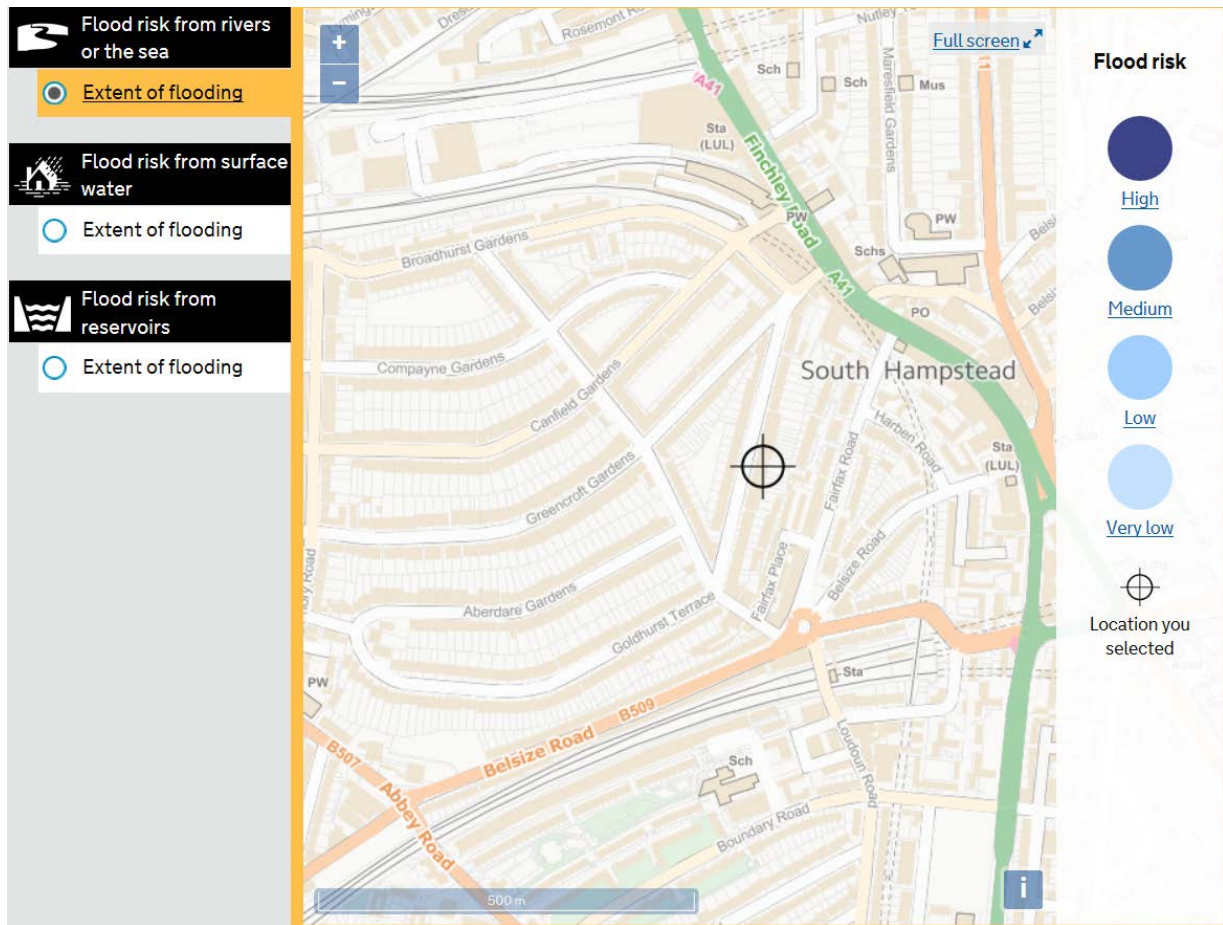


FIGURE 3

4.2 Pluvial (Surface water) Flooding

The EA's online map 'Risk of Flooding from Surface Water' reproduced below as Figure 4, indicates that the site is at a 'low' risk from this source of flooding. The risk of pluvial (surface water) flooding affecting the site is assessed as **Very low**.

There are no surface water features within 250m of the site.

The site is known to lie about 150m to the east of one of the former tributaries to the 'lost' river Westbourne. These tributaries have been culverted or diverted into the sewer system a century ago, so they are no longer able to receive surface water run-off.



The 'Floods in Camden' report (LBC Floods Scrutiny Panel, 2003) and LBC's CPG4 guidance document record that Goldhurst Terrace flooded in both the 1975 and the 2002 local pluvial flood events. The Camden Strategic Flood Risk Assessment (the SFRA, by URS, 2014) identified a Goldhurst Local Flood Risk Zone, which includes Goldhurst Terrace, because of these events. Construction of the NW Storm Relief Sewer in 1994 will have helped to prevent flooding in some of the surrounding roads since then, although it too became overloaded in 2002 because it was only designed for a 1 in 10 year storm.

The latest flood models by both the Environment Agency, and by URS for the Camden SFRA, gave a 'Very Low' risk of surface water flooding, the lowest category which represents the national 'background' level of risk, for No.71's site, and for all other properties in the vicinity on Goldhurst Terrace. The run-off route from the 'Low' risk of flooding on the upslope side of No's 39/41/43 Fairfax Close, which adjoin No.71's rear garden, is expected to be down Fairfax Close so will not require any additional precautions for the proposed basement.

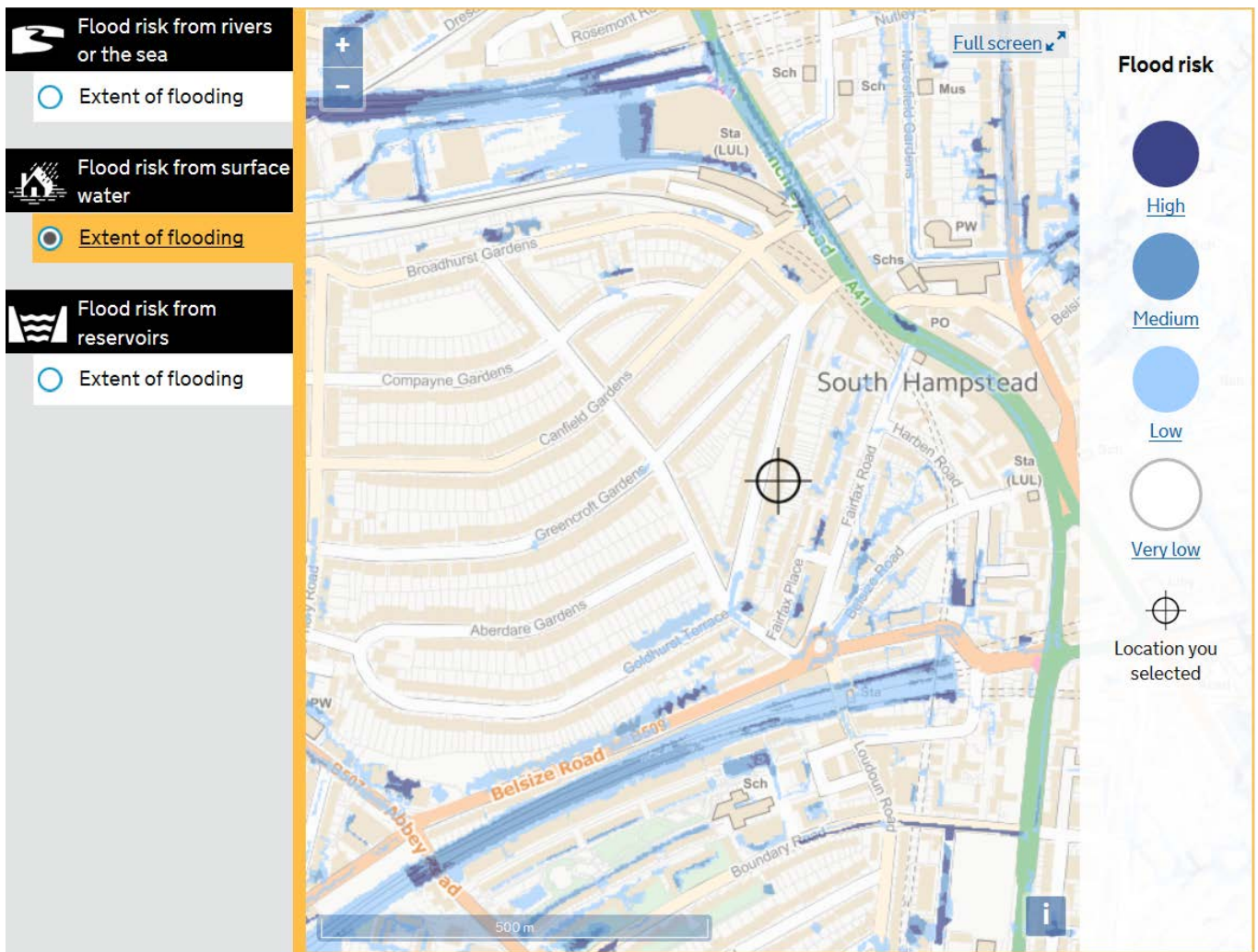
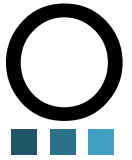


FIGURE 4



4.3 Groundwater Flooding

The British Geological Survey website indicates the underlying ground condition to be London Clay. This has been confirmed by the site investigation carried out which has confirmed the ground conditions to comprise of firm to stiff brown clay immediately below the disturbed material found at the surface.

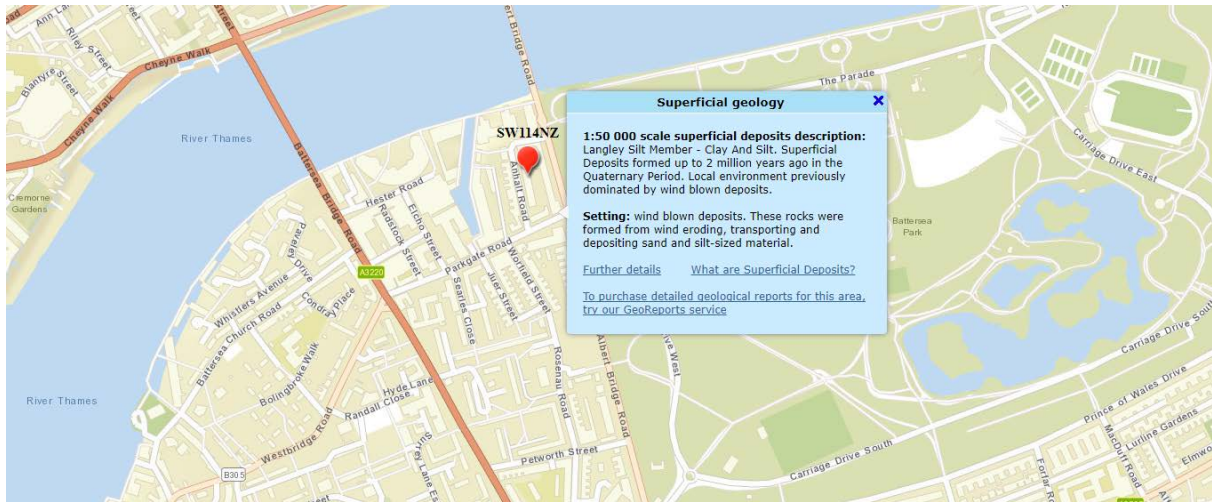


FIGURE 5

From the B.I.A by Gabriel Geo Consulting Limited:

“The Made Ground comprises variably sandy, variably gravelly clays, so is generally low permeability and will permit little or no flow of perched groundwater.

The proposed basement will not increase the width of the existing obstruction to flow (if any) created by the existing foundations and the cellar so, given the anticipated negligible flow in the London Clay, the proposed basement is considered acceptable in relation to groundwater flow.”

“The proposed basement is considered acceptable in relation to the likely negligible groundwater flow in the natural strata, while flow in the Made Ground around the house is likely to be limited to flow in backfill to service trenches or granular pipe bedding. No cumulative impact will be caused to groundwater flow because there are no adjoining/adjacent modern basements”

4.4 Sewer Flooding

Flood events occur when the capacity of a sewer is exceeded either due to a blockage in the sewer system or excess surface water runoff entering the system.

Given the lack of any recorded history of sewer flooding affecting this property, the probability of future sewer flooding affecting No.71 is considered to be very low, provided that the sewer system is well maintained and appropriate flood resistance measures are implemented.

The risk of sewer flooding affecting the site is assessed as **very low**.

4.5 Other Sources of Flooding: Artificial Sources, Reservoirs, Canals etc.

The EA's internet reservoir flooding map as reproduced in Figure 8, indicates that the site lies inside an area at no risk of flooding from reservoirs.

There are no canals within the vicinity of the site. There are no other artificial water bodies in the vicinity of the site which could constitute a flood risk to the site. The risk of flooding from artificial sources is therefore assessed as **low**.

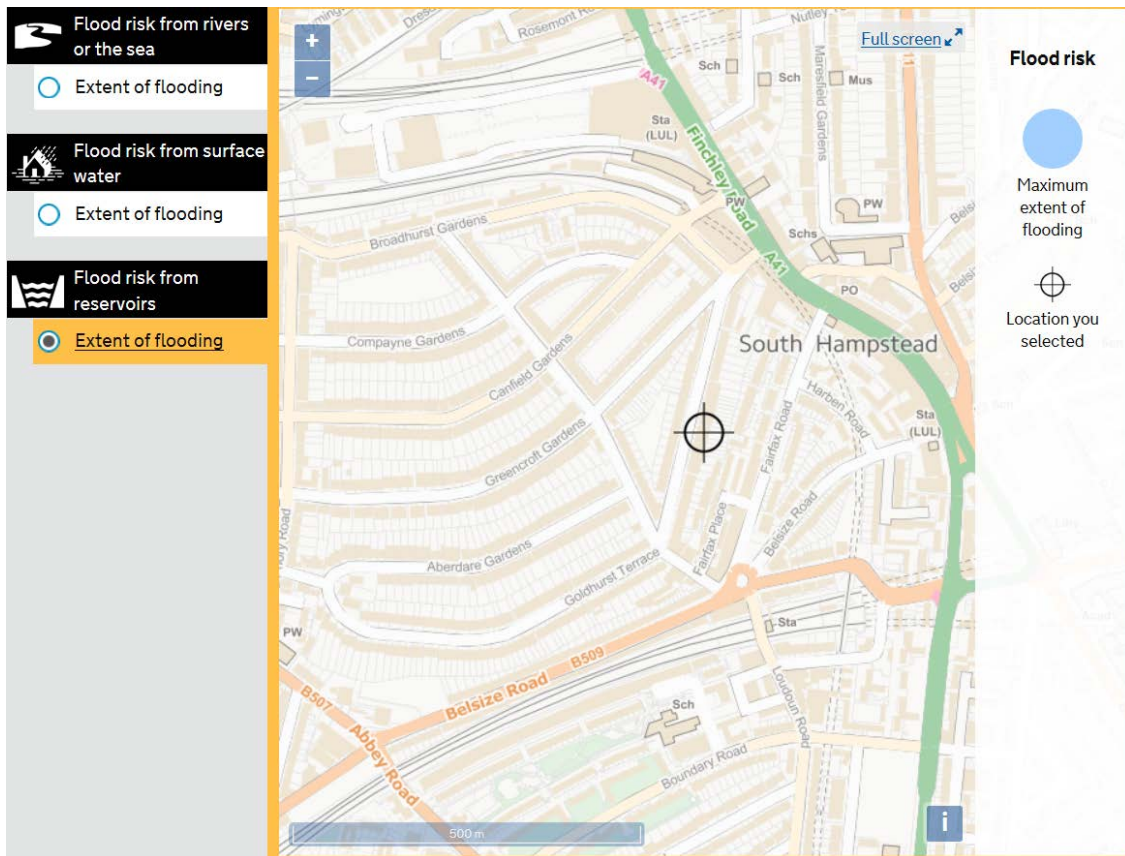


FIGURE 6

5. Basement Proposal

The proposal will comprise the followings works:

- Excavation of a basement and creation of a lightwells to the front and into the courtyard of the property
- Erection of a single storey side infill extension and the erection of a single storey rear extension to the property.
- Repositioning of the existing iron railings to the front of the property and works in connection to the new lightwell in front of the property.

The rear section of the basement will increase the area of hard surfacing slightly. It is believed that the potential impact of this increase on surface water run-off is likely to be negligible.



5.1 Mitigation measures

Access to the basement will be via the construction of a new staircase in the entrance hall.

The following flood proofing measures will be adopted to minimise the risk to the inhabitants and the property in the event of a flood:

All new foul & service water drainage is to connect into the existing foul pipework and into the existing mains foul drain running underneath the property and on to the mains Sewer running along Goldhurst terrace. The drainage to the lower levels will be via a pumped system to prevent any back flow from surcharged drainage in the road.

The new basement will be protected from flooding thanks to the integration of a Delta membrane waterproofing system. This system provides two pumps, one for the water coming from outside the membrane, from the soil, and one for the foul water drainage.

Escape can be achieved thanks to the new staircase that will connect the new lightwell in the courtyard of the house to the rear of the property or, if believed necessary, from a fixed ladder can be installed in the front lightwell.

The lower ground floor level will be closed in times of flooding and the internal access from the basement to the ground floor can be utilised should an evacuation be necessary.

the retaining walls around the lightwells will be provided with upstanding in order to prevent surface water from the adjoining areas from draining into the lightwells or will be set a slope to avoid any ingress inside the lightwells.

All the external doors in the lightwells will be raised, to the external lightwell floor of a height of minimum 150 mm.

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.

6. Summary

The flood risk associated with all other sources of flood risk is also assessed as low. The effects of climate change are not anticipated to change the risks to the site for the lifetime of the proposed residential development.

This assessment concludes that the basement development should not be precluded on flood risk grounds.

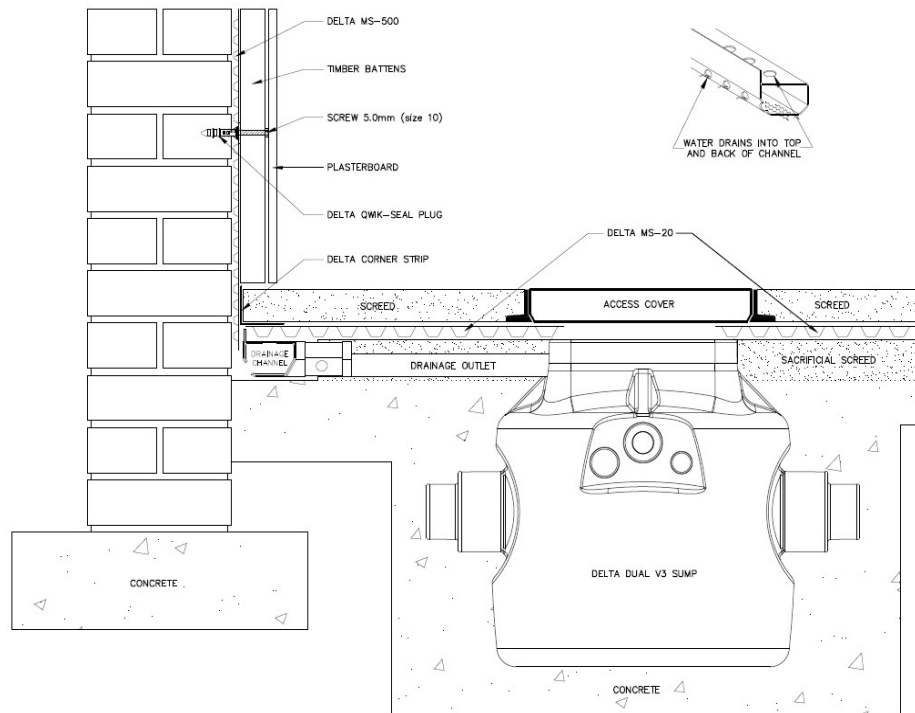


FIGURE 7 - TYPICAL WATERPROOFING DETAIL

Schematic drawing - not to scale

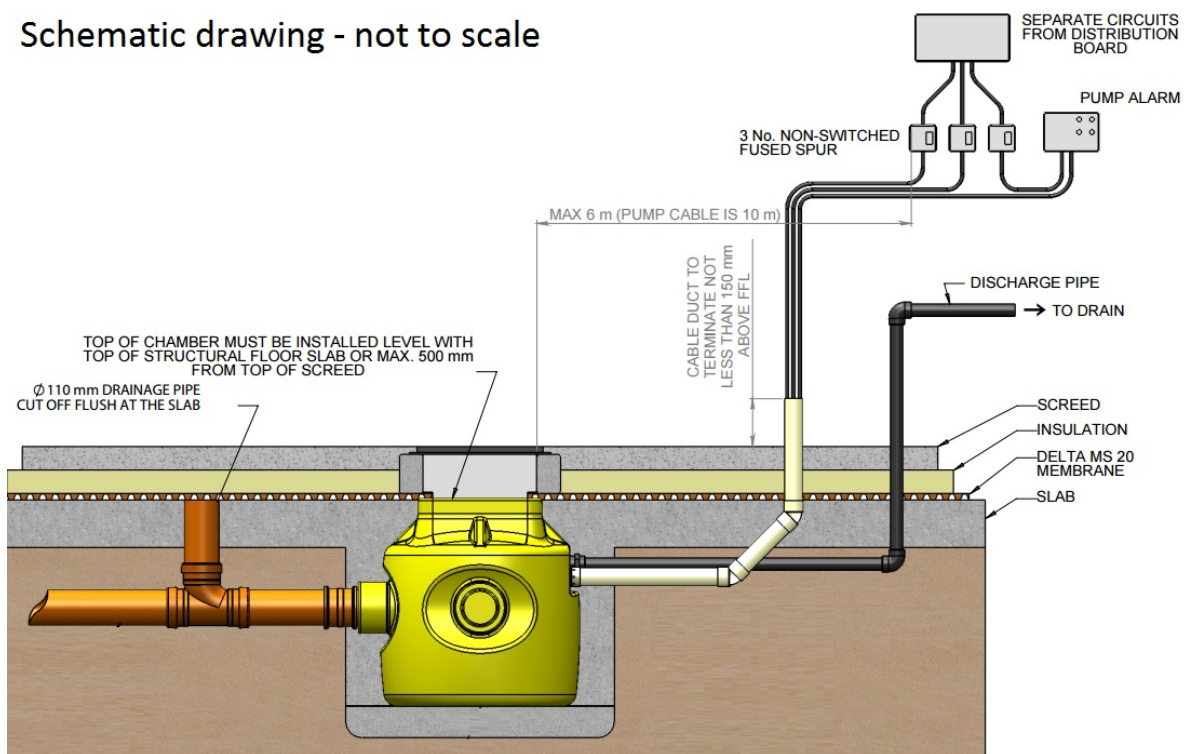


FIGURE 8 - TYPICAL PUMPING SCHEME