
Drainage Statement

**St George's Church Site, St George's
Road, Reading RG30 2RG**

For

**Stonewater
Unit C, Lancaster House
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Enderby Road
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1.0 Introduction

Michael Aubrey Partnership has been instructed to provide a statement in connection with the proposed drainage to St George's Church Site, St George's Road, Reading RG30 2RG.

The existing site comprises the church and church hall.

The intention is to demolish and replace the hall with housing and provide an extension to the church to form the ancillary space.

This statement aims to provide the outline principles which it is intended to adopt in respect of the drainage systems during the development and the permanent solution.

This statement has been prepared with limited information regarding the existing drainage system. A full survey will be undertaken at a later date.

2.0 Description of Building and Development Proposals

The existing site comprises a church building and church hall, with associated hard and soft landscaping.

Essentially the scheme comprises demolition of the church hall and erection of some apartments with a community extension being added to the church to replace the hall functionality.

The existing buildings are shown in the drawing contained within Appendix A. This drawing has been shaded and labelled with the existing impermeable areas (Blue Church; Orange impermeable surfacing; Green Hall Roof)

The proposed site layout is shown in Appendix B, and has been labelled with various areas (Blue Extended Church; Orange hard surfacing; Green New build residential). It is intended that the Orange area of hard landscaping (except the path at the east of the site) will be formed from PERMEABLE finishes, removing this area from the collected stormwater.

3.0 Existing Drainage

The existing drainage has not been fully investigated on site, but it appears that the existing stormwater is connected to the combined main sewers. It appears that the connection is in St George's Road to the west of the site.

4.0 Flood Risk

The site has been checked against the Environment Agency website and does not fall within the flood risk zones for flood risk from rivers, flood risk from reservoirs, flood risk from surface water or the flood warning zone.

The relevant map extracts are contained in Appendix C.

5.0 Effects of development as a whole

The public drainage system adjacent the site is a combined storm and foul system. As far as possible, separation will be maintained within the development site.

5.1 Stormwater

The problem with the site that has been identified by geotechnical advisers is that the shallow soils are clay and have very poor infiltration rates. At depth there is chalk.

This means that a shallow soakaway would be ineffective. A deep soakaway would create an unacceptable risk of solution features in the chalk below the site and also below adjacent sites as it would create new flows within the chalk. Neither of these scenarios is sensible and so the strategy adopted is to reduce the collected areas to ensure that the load on the existing main sewers is reduced and as an improvement is acceptable to Thames Water.

The stormwater peak volumes and peak flow rates have been calculated for the existing site and the proposed site, taking into account the reduced collection area through use of permeable finishes and also the 100 year storm plus 30%.

These calculations are included in Appendix D, but show that the existing flow rate of 17.8 l/s under the 100 year storm will reduce to 17.4 l/s under the 100 year storm with 30% allowance for climate change.

6.0 Summary

There is no flood risk at the site.

By managing the impermeable areas in the proposed scheme and continuing to use the connection to the sewers, the scheme will reduce stormwater load on the drainage system, even comparing the existing site with the proposed with 30% increase for climate change.

Signed: 

John M Staves BSc(Hons) CEng MStructE
For and on behalf of Michael Aubrey Partnership Ltd

Date: 13 May 2016

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Appendix A - Existing Scheme Drawing

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Figure 1: Existing Layout and Impermeable Areas

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Appendix B - Proposed Scheme Drawing



Figure 2: Proposed layout and areas

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Appendix C - Flood Maps

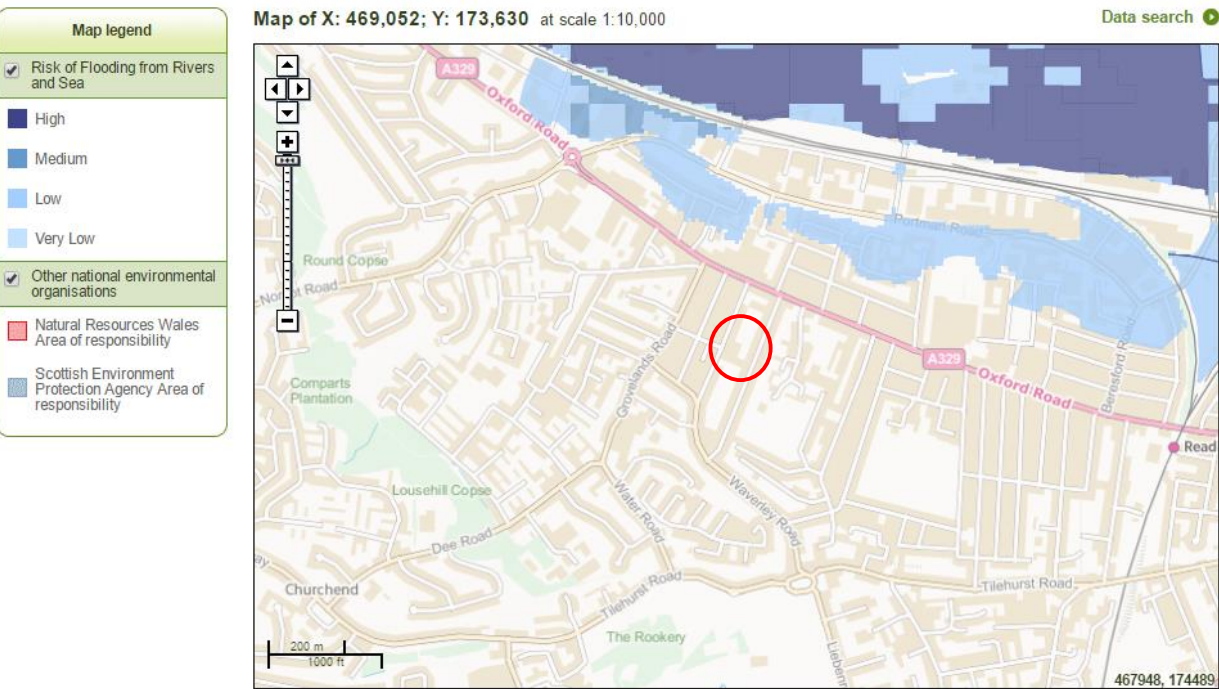


Figure 3: Rivers and Sea Flood Map

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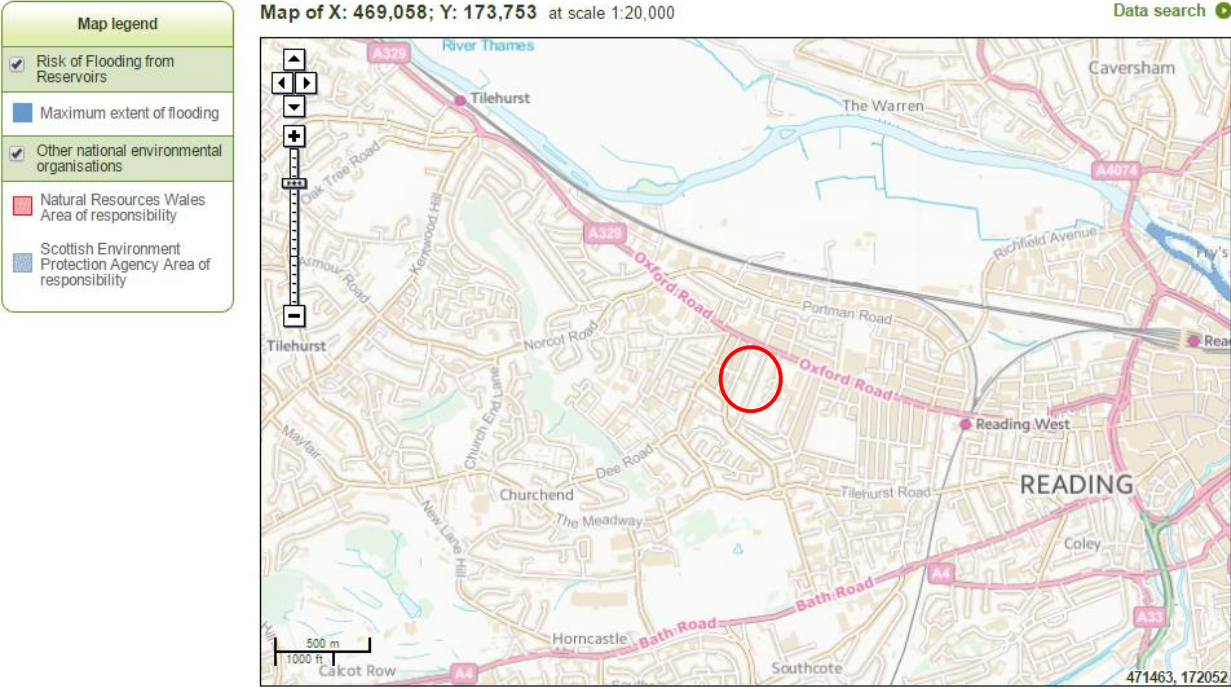


Figure 4: Flooding from Reservoirs

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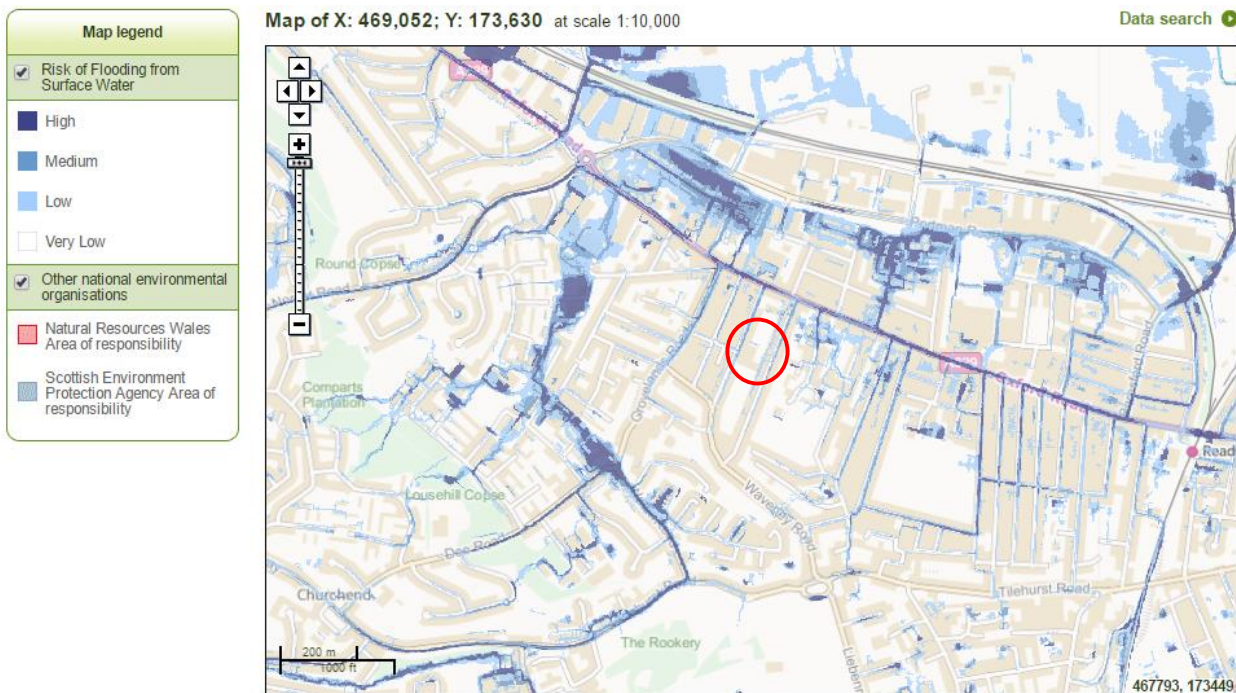


Figure 5: Flood From Surface Water

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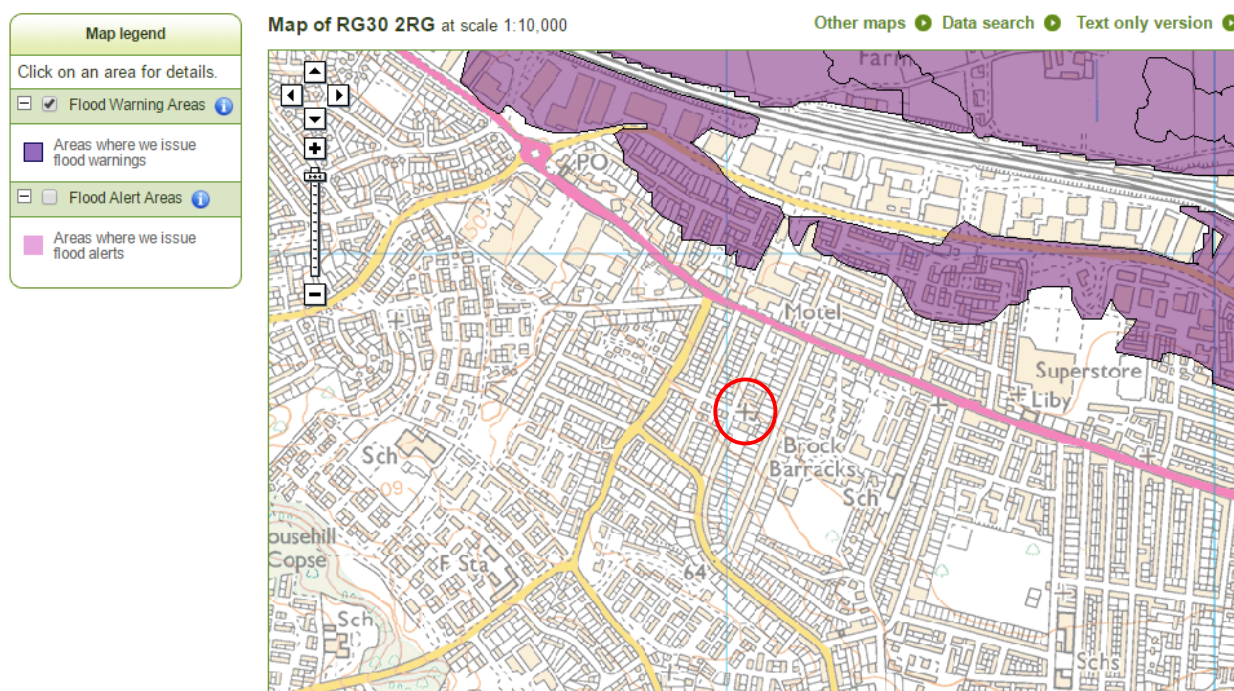


Figure 6: Flood Warnings

Appendix D - Peak Flow Stormwater Calculations

EXISTING

Site total area is 3093m² and existing impermeable area is 1582m².

Design rainfall in accordance with the Wallingford Procedure

Tedds calculation version 2.0.00

Design rainfall intensity

Location of catchment area;	London
Storm duration;	D = 1 hr
Return period;	Period = 100 yr
Ratio 60 min to 2 day rainfall of 5 yr return period;	r = 0.440
5-year return period rainfall of 60 minutes duration;	M5_60min = 20.0 mm
Increase of rainfall intensity due to global warming;	p _{climate} = 0 %
Factor Z1 (Wallingford procedure);	Z1 = 1.00
Rainfall for 1hr storm with 5 year return period;	M5_1hr _i = Z1 × M5_60min = 20.0 mm
Factor Z2 (Wallingford procedure);	Z2 = 2.03
Rainfall for 1hr storm with 100 year return period;	M100_1hr = Z2 × M5_1hr _i = 40.6 mm
Design rainfall intensity;	I _{max} = M100_1hr / D = 40.6 mm/hr

Maximum surface water runoff

Catchment area;	A _{catch} = 3093 m ²
Percentage of area that is impermeable;	p = 51 %
Maximum surface water runoff;	Q _{max} = A _{catch} × p × I _{max} = 17.8 l/s

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PROPOSED WITH ROAD AS PERMEABLE BUT WITH BIN STORE, CYCLE SHED AND EXISTING ACCESS PATH IMPERMEABLE

Site total area is 3093m² and proposed impermeable area is 1218m².

Design rainfall in accordance with the Wallingford Procedure

Tedds calculation version 2.0.00

Design rainfall intensity

Location of catchment area;	London
Storm duration;	D = 1 hr
Return period;	Period = 100 yr
Ratio 60 min to 2 day rainfall of 5 yr return period;	r = 0.440
5-year return period rainfall of 60 minutes duration;	M5_60min = 20.0 mm
Increase of rainfall intensity due to global warming;	p _{climate} = 30 %
Factor Z1 (Wallingford procedure);	Z1 = 1.00
Rainfall for 1hr storm with 5 year return period;	M5_1hr _i = Z1 × M5_60min × (1 + p _{climate}) = 26.0 mm
Factor Z2 (Wallingford procedure);	Z2 = 2.00
Rainfall for 1hr storm with 100 year return period;	M100_1hr = Z2 × M5_1hr _i = 52.1 mm
Design rainfall intensity;	I _{max} = M100_1hr / D = 52.1 mm/hr

Maximum surface water runoff

Catchment area;	A _{catch} = 3093 m ²
Percentage of area that is impermeable;	p = 39 %
Maximum surface water runoff;	Q _{max} = A _{catch} × p × I _{max} = 17.4 l/s