5.11 **Exception Test**

5.11.1 The aim of the Exception Test is to demonstrate that potential development gives rise to wider sustainability benefits to the local community that outweigh the risk of flooding, and that the proposed development will be safe and not increase the risk of flooding elsewhere as set out in Paragraph 102 of the National Planning Policy Framework.

5.11.2 The proposed development offers the opportunity to provide additional residential accommodation in Barnes which is considered to provide a benefit to the local community that outweighs the risk of flooding.

5.11.3 Further to this no basement accommodation is proposed, and there will be no increase to the number of residential units at ground floor level.

5.11.4 It is therefore considered that the first part of the Exception Test is passed.

5.11.5 This Flood Risk Assessment takes into account the vulnerability of users, demonstrates that the development will be safe for its lifetime, and that the proposal will not increase the off-site risk of flooding. The proposed development therefore passes the second part of the Exception Test.

5.11.6 Both parts of the Exception Test are therefore passed, thus the proposed development is considered acceptable when considered against the Exception Test.

5.12 In line with local and national requirements SuDS systems will be introduced as part of the development, with permeable paving to be used on all external access areas being resurfaced. This will ensure that surface water discharge rates and volumes are reduced below existing levels.

5.13 Infiltration testing will also take place once conditional planning permission has been granted and if acceptable infiltration rates are obtained surface water from the permeable paving will be discharged via infiltration to the ground. If infiltration testing shows discharge via infiltration is not feasible then attenuation will be provided in the base of permeable paving to restrict discharge rates to the surface water sewer network below existing discharge rates.

5.14 As a minor development of less than 10 residential dwellings it is appropriate to apply a surface water drainage condition to any planning permission granted requiring full details of the surface water drainage design to be provided at the conditional discharge stage.

5.15 The proposal will have no adverse impact upon flood risk to the surrounding area but a beneficial impact by the reduction in surface water discharge rates.

5.16 Foul drainage will continue as at present.

6 Conclusion

6.1 The proposal involves alterations to the existing building at 67-69 Barnes High Street, Richmond upon Thames to increase the number of residential units from 3 to 7.

6.2 The site is shown as lying within the natural flood plain of the River Thames, however Environment Agency breach modelling indicates that at levels of about 5.4m AOD the site would remain dry during fluvial and tidal breach event on the River Thames in 2100 in which water levels would likely be about 5.3m AOD. As such it is considered unlikely that the site will flood under any circumstances.

6.3 Both the Sequential Test and Exception Test would be passed by the proposed development as detailed in Sections 5.12 and 5.13 respectively.

6.4 All ground floor levels will remain at existing levels which are about 100mm higher than the anticipated water level in the vicinity of the site in a breach event on the River Thames, thus will ensure the units and occupants are adequately protected and no flood resistant or resilient construction is required.

6.5 The existing commercial units will be subject to only minor alterations and the floor levels will remain at existing, which at 5.4m AOD is above the modelled breach water level of 5.3m AOD.

6.6 Dry access will be maintained to and from the site in all events other than a breach event in 2100 in which shallow flooding of surrounding roads may be present. The units themselves would provide a safe refuge for any occupant unable to safely exit the site during such an event.

6.7 Permeable paving which is a SuDS system will be used on all areas of external surfacing being resurfaced as part of the works. This will allow discharge rates to be reduced below existing rates and provide a benefit to the off-site risk of flooding.

6.8 Infiltration testing will also be carried out as part of the detailed drainage design and if acceptable rates are achieved discharge of surface water from permeable paving will be to the ground rather than the existing surface water network. Even if infiltration raters are too low to permit this the attenuation provided in the permeable paving will reduce discharge rates below existing.

6.9 Provision of full detailed surface water drainage design will be secured by condition imposed upon any planning approval granted.

6.10 Foul drainage will continue as at present.

6.11 There are no flood risk or drainage related grounds under The National Planning Policy Framework on which to object to the proposed alterations and extensions to number 67-69 Barnes High Street, Richmond upon Thames provide four additional residential units.

APPENDIX 1

SITE LOCATION PLAN

1:1250

0 | 12.5 | 25 | 37.5 | 50

KEY

APPLICATION BOUNDARY

1:1250 LOCATION PLAN

N

REVISION	NOTE	DATE	DRAWN

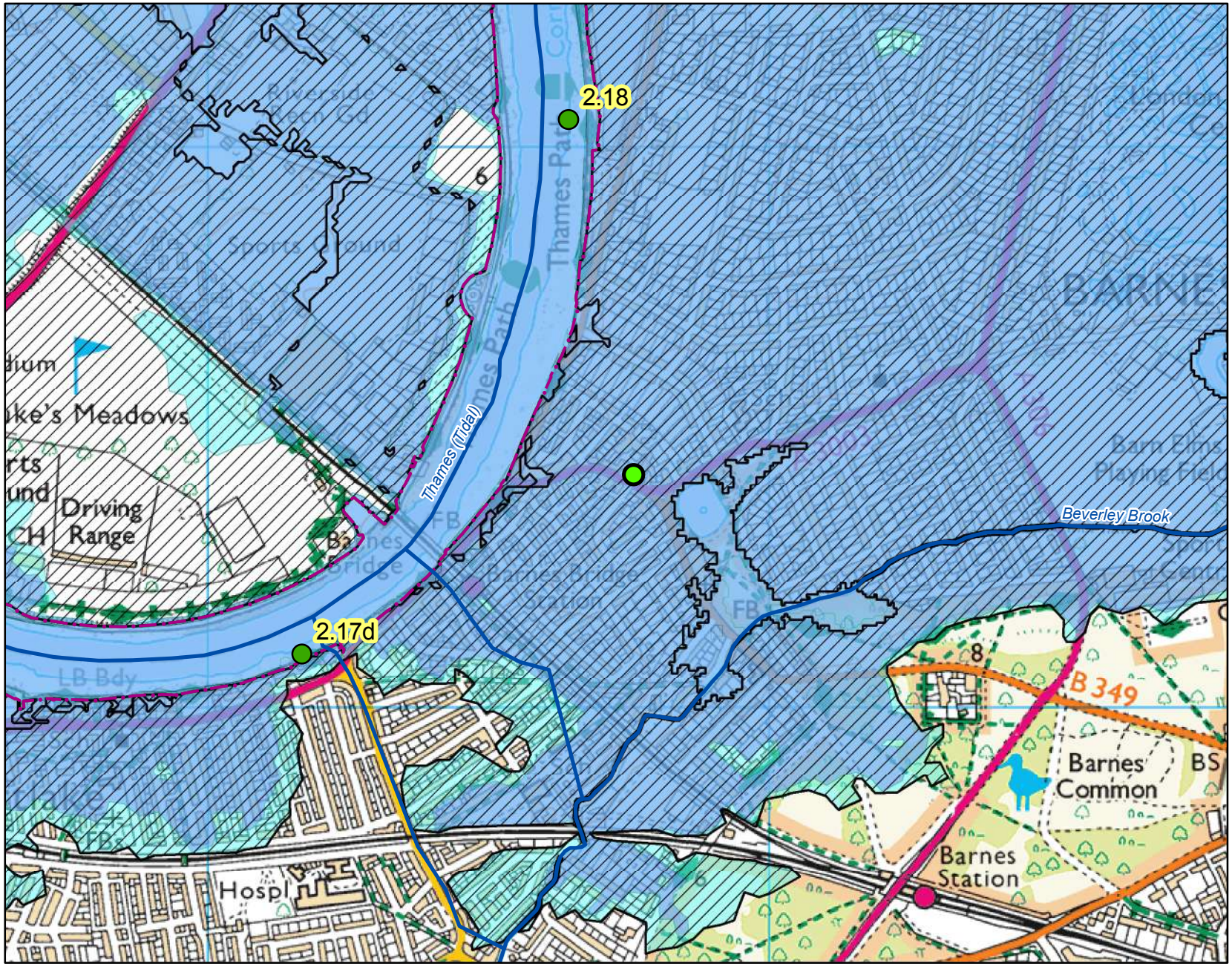
architecture initiative
4 John Prince's Street, London, W1G 0JL
architectureinitiative.com

PROJECT	67-69 BARNES HIGH STREET
DRAWING TITLE	LOCATION PLAN
DATE	SEPT 17
SCALE	1:1250 @A3
DRAWN	JH
CHECK	CS
STATUS	PLANNING
JOB NUMBER	AI - 2296
DRAWING NUMBER	BRN - 001
REV	

APPENDIX 2

ENVIRONMENT AGENCY FLOOD MAP FOR PLANNING

Detailed FRA Map centred on SW13 9LW created 09/08/2017 [Ref: KSL 56153 UE]



Environment Agency

Scale 1: 10,000

Legend

- Main Rivers
- Site
- TE2100 Model Nodes
- Flood Map - Defences
- Flood Map - Flood Storage Areas
- Areas Benefitting from Flood Defences
- Flood Map - Flood Zone 3
- Flood Map - Flood Zone 2

Flood Map for Planning (assuming no defences)

Flood Zone 3 shows the area that could be affected by flooding:
- from the sea with a 0.5% or greater chance of occurring each year
- or from a river with a 1% or greater chance of occurring each year.

Flood Zone 2 shows the extent of an extreme flood from rivers or the sea with up to a 0.1% chance of occurring each year.

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

APPENDIX 3

ENVIRONMENT AGENCY MODELLED FLOOD, DEFENCE, AND BREACH DATA

Product 4 (Detailed Flood Risk) for: 68-69 Barnes High Street, Barnes, London SW13 9LW
Requested by: Emily Fell
Reference: KSL 56153 UE
Date: 09/08/2017

Contents

The information provided is based on the best data available as of the date of this letter.

You may feel it is appropriate to contact our office at regular intervals, to check whether any amendments/ improvements to the data for this location have been made. Should you re-contact us after a period of time, please quote the above reference in order to help us deal with your query.

Please refer to the Open Government Licence which explains the permitted use of this information.

Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH.
Customer services line: 01732 223 202
Email: kslenquiries@environment-agency.gov.uk
Website: https://www.gov.uk/government/organisations/environment-agency

Flood Map for Planning (Rivers and Sea)

The Flood Map:

Our Flood Map shows the natural floodplain for areas at risk from river and tidal flooding. The floodplain is specifically mapped ignoring the presence and effect of defences. Although flood defences reduce the risk of flooding they cannot completely remove that risk as they may be over topped or breached during a flood event.

The Flood Map indicates areas with a 1% (0.5% in tidal areas), Annual Exceedance Probability (AEP) - the probability of a flood of a particular magnitude, or greater, occurring in any given year, and a 0.1% AEP of flooding from rivers and/or the sea in any given year. In addition, the map also shows the location of some flood defences and the areas that benefit from them.

The Flood Map is intended to act as a guide to indicate the potential risk of flooding. When producing it we use the best data available to us at the time and also take into account historic flooding and local knowledge. The Flood Map is updated on a quarterly basis to account for any amendments required. These amendments are then displayed on the internet at https://www.gov.uk/check-flood-risk

At this Site:

The Flood Map shows that this site lies within the outline of Flood Zone 3. This zone comprises land assessed as having a 0.5% (1 in 200) or greater annual probability of tidal flooding.

Enclosed is an extract of our Flood Map which shows this information for your area.

Method of production

The Flood Map at this location has been derived using detailed modelling of the tidal River Thames through the Thames Tidal Defences Study completed in 2006 by Halcrow Ltd.

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Thames Estuary 2100 (TE2100)

You have requested in-channel flood levels for the tidal river Thames. These have been taken from the Thames Estuary 2100 study completed by HR Wallingford in 2008. The modelled node closest to your site is **2.17d**; the locations of nearby nodes are also shown on the enclosed map.

Details about the TE2100 plan

The TE2100 plan is now live and within it are a set of levels on which the flood risk management strategy is based. The plan is the overarching flood management strategy for the Thames Estuary and therefore any development planning should be based on the same underlying data.

Details about the TE2100 in-channel levels

The TE2100 in-channel levels take into account operation of the Thames Barrier when considering future levels. The Thames Barrier requires regular maintenance and with additional closures the opportunity for maintenance will be reduced. When this happens, river levels – for which the Barrier would normally shut for the 2008 epoch – will have to be allowed through to ensure that the barrier is not shut too often. For this reason, levels upriver of the barrier will increase and the tidal walls will need to be heightened to match.

Why is there no return period for levels upriver of the barrier?

The levels upriver of the barrier are the highest levels permitted by the operation of the Thames Barrier. If levels and flows are forecast to be any higher, the Thames Barrier would shut, ensuring that the tide is blocked and the river maintained to a low level. For this reason the probability of any given water level upriver of the Barrier is controlled and therefore any associated return period becomes irrelevant. The Thames Barrier and associated defence system has a 1 in 1000 year standard which means it ensures that flood risk is managed up to an event that has a 0.1% annual probability. The probability of water levels upriver is ultimately controlled by the staff at the Thames Barrier.

For further information about the Thames Barrier please visit our website at:

https://www.gov.uk/the-thames-barrier

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TE2100 2008 levels:

Levels downriver of the Thames Barrier are 0.1% AEP (1 in 1000) and levels upriver are the highest levels permitted by the Thames Barrier, described as the Maximum Likely Water Levels (MLWLs). The defence levels (left defence, right defence) are the minimum levels to which the defences should be built.

Location	Node	Easting	Northing	Extreme water level (m)	Left defence (m)	Right defence (m)	Allow for future defence raising to a level of...	
							Left Bank (m)	Right Bank (m)
Brentford	2.15	519775	177281	5.29	5.94	5.94	6.70	6.70
	2.17	521099	176083	5.17	5.94	5.94	6.70	6.70
	2.18	521644	177047	5.04	5.54	5.94	6.40	6.40
	2.18a	521776	177707	5.04	5.54	5.94	6.40	6.40

TE2100 climate change levels:

				2065 to 2100		**2100**	
Location	Node	Easting	Northing	Design water level	Defence level (both banks)	Design water level	Defence level (both banks)
Brentford	2.15	554507	178325	5.62	6.25	6.07	6.70
	2.17	521099	176083	5.55	6.25	6.00	6.70
	2.18	521644	177047	5.50	6.25	5.94	6.70
	2.18a	521776	177707	5.50	5.95	5.94	6.40

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Thames Tidal Upriver Breach Inundation Modelling - 2017

The table below displays site-specific modelled flood levels at your site. These have been taken from the Thames Tidal Upriver Breach Inundation Modelling Study 2017 completed by Atkins Ltd. in May 2017.

We have developed a modelling approach where all upriver breach locations along the Thames are equitably modelled, to ensure a consistent approach across London. This modelling simulates 5679 continuous tidal breaches along the entire extent of the Thames from Teddington to the Thames Barrier. For hard and composite defences breaches are set at 20 m wide; for soft defences, breaches are 50 m wide. In both cases, the defence breach scour distance was assumed to extend into the floodplain by the same distance as the breach width.

For breaches upriver of the Thames Barrier, there is no return period for modelled levels as the levels are controlled by barrier closures. The levels used are referred to as Maximum Likely Water Levels (MLWLs). Therefore 2014 and 2100 epochs were modelled on that basis.

This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites within London.

	National Grid Reference		Modelled levels in mAODN for Max Likely Water Level	
Node	**Easting**	**Northing**	**2014**	**2100**
1	521705	176427	Nil Return	5.59
2	521733	176413	Nil Return	5.55
3	521735	176377	Nil Return	5.28
4	521761	176400	Nil Return	5.30
5	521802	176390	Nil Return	5.19
6	521784	176420	4.83	5.26
7	521761	176451	Nil Return	5.30

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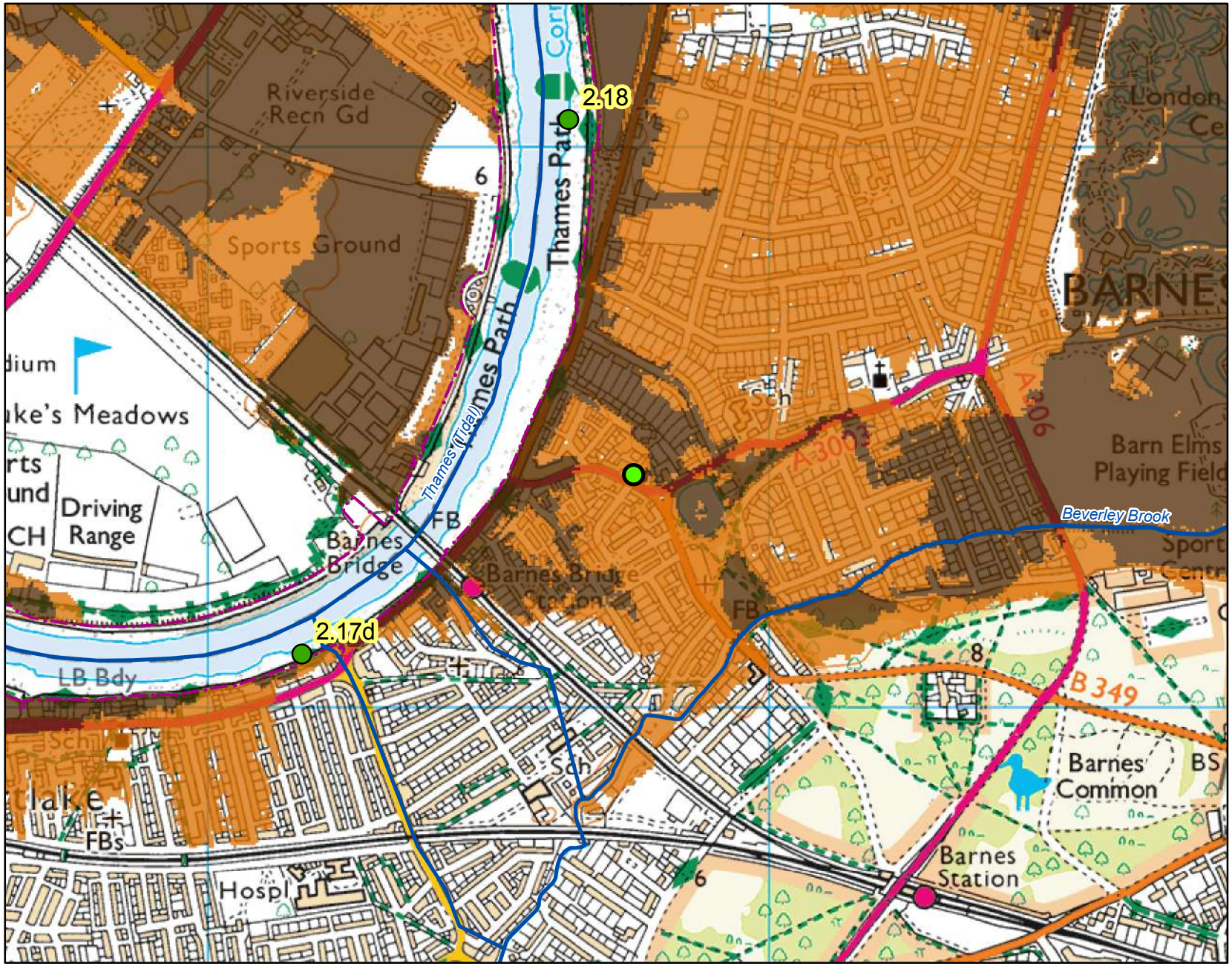
Breach Inundation Modelling Map centred on SW13 9LW created 09/08/2017 [Ref: KSL 56153 UE]



Environment Agency

Scale 1: 10,000

N W E S

Legend

- Main Rivers
- Site
- TE2100 Model Nodes
- Flood Map - Defences

Upriver MLWL Breach Inundation

Epoch

- 2014
- 2100

Thames Tidal Upriver Breach Inundation Modelling 2017

A modelled representation of all upriver tidal breach locations along the Thames from Teddington to the Thames Barrier, based on low floodplain topography. For hard and composite defences breaches are set at 20 m wide; for soft defences, breaches are 50 m wide. In both cases, the defence breach scour distance was assumed to extend into the floodplain by the same distance as the breach width.
The modelling is based on the 2008 TE2100 in-channel levels, with an allowance for climate change for epoch 2100.

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