

URS

Lambeth Borough Council Sequential Test

Final Report

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TABLE OF CONTENTS	1	INTRODUCTION	1
	1.1	Background	1
	1.2	The Sequential Test	1
	2	POTENTIAL DEVELOPMENT SITES.....	3
	2.1	Lambeth Borough Study Area.....	3
	2.2	Policy Review	3
	3	FLOOD RISK IN LAMBETH	9
	3.2	Tidal Flooding	9
	3.3	Fluvial Flooding	9
	3.4	Surface Water	10
	3.5	Sewer Flooding	11
	3.6	Groundwater Flooding	11
	3.7	Artificial Flood Sources	12
	3.8	Flood Summary Sheets	12
	3.9	Mapping of Flood Risk from Sewers.....	13
	4	SEQUENTIAL TEST.....	34
	4.2	Summary.....	37
	5	EXCEPTION TEST	38
	5.2	Part a) Wider Sustainability to the Community	38
	5.3	Part b) Safe from Flood Risk	39
	6	WINDFALL SITES.....	42
	7	CONCLUSIONS AND RECOMMENDATIONS.....	43
	7.1	The Sequential Test.....	43
	7.2	Windfall Sites	43
	7.3	Recommendations.....	43
		APPENDIX A – FIGURES	44
		APPENDIX B – ENVIRONMENT AGENCY CORRESPONDENCE .	45
		REFERENCES.....	46

Table of Tables

Table 3.1: Environment Agency records of Flooding on the River Graveney	10
Table 3.2: Data supplied by stakeholders	12
Table 3.3: Allocated Sites for development identified in LB Lambeth Draft Local Plan	32
Table 5.1: Criteria from LB Lambeth Sustainability Appraisal	38
Table 5.2: Ranking of sites based on flood risk.....	41

1 INTRODUCTION

1.1 Background

- 1.1.1 The London Borough (LB) of Lambeth is currently preparing their Draft Local Plan which, once adopted, will replace the existing Core Strategy (CS)¹ and Unitary Development Plan (UDP)². When completed the LB Lambeth Draft Local Plan will present the vision for development within the borough.
- 1.1.2 The aim of this document is to apply the Sequential Test to the Local Plan Allocated Sites for development within Lambeth to ensure that development is directed towards areas of low flood risk first.
- 1.1.3 This document has been structured in the following way:
- Review of national, regional and local policy regarding the regeneration and development options and aims proposed for Lambeth;
 - Identification of sources of flood risk present in Lambeth, informed by existing strategic assessments, primarily the Lambeth Strategic Flood Risk Assessment (SFRA) 2013³ and Surface Water Management Plan (SWMP)⁴ 2011;
 - Application of the Sequential Test to Allocated Sites for development in Lambeth identified in the LB Lambeth Draft Local Plan (November 2013);
 - Identification of areas which may require application of the Exception Test;
 - Identification of the procedure for applying the Sequential Test to windfall sites.

1.2 The Sequential Test

- 1.2.1 The National Planning Policy Framework⁵ (NPPF) and its accompanying Technical Guidance⁶ sets out the government's policy on flood risk. Its overall aims are to ensure that flood risk is taken into account at all stages of the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas of highest risk. Where new development is, exceptionally, necessary in such high risk areas, policy aims to make it safe without increasing flood risk elsewhere and, where possible, reducing flood risk overall.
- 1.2.2 The Sequential Test is the tool employed by the Local Planning Authority when allocating land for development. The test should demonstrate that there are no reasonably available alternative sites for development within the local authority area, classified as having a lower probability of flooding when compared to the site in question. The areas under comparison must be appropriate to the types of development or land use proposed in relation to the NPPF.
- 1.2.3 When allocating sites for development, preference should be given to sites in Flood Zone 1. If there are 'no reasonably available sites in Flood Zone 1, the flood vulnerability of the proposed development can be taken into account in locating development in Flood Zone 2 and then Flood Zone 3' sequentially. Within each Flood Zone 'new development should be directed to sites at the lowest probability of flooding from all flood sources'.
- 1.2.4 For sites that partially lie in flood zones defined as 'high probability flooding' it can be possible to direct development to specific parts of the site that are at lower risk. The NPPF outlines that within each flood zone, new development should be directed first to sites at the lowest probability of flooding and the flood vulnerability of the intended use matched to the flood risk of the site e.g. higher vulnerability uses located on parts of the site at lowest probability of flooding.
- 1.2.5 In some situations it may be necessary to situate some form of development on land identified to be at risk of flooding. The Sequential and Exception Tests aim to limit damage resulting from flooding to land, people and property.

- 1.2.6 Due to the nature of flood risk in Lambeth, and the reality that many of the potential allocation sites in the north of the borough are located within Flood Zone 3a being at a residual risk of tidal flooding, the data source for application of the Sequential Test in this case will be expanded to include all sources of flood risk.
- 1.2.7 In accordance with the guidance set out in the NPPF and using the Lambeth Strategic Flood Risk Assessment (SFRA) and Surface Water Management Plan (SWMP), the Sequential Test has been applied to all sites identified in the Local Plan.

2 POTENTIAL DEVELOPMENT SITES

2.1 Lambeth Borough Study Area

- 2.1.1 Lambeth covers an area of 27km² and had an approximate population of 303,100 in 2011. It is situated adjacent to the south bank of the River Thames. The northern-most section of the borough is located within London's Central Activities Zone.
- 2.1.2 The Waterloo and Vauxhall areas have been identified as Opportunity Areas for growth within the borough by the London Plan⁷, with Vauxhall located within the Vauxhall, Nine Elms, Battersea Opportunity Area. Brixton and Streatham have been identified as Major Town, which will also be a focus for development.
- 2.1.3 The borough has undergone considerable change and development in the recent years and LB Lambeth are keen to see this transformation continue as further areas undergo regeneration. Under the London Plan the borough as a whole has been allocated for 11,950 new homes between 2011 and 2021.

2.2 Policy Review

- 2.2.1 A review has been undertaken of national, regional and local policy relating to Lambeth to provide an appreciation of the aims for the borough with respect to future development and regeneration.

National

National Planning Policy Framework (2012)

- 2.2.2 The NPPF sets out the government policy towards flood risk, and the guidance in relation to the Sequential Test has been discussed in Section 1.2.

Regional

The London Plan (2011)

- 2.2.3 Table 1.1 – Projected growth in employment in Lambeth for the period of 2011-2031 is 16,000 jobs.
- 2.2.4 Policy 2.11: Central Activities Zone: Strategic Functions – ‘The Mayor will, and boroughs and other relevant agencies should...enhance the environment of strategic cultural areas along the South Bank’
- 2.2.5 Policy 2.13, Table A1.1 Opportunity Areas and Intensification Areas - Vauxhall, Nine Elms and Battersea Opportunity Area and Waterloo Opportunity Area are identified, representing major reservoirs of brownfield land, not only within Lambeth Borough but within London as a whole. There is an aim to encourage realisation of the areas' potential for growth and intensification. The sites should 'contribute towards meeting (or where appropriate, exceeding) the minimum guidelines for housing and/or indicative estimates for employment capacity set.'
- 2.2.6 The Waterloo Opportunity Area has been identified as having an indicative employment capacity of 15,000 with a minimum requirement of 1,900 new homes by 2031. 'The Area provides opportunities for intensification of commercial, residential and cultural facilities associated with a major transport hub, a major office location and a Strategic Cultural Area (see Policy 4.6). There is potential to enhance the South Bank.' Waterloo railway station is identified as a long-term site for major development.
- 2.2.7 The Vauxhall, Nine Elms, Battersea Opportunity Area has been identified as having an indicative employment capacity of 15,000 with a minimum requirement of 10,000 new homes by 2031, with 8,000 new jobs and 3,500 new homes specifically within Vauxhall.

- 2.2.8 Policy 2.14 Areas for regeneration – There are a number of regeneration areas located within Lambeth. ‘Within the areas for regeneration...the Mayor will work with strategic and local partners to co-ordinate their sustained renewal by prioritising them for neighbourhood-based action and investment.’
- 2.2.9 Policy 2.15, 4.7, 4.8, Table A2.1: Town Centres – Brixton and Streatham are identified as Major Town Centres, and Clapham High Street, Stockwell and West Norwood/Tulse Hill identified as District Town Centres. These areas should be ‘the main foci beyond the Central Activities Zone for commercial development and intensification, including residential development’. ‘The Mayor will, and boroughs and other stakeholders should, support a successful, competitive and diverse retail sector.’
- 2.2.10 Table 3.1 – Targets of at least 11,950 additional dwellings in Lambeth 2011-2021 are set, with an annual minimum of 1,195. ‘Boroughs should identify and seek to enable development capacity to be brought forward to meet these targets having regard to the other policies of this Plan and in particular the potential to realise brownfield housing capacity through the spatial structure it provides including: intensification, town centre renewal, opportunity and intensification and growth corridors, mixed-use redevelopment, sensitive renewal of existing residential areas.
- 2.2.11 Policy 4.6: Support for and enhancement of arts, culture, sport and entertainment provision - ‘The Mayor will, and boroughs and other stakeholders should, support the continued success of London’s diverse range of arts, cultural, professional sporting and entertainment enterprises and the cultural, social and economic benefits that they offer to its residents, workers and visitors...Developments should: fulfil the sequential approach and where necessary, complete an impact assessment’
- 2.2.12 Table 6.1: Indicative list of transport schemes - Northern line Kennington to Battersea to support the regeneration of the Vauxhall/Nine Elms/Battersea area.
- The London Strategic Housing Land Availability Assessment Greater London Authority and Housing Capacity Study (SHLAA/HCS) 2009⁸**
- 2.2.13 The SHLAA identifies prospective housing sites for development within London, providing an indication of the potential for housing and a likely timeframe for development. Within the SHLAA study 94 sites in Lambeth are identified for potential housing development. All 18 sites proposed within the LB Lambeth Local Plan were included in the Study, with the exception of the following sites;
- Site 3: Vale Street Depot, Vale Street
 - Site 4: New Park Road
- [Local](#)
- Draft London Borough of Lambeth Local Plan Proposed Submission Document (November 2013)**
- 2.2.14 LB Lambeth is currently preparing their Draft Local Plan which, once adopted, will replace the existing Core Strategy (CS) and Unitary Development Plan (UDP). The new LB Lambeth Local Plan will be a partial review of the Council’s CS which was adopted in 2011 after extensive consultation. The new Local Plan will reflect recent national, regional and local policies, such as the NPPF.
- 2.2.15 When completed the LB Lambeth Draft Local Plan will present the vision for development within the borough. The document also presents planning policies with implementation and monitoring details about how the vision and objectives will be delivered. LB Lambeth aim to adopt the finalised Plan early in 2015. The Local Plan is currently available in draft format.

- 2.2.16 The main components of the Draft Local Plan are as follows:
- Evidence base and issues
 - Spatial Strategy, Vision and Strategic Objectives
 - Delivering the Vision and Objectives
 - Housing
 - Economic Development, Retail and Town Centre Uses
 - Social Infrastructure
 - Transport and Communications
 - Environment and green infrastructure
 - Quality of the built environment
 - Places and Neighbourhoods
- 2.2.17 The Draft Local Plan emphasises Lambeth’s high population density in comparison with other London boroughs, and the resultant high level of competition for land to meet a range of development needs.
- 2.2.18 The Draft Local Plan complements the London Plan, Vauxhall, Nine Elms, Battersea Opportunity Area Planning Framework and local Spatial Planning Documents in identifying the Waterloo and Vauxhall Opportunity Areas for significant potential commercial and residential growth, in addition to continued growth of town centres within the Borough.
- Relevant Local Plan Policies**
- 2.2.19 Policy H1 – Maximising housing growth - ‘The Council will seek to maximise the supply of additional homes in the borough to meet and exceed the annual housing target for Lambeth as set out in the London Plan for the period 2015/16 to 2030/31 by:
- (i) Working with relevant partners to take full advantage of opportunities to deliver sustainable new housing, and in particular maximise the delivery of affordable housing, including through estate renewal and regeneration strategies.
 - (ii) Supporting development proposals that provide a mix of housing types and tenures to meet current and future housing need and accord with applicable policies set out in the development plan.
 - (iii) Seeking levels of residential density consistent with London Plan guidelines, having regard to the provision of other uses on the site, availability of local services, access to and capacity of public transport, urban design context, quality of design and impact on existing and future residents and the local environment.’
- 2.2.20 Policies E1-E14 set out the spatial approach to economic development, with a focus on Key Industrial and Business Areas (KIBAs), the London Plan Central Activities Zone, London Plan Opportunity Areas and Town Centres. Cultural value within these areas will be encouraged through protection and enhancement of cultural and leisure facilities.
- 2.2.21 Large office space, of above 1000m² will be accommodated in the CAZ, Vauxhall and Waterloo London Plan Opportunity Areas and Brixton and Streatham major town centres.
- 2.2.22 Development within Lambeth’s major, district and local centres and Lower Marsh / The Cut CAZ frontage will be encouraged, whilst maintaining the existing functions and character of the areas, through integration of new development with existing land uses.

- 2.2.23 Policies S1-S3 provide a commitment to safeguard and improve social infrastructure within the borough which includes public spaces, recreation, emergency service and educational facilities. The Local Plan estimates that an additional 5,040 primary school and 3,108 secondary school places will be required by 2021 and 2017 respectively.
- 2.2.24 Policy EN5 – Flood Risk commits to directing development to areas of lowest flood risk, ensuring that a sequential, risk-based approach to location of development is followed, in line with the NPPF.
- 2.2.25 Policy T4 – Public Transport Infrastructure - A series of infrastructure improvements are outlined in order to enhance public transport connectivity and capacity, helping to support development within the borough. Proposed infrastructure developments include the Northern Line extension to Battersea Power Station via Nine Elms, improvements to Waterloo and Vauxhall stations, new Overground station stops at Brixton and Loughborough Junction, extension of the Croydon Tramlink to Crystal Palace and Streatham as well as other additional works.

London Borough of Lambeth Core Strategy (2011)

- 2.2.26 The current LB Lambeth Local Plan consists of the Core Strategy and Unitary Development Plan (UDP). The Core Strategy sets out relevant policy at national, regional and local scales, the spatial strategy, vision and strategic objectives for the borough, as well as the relevant supporting evidence base. When adopted, the LB Lambeth Draft Local Plan, discussed above, will supersede these documents.
- 2.2.27 The Core Strategy sets out a number of policies relevant to major areas of potential future development, primarily Waterloo, Vauxhall, Brixton and Streatham, as well as other smaller potential growth areas.

London Borough of Lambeth Unitary Development Plan (2007)

- 2.2.28 The LB Lambeth UDP currently in the public domain presents policies saved beyond August 2010 and not superseded by the Core Strategy (2011). The UDP identifies areas where LB Lambeth wishes to encourage future development within the borough. In support of the Draft Local Plan and Core Strategy, the UDP identifies the areas of Waterloo, Vauxhall, Brixton and Streatham as sites of major future growth.

Waterloo Area Supplementary Planning Document (2013)⁹

- 2.2.29 The Waterloo Area Supplementary Planning Document (SPD) seeks to endorse development within the opportunity area, promoting development of higher density commercial and residential uses, as well as enhancing transport infrastructure, public spaces and cultural value.
- 2.2.30 A number of the potential development sites put forward for this Sequential Test were identified in the Waterloo Area SPD;
- Site 1: Land north and south of and including 10 Royal Street
 - Site 5: Elizabeth House, York Road
 - Site 6: Shell Centre, York Road
 - Site 7: Waterloo Station, Waterloo Road
 - Site 8: Cornwall Road Bus Garage, Cornwall Road

Vauxhall Area Draft Supplementary Planning Document (2013)¹⁰

- 2.2.31 The Vauxhall Area SPD, similar to that written for the Waterloo area, seeks to set out the strategic plan for development of the opportunity area. The document aims to gather information on strategic development from the London Plan, LB Lambeth's Core Strategy and the VNEB Opportunity Area Planning Framework (OAPF) and relate it to the specific opportunity area.
- 2.2.32 A number of the potential development sites put forward for this Sequential Test were identified in the Vauxhall Area SPD;
- Site 10: 8 Albert Embankment and land to the rear bounded by Lambeth High St, Whitgift St, the Railway Viaduct, and Southbank House
 - Site 11: Keybridge House, 80 South Lambeth Road, 10 - 22 Wyvil Road (even) and 143 - 161 Wandsworth Road (odd)
 - Site 12: Land bounded by Wandsworth Road to the west, Parry Street to the north, Bondway and the railway viaduct to the east
 - Site 13: Plot bounded by 7- 93 Wandsworth Road, Parry Street and Bondway including the bus station SW8 (Vauxhall Island Site)

Vauxhall Nine Elms and Battersea Opportunity Area Planning Framework (APF) (2012)¹¹

- 2.2.33 This spatial planning document forms supplementary planning guidance to the Local Plan and seeks to guide future development within the Vauxhall, Nine Elms and Battersea Opportunity Area.
- 2.2.34 A number of the potential development sites put forward for this Sequential Test were identified in the Vauxhall, Nine Elms Battersea APF, thus supporting the information contained within the Vauxhall Area SPD;
- Site 10: 8 Albert Embankment and land to the rear bounded by Lambeth High St, Whitgift St, the Railway Viaduct, and Southbank House
 - Site 11: Keybridge House, 80 South Lambeth Road, 10 - 22 Wyvil Road (even) and 143 - 161 Wandsworth Road (odd)
 - Site 12: Land bounded by Wandsworth Road to the west, Parry Street to the north, Bondway and the railway viaduct to the east
 - Site 13: Plot bounded by 7- 93 Wandsworth Road, Parry Street and Bondway including the bus station SW8 (Vauxhall Island Site)

Draft Brixton Area Supplementary Planning Document (2013)¹²

- 2.2.35 The Brixton SPD continues on from and develops the Future Brixton Masterplan (2009). Both documents present a vision of future growth in the area, developing a diverse town centre. The SPD area covers the whole of Brixton town centre as well as the Moorlands Estate, the Guinness Trust Loughborough Estate and Railton Road and provides supplementary guidance to the Core Strategy, specifically Policy PN3 – Brixton. The document identifies a number of over-arching principles, as well as specific strategies for development of the Brixton Area.
- 2.2.36 A number of the potential development sites put forward for this Sequential Test were identified in the Draft Brixton Area SPD;
- Site 14: Somerleyton Road
 - Site 15: Popes Road
 - Site 16: Brixton Central
 - Site 17: SW2 Enterprise Centre

Lambeth Strategic Flood Risk Assessment (2013)

2.2.37

The SFRA has been completed in two stages as recommended in NPPF supporting guidance. This provides the local planning authority with tools throughout the LLP and SFRA process sufficient to inform decisions regarding development sites. The two stages are:

- Level 1 SFRA – Study Area Flood Source & Data Review to enable application of the Sequential Test.
- Level 2 SFRA – refines information on the probability of flooding in the Waterloo and Vauxhall Opportunity Areas including development Site Assessments for Exception Testing.

3 FLOOD RISK IN LAMBETH

- 3.1.1 The following chapter provides a review of the flood risk posed to Lambeth, drawing on a number of existing strategic documents including the Lambeth SFRA and SWMP. This information will be used to apply the Sequential Test to the Allocated Sites for development in Lambeth identified in the LB Lambeth Draft Local Plan (November 2013).

3.2 Tidal Flooding

- 3.2.1 The primary source of flood risk to the northern section of Lambeth is tidal flooding associated with the River Thames, which flows along the northern boundary of the LB Lambeth.
- 3.2.2 The Thames Barrier, located in Woolwich Reach lies approximately 25km downstream of the Study Area and is the main structure of the Thames tidal defence system. When closed, the barrier prevents extreme storm surges from flowing up the estuary and flooding central London.
- 3.2.3 Flood defences of the River Thames protect areas within the floodplain up to a 1 in 1000 (0.1%) annual probability event which is the highest standard of protection in the country. Due to the presence of flood defences, tidal flood risk is considered at present to be a residual risk, i.e. will only result following a failure or overtopping of the flood defences. The extent of residual risk is determined through the use of mathematical models which simulate the speed and depths of flood water that could occur behind defences if the defences were breached. These 'breach modelling' outputs can be used to determine residual risk in more detail for locations that are in Flood Zones, but benefit from the protection of defences.
- 3.2.4 Discussion with the Environment Agency during the writing of this report (detailed in Appendix B) indicates that some known errors exist in the Thames Tidal Breach Modelling¹³, first presented in the LB Lambeth SFRA, in an isolated area around Waterloo Station and therefore breach modelling results have associated limitations. The Environment Agency has confirmed that, despite the known errors around Waterloo station, the current breach modelling is considered the best available data with regards to determining residual risk to Lambeth in the event of a breach of the Thames Tidal Flood Defences. The SFRA should therefore be consulted for information on residual risk. The Environment Agency are due to update their breach modelling in 2014 using in-channel water levels presented in the Thames Estuary 2100 (TE2100) Plan¹⁴. If available, this updated modelling will be used to inform the LB Lambeth Exception Test.

Historic Flooding

- 3.2.5 Widespread flooding occurred in 1928 as a consequence of a tidal surge during a high tide resulting in the overtopping of the defences and embankments (present at the time) north of Vauxhall Bridge. Following this event and a similar tidal flood event in 1953, flood defences along the Thames have been enhanced to their current flood defence level.

3.3 Fluvial Flooding

- 3.3.1 The main rivers within the study area are the River Thames and the River Graveney, a tributary of the River Wandle, which itself flows into the River Thames approximately 3km to the west of LB Lambeth.
- 3.3.2 Where the River Thames flows along the boundary of the LB Lambeth the water levels are a result of both a tidal and fluvial influence. The result of flooding from the tidal influence of the River Thames is judged to be of greater magnitude than that of fluvial sources. Flood risk from the River Thames has been discussed in Section 3.1 and therefore will not be discussed further.

- 3.3.3 The River Graveney flows through the Streatham / Norbury area at the southern sections of the borough. The watercourse is canalised throughout the study area having artificial banks and bed.
- 3.3.4 The Environment Agency’s River Wandle Hydraulic model has been updated in recent years and final outputs were produced in March 2010. The Environment Agency has provided the current modelled flood levels and flood extents for the River Graveney. The modelled flood extents are illustrated in Appendix A Figure 1.
- 3.3.5 No ordinary watercourses are located within Lambeth borough.

Historic Flooding

- 3.3.6 The LB Lambeth SFRA presents details of flooding instances on the Graveney provided by the Environment Agency from their flood records database for the years; 1968, 1973, 1977,1978,1981,1983 and 1987. Details are included in Table 3.1 below:

Table 3.1: Environment Agency records of Flooding on the River Graveney

YEAR	NO. OF FLOOD EVENTS	LOCATION	POST CODE	SOURCE	DESCRIPTION
06/08/1981	1	138 Abercairn Rd	SW16	Graveney	Garage & garden flooded - water level 0.5 inch below front door
06/08/1981	1	132-136 Abercairn Rd	SW16	Graveney	Gardens flooded
06/08/1981	1	140 Abercairn Rd	SW16	Graveney	Garage & garden flooded - water level 0.5 inch below front door

Environment Agency Flood Zones

- 3.3.7 The Environment Agency has provided an extract of their Flood Map for the study area (Appendix A Figure 1). The Flood Map shows the estimated extent of Flood Zones 2 (land with a 1 in 1000 or greater annual probability of flooding) and Flood Zone 3 (land with an annual probability of less than or equal to 1 in 100 fluvial flood risk or 1 in 200 tidal flood risk) (ignoring the presence of flood defences) for the main rivers in and adjacent to Lambeth; the River Thames and River Graveney.

3.4 Surface Water

- 3.4.1 Overland flow / surface water flooding typically arise because of intense rainfall, often of short duration, that is unable to soak into the ground or enter drainage systems. It can run quickly off land and result in localised flooding.
- 3.4.2 As the majority of the study area is heavily developed, overland flow typically tends to occur when surface water cannot enter overloaded drainage systems during significant rainfall events. This problem is exacerbated by areas of steep, impermeable topography which can generate significant volumes of run-off during heavy rainfall events.
- 3.4.3 Rainfall (pluvial) modelling of the entire borough was carried out for the Lambeth SWMP, which assesses the risk of flooding from surface water in detail. Flood depth and hazard maps were produced, and a number of Critical Drainage Areas (CDAs) were identified within the borough.

Historic Flooding

- 3.4.4 Records of surface water flooding incidents were provided by the LB Lambeth for the Lambeth SFRA, and are presented in Appendix A Figure 1 of this report. It should be noted that the majority of the recorded incidents date back to between 1901 and 1926, and therefore may not provide a reliable indication of key areas of surface water flood risk in the present day.

3.5 Sewer Flooding

- 3.5.1 Sewer flooding generally results in localised short term flooding caused by intense rainfall events overloading the capacity of sewers. Flooding can also occur as a result of blockage, poor maintenance or structural failure.
- 3.5.2 A large network of sewers is located in the study area. Modern sewer systems are typically designed to accommodate rainfall events with a 1 in 30 year return period. Older sewer systems were often constructed without consideration of a design standard therefore some areas of The London Borough of Lambeth may be served by Victorian sewers with an effective design standard of less than 1 in 30 years.

The River Effra Sewer

- 3.5.3 The River Effra is a 'lost river' of London and for the purposes of this study is referred to as a sewer. The approximate route of this sewer is shown on Appendix A Figure 1. The route has been identified through local knowledge and reference to the London County Council Sewer record.
- 3.5.4 In 1985, to overcome problems of damp and occasional flooding in the basements of Dulwich Road, in South Brixton a storm relief sewer was built, running from Burbage Road to Clapham. Following very heavy rainfall events, surplus water is now allowed to overflow into this sewer which runs forty feet below Brixton Water Lane, and later, when the tide is low enough, it can be released into the Thames.
- 3.5.5 Due to the culverted nature of the watercourse, the River Effra produces flood risk with characteristics of sewer flooding.

Historic Flooding

- 3.5.6 In order to fulfil statutory commitments set by the Water Services Regulation Authority (OFWAT), water companies must maintain verifiable records of sewer flooding, which is achieved through their DG5 registers. Water companies are required to record flooding arising from public foul, combined or surface water sewers and identify where properties suffered internal or external flooding.
- 3.5.7 Sewer flooding incident records were provided by Thames Water from their DG5 register, and are presented in Appendix A Figure 2.

3.6 Groundwater Flooding

- 3.6.1 The Solid and Drift deposit geology of the study area consists of London Clay for the majority of the Study Area. The presence of London Clay throughout the study area suggests that the risk of groundwater flooding should typically be relatively low. However groundwater flooding risks are often highly localised, and dependent upon geological interfaces between permeable and impermeable subsoils.

Historic Flooding

- 3.6.2 The Environment Agency has provided as a GIS layer containing groundwater flooding records throughout the study area, however these records have only been collated between the years of 2000 and 2010.

- 3.6.3 There is limited information regarding historical instances of groundwater flooding. Local knowledge provided by Lambeth Council has noted that instances of groundwater flooding have been reported on Ferndene Road adjacent to Ruskin Park in Central Brixton and Dulwich Road adjacent to Brockwell Park (see Appendix A Figure 1). This data should be used with caution as it is anecdotal and may not be solely caused by groundwater flooding, surface water and/or overland flow may also be contributing. As with the council surface water flood records it should be noted that the majority of the recorded incidents date back to between 1901 and 1926, and therefore may not provide a reliable indication of key areas of surface water flood risk in the present day.

3.7 Artificial Flood Sources

- 3.7.1 Artificial sources include any water bodies not covered by the previous categories. This typically includes canals, lakes, reservoirs etc. Due to the heavily urbanised nature of the study area, there are very few artificial flood sources in the area. There are two reservoirs located in the Borough, the first at Brixton Hill on Waterworks Road and the second on Wavertree Road. Both of these are operated by Thames Water but no details have been provided. LB Lambeth has confirmed that there are no records of flooding associated with these structures.

3.8 Flood Summary Sheets

- 3.8.1 To inform application of the Sequential Test local level mapping of flood zones, flood risk and available flood incident records has been produced below. Flood data should be used to define flood risk to development sites enabling those with the lowest flood risk to be identified for development in preference to those with greater flood risk. This section details the data used to produce the flood maps.

- 3.8.2 The data obtained, the organisation that supplied it and the format of the data are detailed in Table 3.2.

Table 3.2: Data supplied by stakeholders

DATA	STAKEHOLDER	FORMAT
Flood Zone 2 Outline	Environment Agency	GIS
Flood Zone 3 Outline	Environment Agency	GIS
Flood Zone 3b (River Graveney) outline – River Wandle 2D Flood Modelling and Mapping Study, Halcrow (March 2010)	Environment Agency	GIS
Thames Tidal Breach Modelling – Bermondsey Embayment, Halcrow (April 2011)	Environment Agency	GIS
Lambeth Surface Water Management Plan Pluvial Modelling	Lambeth Borough Council/GLA	GIS
Main Rivers, Detailed River Network, Flood Defence layers	Environment Agency	GIS
Environment Agency Groundwater Flooding Incident Records	Environment Agency	GIS
Lambeth Borough Council Groundwater and Surface Water	Lambeth Borough Council	Spreadsheet

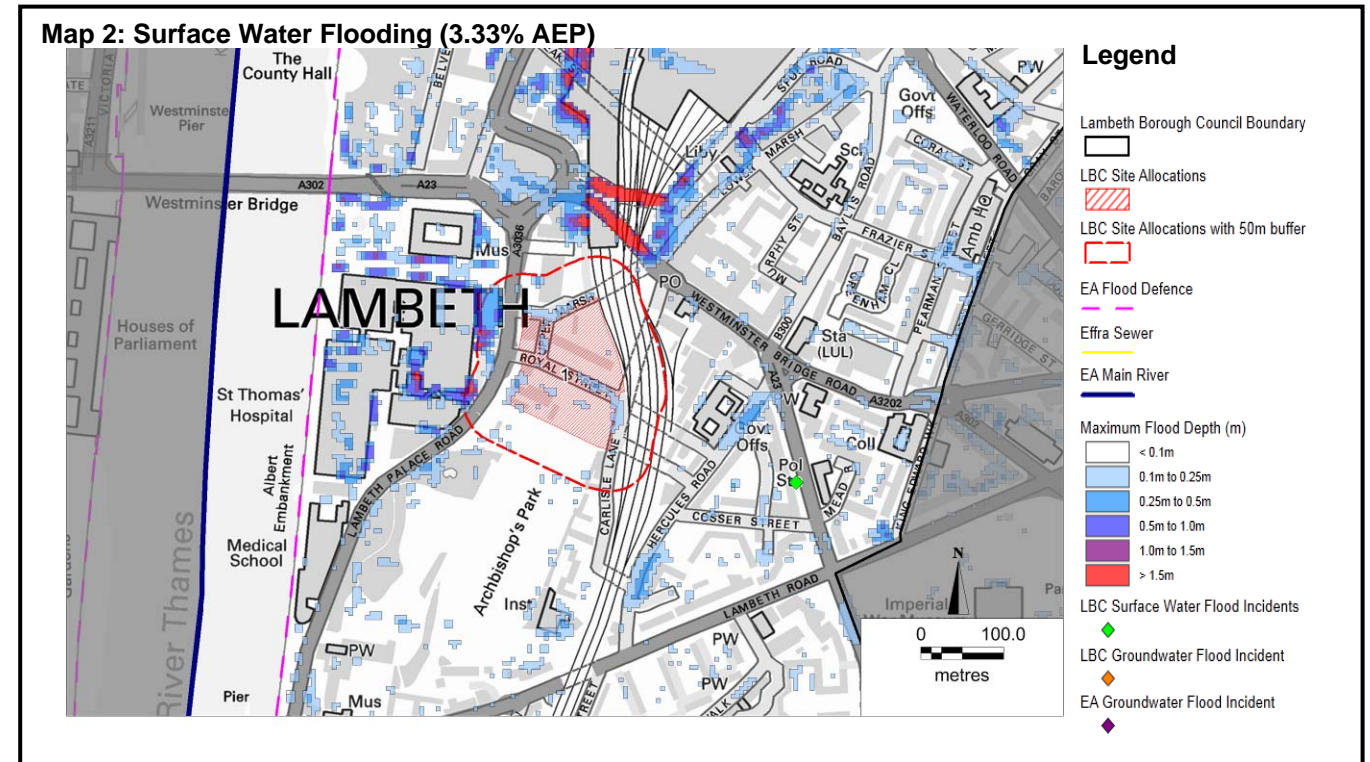
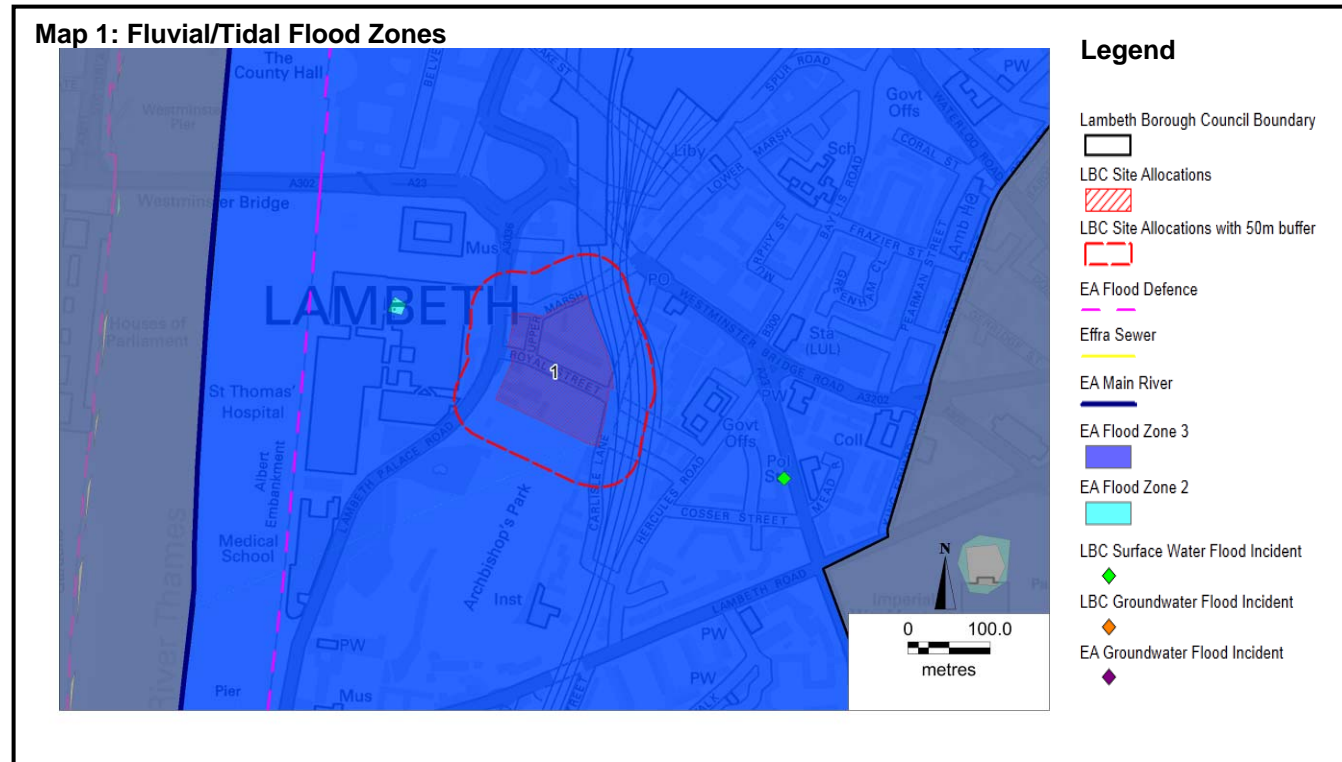
DATA	STAKEHOLDER	FORMAT
Flooding Incident Records		
DG5 sewer incident records	Thames Water	Spreadsheet

3.9 Mapping of Flood Risk from Sewers

3.9.1 As flood incident records are not provided to street level it is not possible to identify whether sewer flooding has occurred within the specific boundary of a proposed development site. Instead flooding is recorded to 4-digit post code area scale. Therefore, in the flood summary sheets below it can only be determined whether a proposed development site is located within a wider area with a history of previous sewer flooding incidents. Where a proposed development site boundary crossed more than one post code sector, the number of internal and external flood incidents for the development site was taken from the post code sector with the greatest number of recorded incidents.

Site Reference: Site 1 - Land north and south of and including 10 Royal Street
Centre co-ordinates (x,y): 530,870 179,432 **Size (ha):** 1.69

Preferred Use: Health / Residential (see Table 3.4 for further details on preferred use for each site)
Flood risk vulnerability classification: More vulnerable



Map 1: Fluvial/Tidal Flood Zones		3B	3A	2	1
		Flood Zones in Site	NO	YES	YES
Area of site in Flood Zones (ha)		0	1.69	1.69	0
% of site in Flood Zones		0	100	100	0

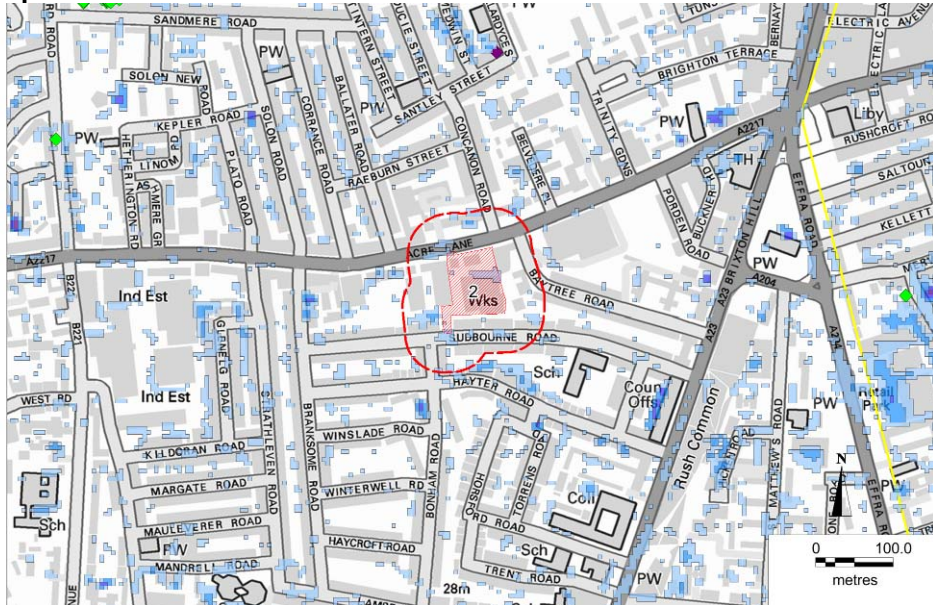
Map 2: Surface Water Flooding		1 in 30yr (3.33% AEP)	1 in 75yr (1.33% AEP)	1 in 100yr (1% AEP)	1 in 200yr (0.5% AEP)	In a Critical Drainage Area?
		% of site at risk of surface water flooding	10.8	13.7	15.9	20.1
		Within the site		Within the site + 50m buffer		
Council records of surface water flooding		0		0		

Refer to Appendix A Figure 4		Within the site
		TWUL records of internal sewer flooding
TWUL records of external sewer flooding	0	

Map 1-2: Groundwater Flood Incidents		Within the site	Within the site + 50m buffer
		Environment Agency records of groundwater flooding	0
Council records of groundwater flooding	0	0	

Site Reference: 2 – 47-51 Acre Lane and land at the rear of Sudbourne Road **Size (ha):** 0.57
Centre co-ordinates (x,y): 530,590 175,034 **Preferred Use:** Education
Flood risk vulnerability classification: More vulnerable

Map 1: Fluvial/Tidal Flood Zones



Legend

- Lambeth Borough Council Boundary
- LBC Site Allocations
- LBC Site Allocations with 50m buffer
- EA Flood Defence
- Effra Sewer
- EA Main River
- Maximum Flood Depth (m)
 - < 0.1m
 - 0.1m to 0.25m
 - 0.25m to 0.5m
 - 0.5m to 1.0m
 - 1.0m to 1.5m
 - > 1.5m
- LBC Surface Water Flood Incidents
- LBC Groundwater Flood Incident
- EA Groundwater Flood Incident

Tidal/Fluvial

Fluvial/Tidal Flood Zones

	3B	3A	2	1
Flood Zones in Site	NO	NO	NO	YES
Area of site in Flood Zones (ha)	0	0	0	0.57
% of site in Flood Zones	0	0	0	100

Surface Water

Map 1: Surface Water Flooding

Return period	1 in 30yr (3.33% AEP)	1 in 75yr (1.33% AEP)	1 in 100yr (1% AEP)	1 in 200yr (0.5% AEP)	In a Critical Drainage Area?
% of site at risk of surface water flooding	9.8	10.2	10.2	11.2	NO
	Within the site		Within the site + 50m buffer		
Council records of surface water flooding	0		0		

Sewer

Refer to Appendix A Figure 4

	Within the site
TWUL records of internal sewer flooding	4
TWUL records of external sewer flooding	1

Groundwater

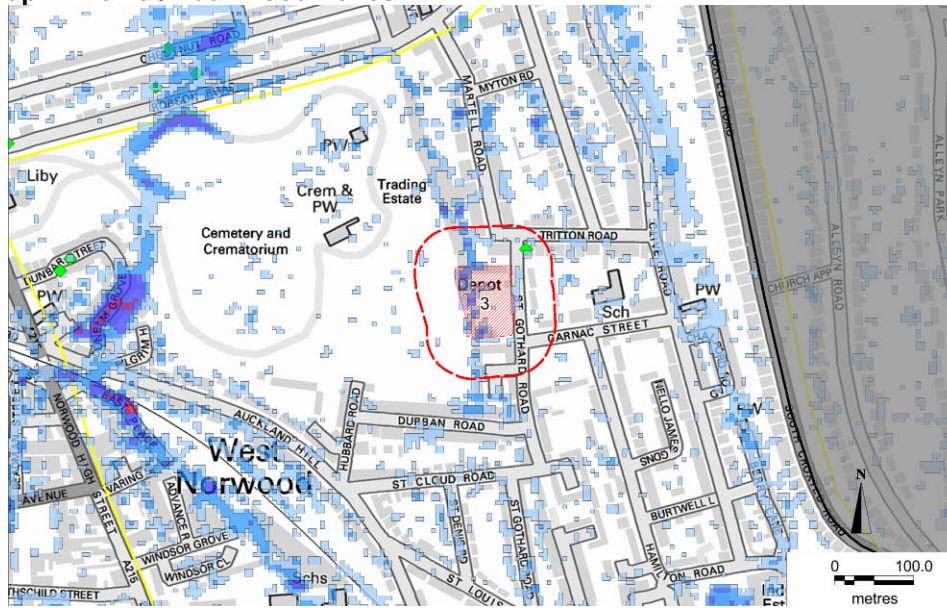
Map 1: Groundwater Flood Incidents

	Within the site	Within the site + 50m buffer
Environment Agency records of groundwater flooding	0	0
Council records of groundwater flooding	0	0

Site Reference: 3 - Vale Street Depot, Vale Street
Centre co-ordinates (x,y): 532,567 172,039
Flood risk vulnerability classification: More vulnerable

Size (ha): 0.58
Preferred Use: Education / Residential

Map 1: Fluvial/Tidal Flood Zones



- Legend**
- Lambeth Borough Council Boundary
 - LBC Site Allocations
 - LBC Site Allocations with 50m buffer
 - EA Flood Defence
 - Effra Sewer
 - EA Main River
 - Maximum Flood Depth (m)
 - <math>< 0.1\text{m}</math>
 - $0.1\text{m to }0.25\text{m}$
 - $0.25\text{m to }0.5\text{m}$
 - $0.5\text{m to }1.0\text{m}$
 - $1.0\text{m to }1.5\text{m}$
 - $> 1.5\text{m}$
 - LBC Surface Water Flood Incidents
 - LBC Groundwater Flood Incident
 - EA Groundwater Flood Incident

Fluvial/Tidal Flood Zones				
	3B	3A	2	1
Flood Zones in Site	NO	NO	NO	YES
Area of site in Flood Zones (ha)	0	0	0	0.58
% of site in Flood Zones	0	0	0	100

Environment Agency Tidal Breach Modelling (0.5% AEP)	
Maximum depth (m)	0
Mean depth (m)	0
Maximum hazard	0
Mean hazard	0

Map 1: Surface Water Flooding					
Return period	1 in 30yr (3.33% AEP)	1 in 75yr (1.33% AEP)	1 in 100yr (1% AEP)	1 in 200yr (0.5% AEP)	In a Critical Drainage Area?
% of site at risk of surface water flooding	34.2	28.5	34.6	29.9	YES
	Within the site		Within the site + 50m buffer		
Council records of surface water flooding	0		1		

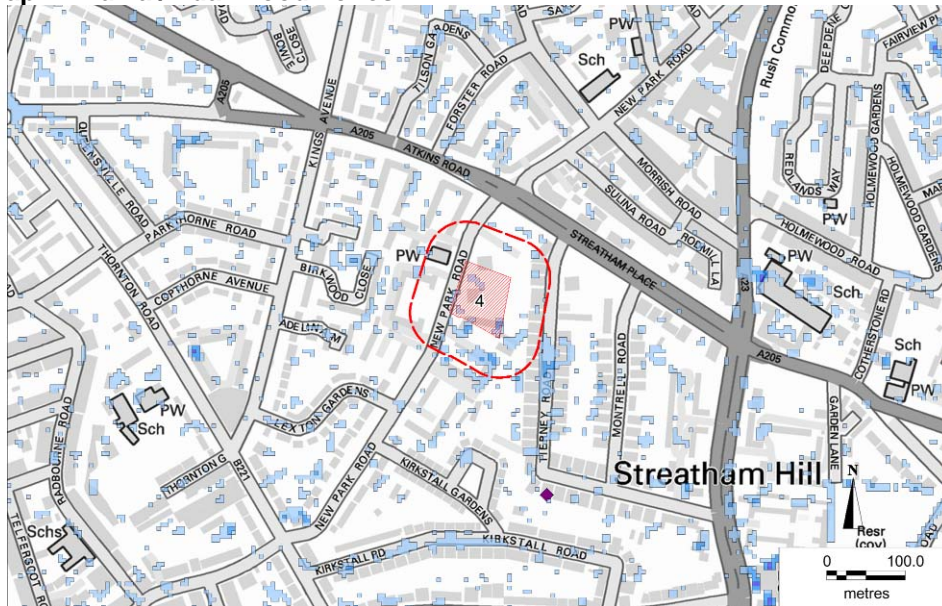
Refer to Appendix A Figure 4	
	Within the site
TWUL records of internal sewer flooding	3
TWUL records of external sewer flooding	2

Map 1: Groundwater Flood Incidents		
	Within the site	Within the site + 50m buffer
Environment Agency records of groundwater flooding	0	0
Council records of groundwater flooding	0	0

Site Reference: 4 – New Park Road
Centre co-ordinates (x,y): 530,110 173,517
Flood risk vulnerability classification: More vulnerable

Size (ha): 0.47
Preferred Use: Education / Residential

Map 1: Fluvial/Tidal Flood Zones



Fluvial/Tidal Flood Zones				
	3B	3A	2	1
Flood Zones in Site	NO	NO	NO	YES
Area of site in Flood Zones (ha)	0	0	0	0.47
% of site in Flood Zones	0	0	0	100

Environment Agency Tidal Breach Modelling (0.5% AEP)	
Maximum depth (m)	0
Mean depth (m)	0
Maximum hazard	0
Mean hazard	0

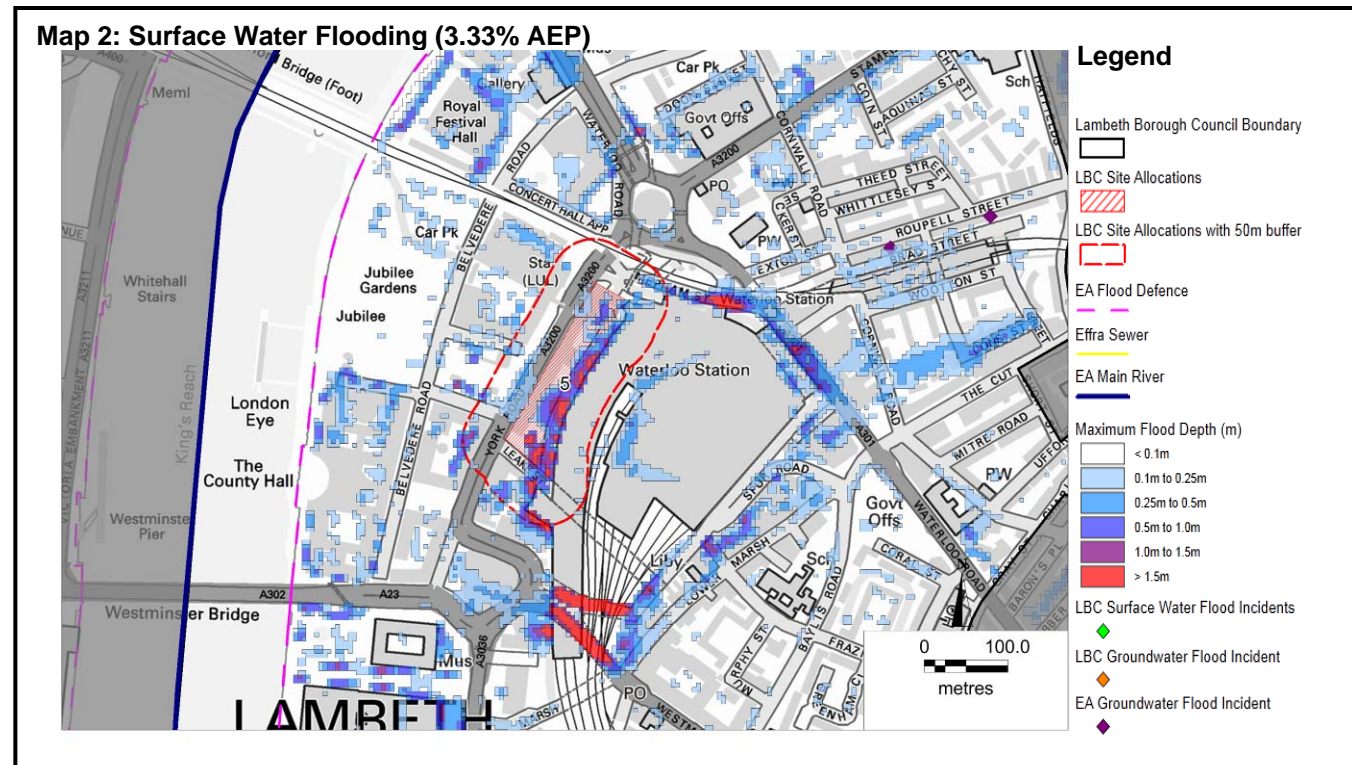
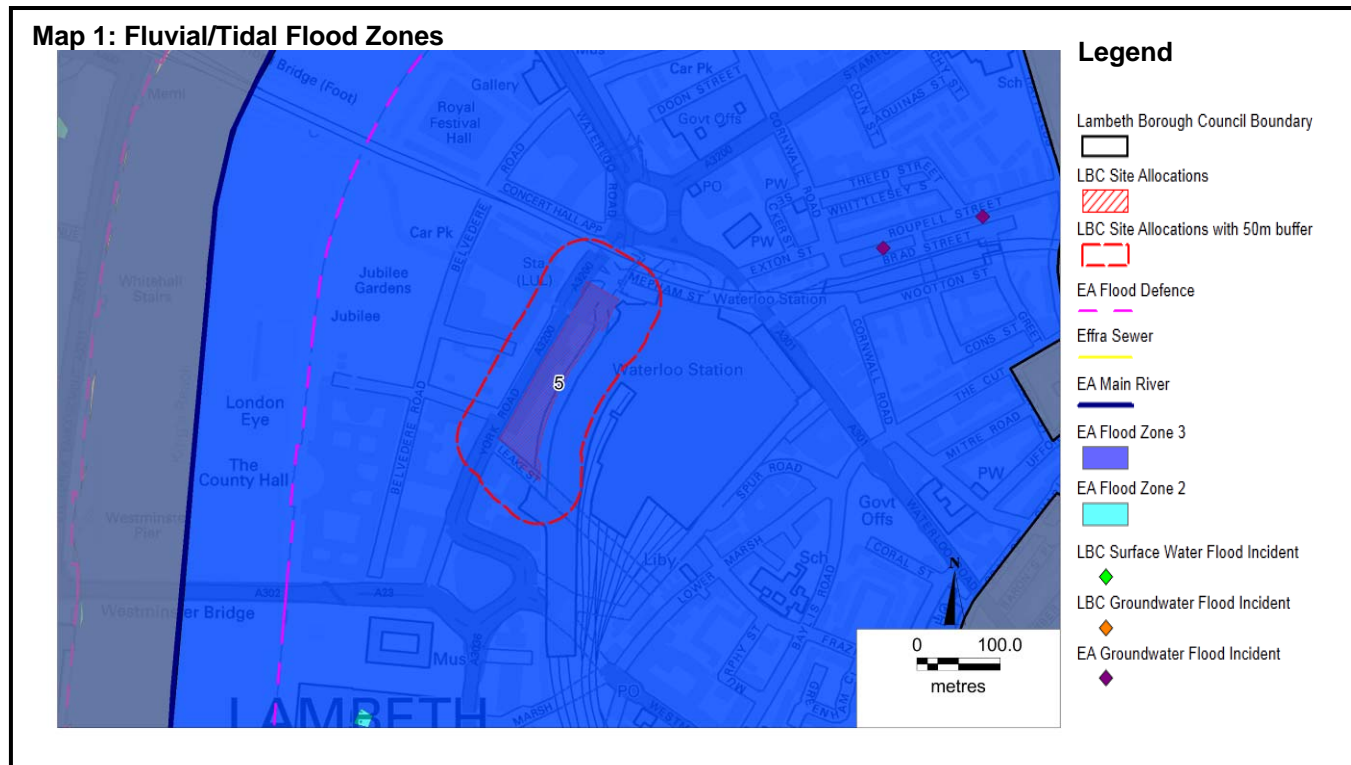
Map 1: Surface Water Flooding					
Return period	1 in 30yr (3.33% AEP)	1 in 75yr (1.33% AEP)	1 in 100yr (1% AEP)	1 in 200yr (0.5% AEP)	In a Critical Drainage Area?
% of site at risk of surface water flooding	12.4	12.4	13.3	12.4	NO
	Within the site		Within the site + 50m buffer		
Council records of surface water flooding	0		0		

Refer to Appendix A Figure 4	
	Within the site
TWUL records of internal sewer flooding	6
TWUL records of external sewer flooding	3

Map 1: Groundwater Flood Incidents		
	Within the site	Within the site + 50m buffer
Environment Agency records of groundwater flooding	0	0
Council records of groundwater flooding	0	0

Site Reference: Site 5 - Elizabeth House, York Road
Centre co-ordinates (x,y): 530,913 179,912 **Size (ha):** 0.88

Preferred Use: Office / Residential
Flood risk vulnerability classification: More vulnerable



Map 1: Fluvial/Tidal Flood Zones		3B	3A	2	1
Tidal/Fluvial	Flood Zones in Site	YES	YES	YES	NO
	Area of site in Flood Zones (ha)	0	0.88	0.88	0
	% of site in Flood Zones	0	100	100	0

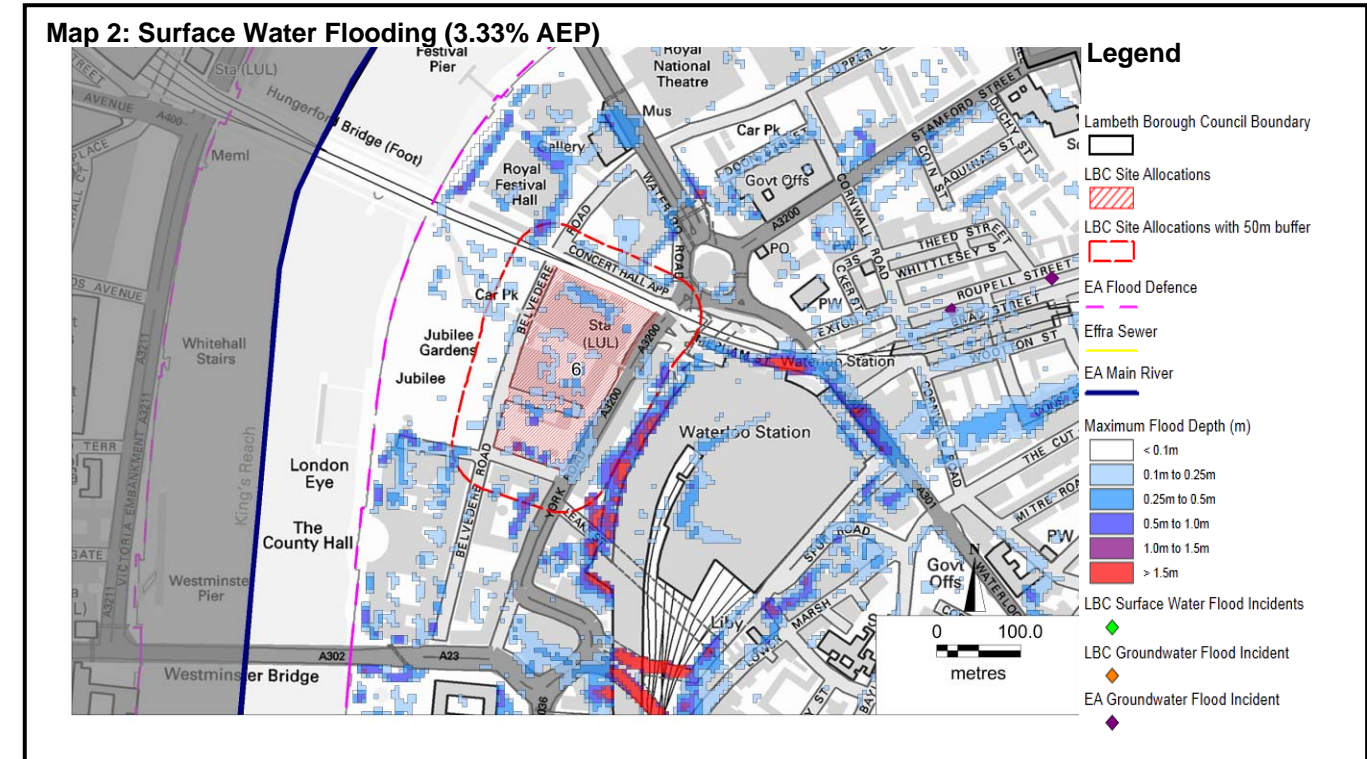
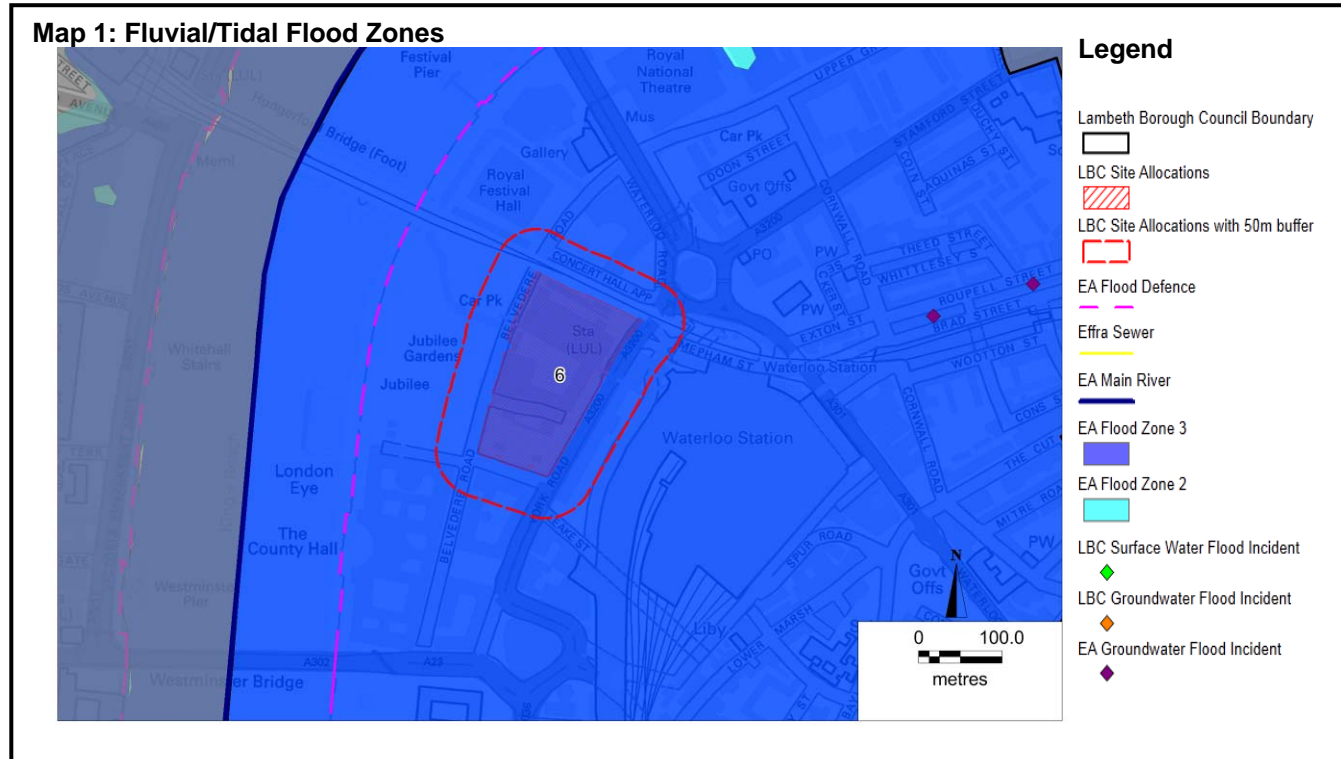
Map 2: Surface Water Flooding					
Return period	1 in 30yr (3.33% AEP)	1 in 75yr (1.33% AEP)	1 in 100yr (1% AEP)	1 in 200 (0.5% AEP)	In a Critical Drainage Area?
% of site at risk of surface water flooding	49.3	39.5	49.1	50.8	YES
	Within the site		Within the site + 50m buffer		
Council records of surface water flooding	0		0		

Refer to Appendix A Figure 4		Within the site
Sewer	TWUL records of internal sewer flooding	0
	TWUL records of external sewer flooding	0

Map 1-2: Groundwater Flood Incidents		
	Within the site	Within the site + 50m buffer
Environment Agency records of groundwater flooding	0	0
Council records of groundwater flooding	0	0

Site Reference: Site 6 – Shell Centre, York Road
 Centre co-ordinates (x,y): 530,855 180,003 Size (ha): 2.55

Preferred Use: Mixed use – Retail / Office / Residential / Community Facilities
 Flood risk vulnerability classification: More vulnerable



Map 1: Fluvial/Tidal Flood Zones		3B	3A	2	1
Tidal/Fluvial	Flood Zones in Site	NO	YES	YES	NO
	Area of site in Flood Zones (ha)	0	2.55	2.55	0
	% of site in Flood Zones	0	100	100	0

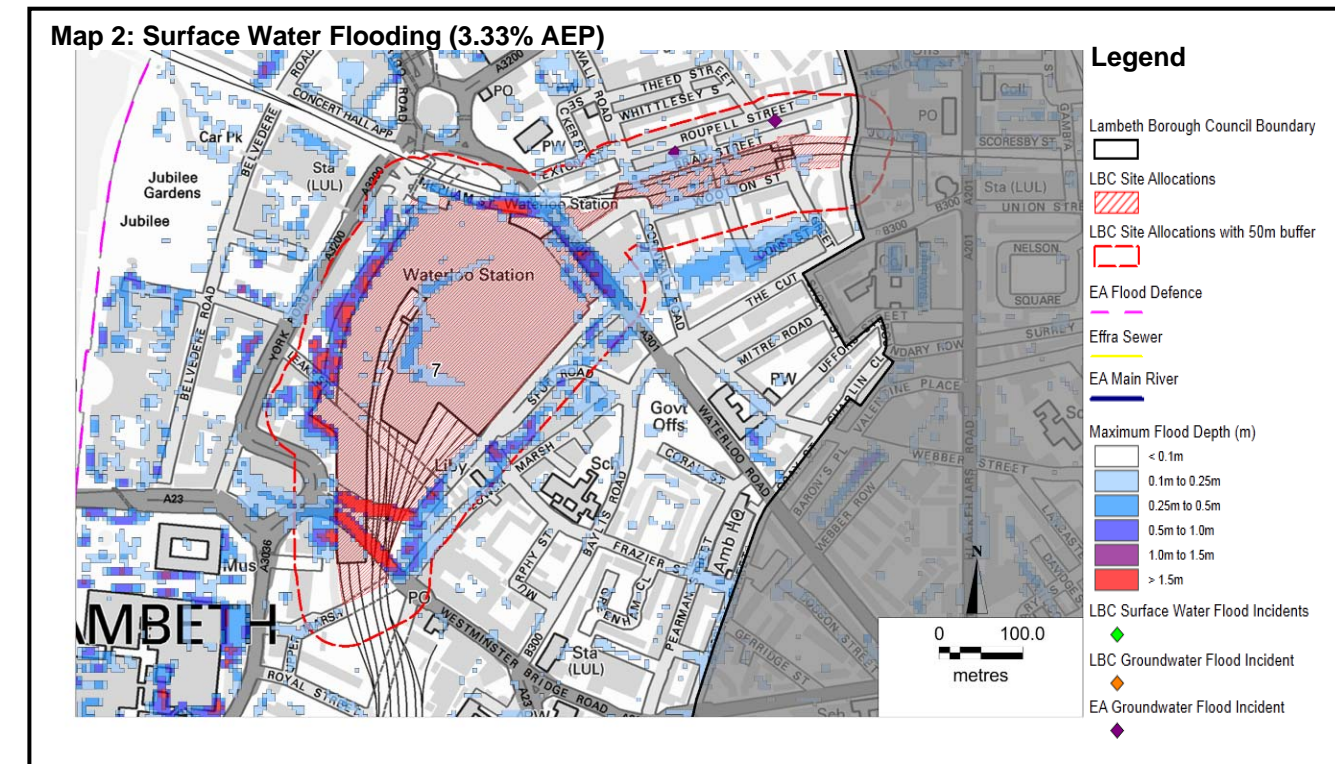
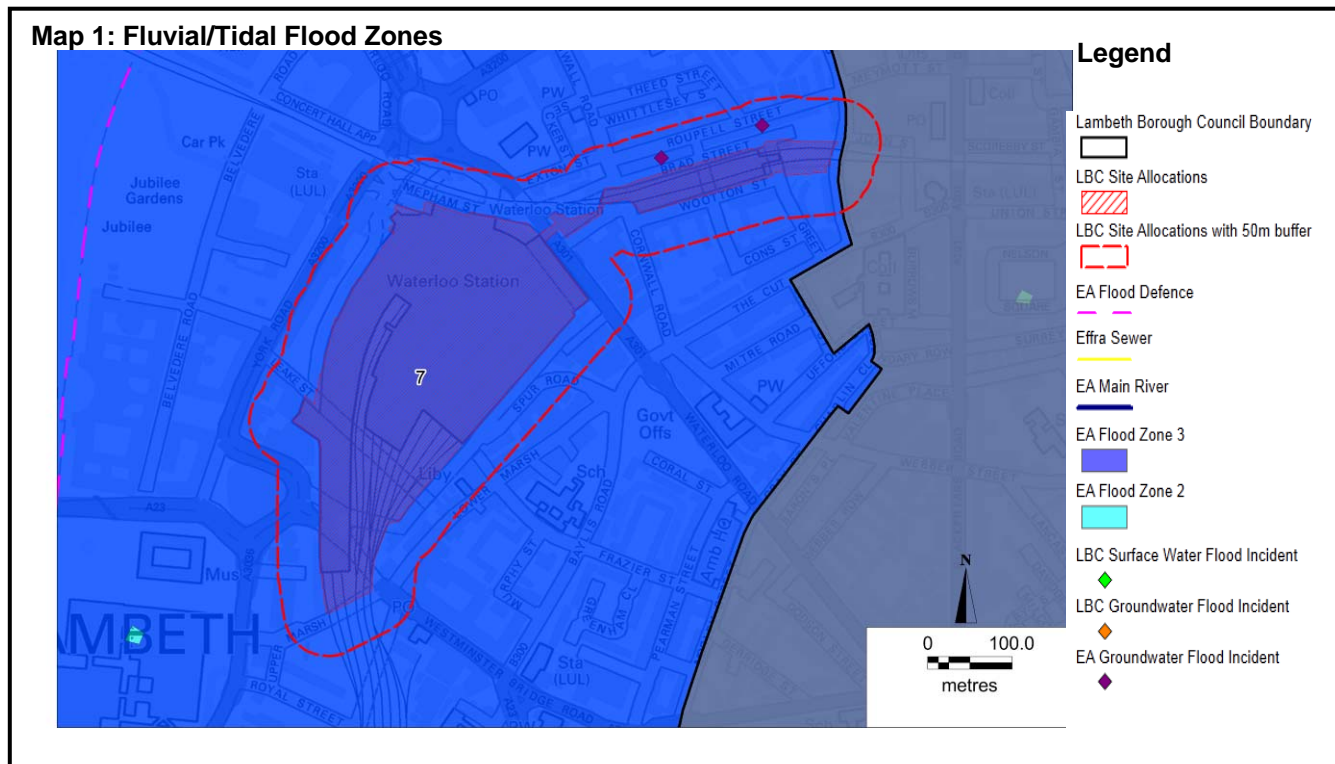
Map 2: Surface Water Flooding					
Return period	1 in 30yr (3.33% AEP)	1 in 75yr (1.33% AEP)	1 in 100yr (1% AEP)	1 in 200 (0.5% AEP)	In a Critical Drainage Area?
% of site at risk of surface water flooding	23.6	27.6	29.1	31.3	YES
	Within the site		Within the site + 50m buffer		
Council records of surface water flooding	0		0		

Refer to Appendix A Figure 4		Within the site
Sewer	TWUL records of internal sewer flooding	0
	TWUL records of external sewer flooding	0

Map 1-2: Groundwater Flood Incidents		
	Within the site	Within the site + 50m buffer
Environment Agency records of groundwater flooding	0	0
Council records of groundwater flooding	0	0

Site Reference: Site 7 – Waterloo Station, Waterloo Road
Centre co-ordinates (x,y): 531,016 179,815 **Size (ha):** 9.16

Preferred Use: Mixed use – Transport / Retail / Office
Flood risk vulnerability classification: Essential Infrastructure / Less vulnerable



		Map 1: Fluvial/Tidal Flood Zones			
		3B	3A	2	1
Tidal/Fluvial	Flood Zones in Site	NO	YES	YES	NO
	Area of site in Flood Zones (ha)	0	9.16	9.16	0
	% of site in Flood Zones	0	100	100	0

		Map 2: Surface Water Flooding					
		Return period	1 in 30yr (3.33% AEP)	1 in 75yr (1.33% AEP)	1 in 100yr (1% AEP)	1 in 200 (0.5% AEP)	In a Critical Drainage Area?
Surface Water	% of site at risk of surface water flooding		12.8	16.9	17.9	20.3	YES
		Within the site		Within the site + 50m buffer			
	Council records of surface water flooding	0		0			

		Refer to Appendix A Figure 4
		Within the site
Sewer	TWUL records of internal sewer flooding	0
	TWUL records of external sewer flooding	0

		Map 1-2: Groundwater Flood Incidents	
		Within the site	Within the site + 50m buffer
Groundwater	Environment Agency records of groundwater flooding	0	0
	Council records of groundwater flooding	0	0

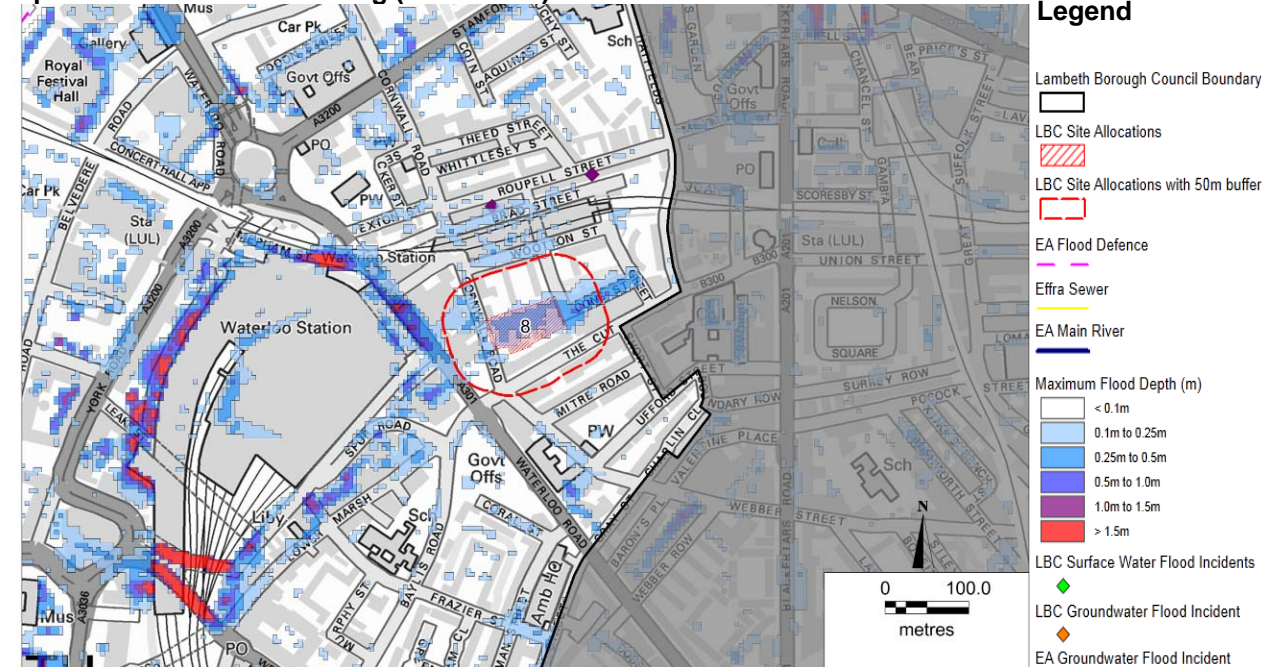
Site Reference: Site 8 – Cornwall Road Bus Garage, Cornwall Road **Size (ha):** 0.38
Centre co-ordinates (x,y): 531,340 179,930

Preferred Use: Mixed development – Residential / Commercial
Flood risk vulnerability classification: More vulnerable

Map 1: Fluvial/Tidal Flood Zones



Map 2: Surface Water Flooding (3.33% AEP)



		Map 1: Fluvial/Tidal Flood Zones			
		3B	3A	2	1
Tidal/Fluvial	Flood Zones in Site	NO	YES	YES	NO
	Area of site in Flood Zones (ha)	0	0.38	0.38	0
	% of site in Flood Zones	0	100	100	0

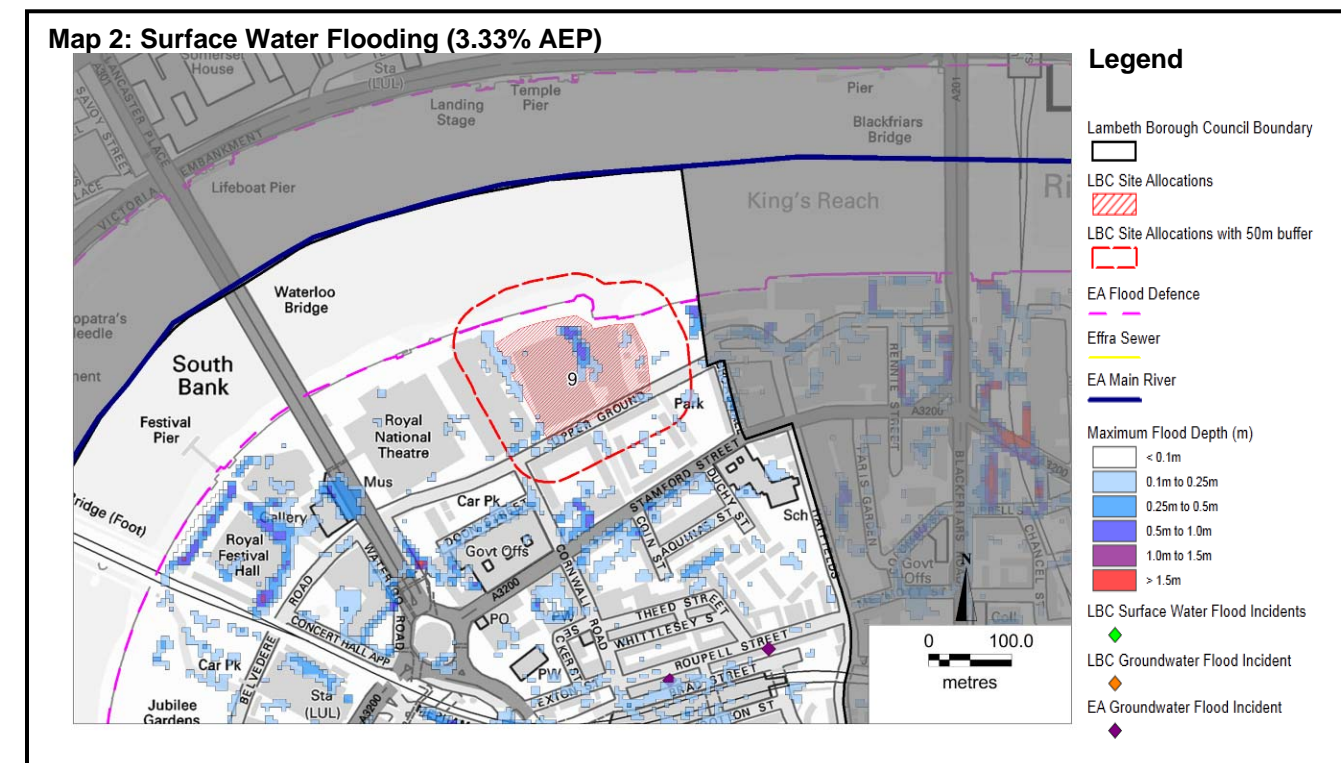
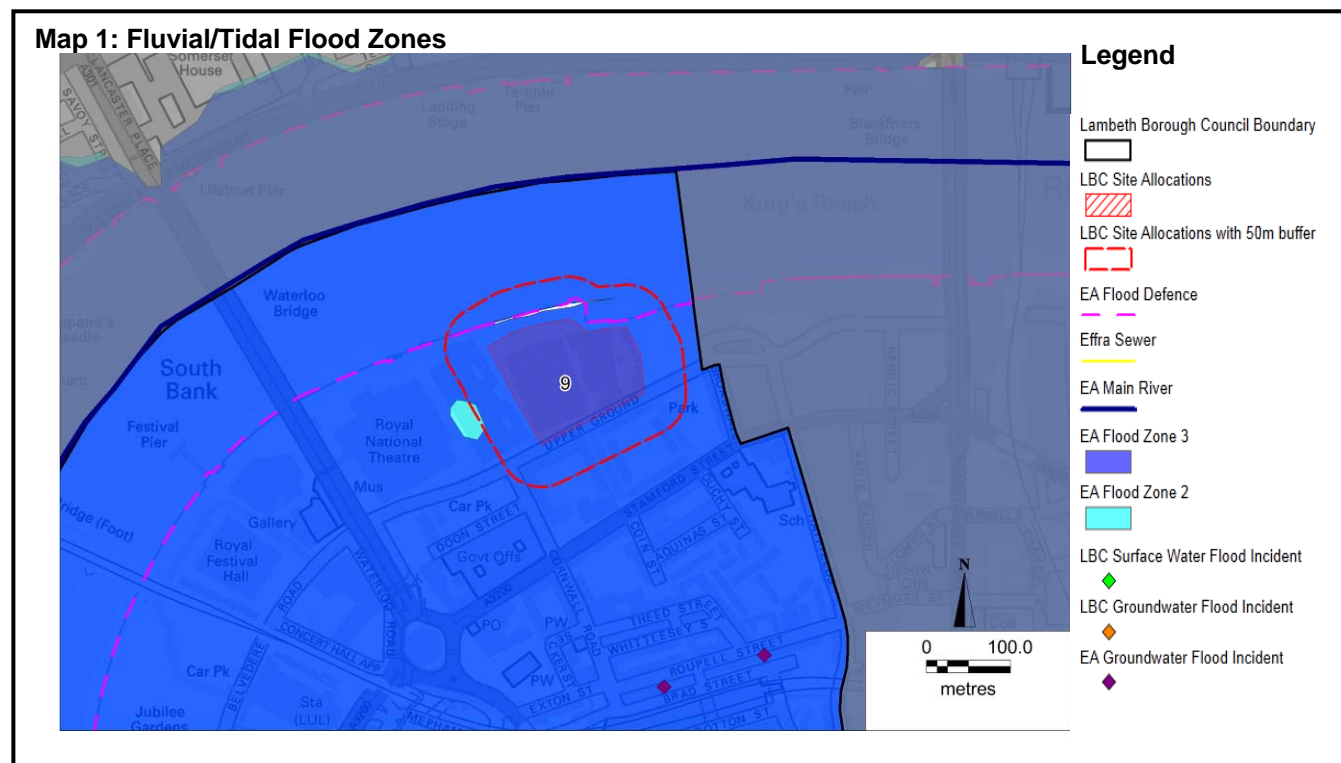
		Map 2: Surface Water Flooding				
		Return period	1 in 30yr (3.33% AEP)	1 in 75yr (1.33% AEP)	1 in 100yr (1% AEP)	1 in 200 (0.5% AEP)
Surface Water	% of site at risk of surface water flooding	85.6	95.1	99.1	100	YES
			Within the site		Within the site + 50m buffer	
	Council records of surface water flooding	0		0		

		Refer to Appendix A Figure 4
		Within the site
Sewer	TWUL records of internal sewer flooding	0
	TWUL records of external sewer flooding	0

		Map 1-2: Groundwater Flood Incidents	
		Within the site	Within the site + 50m buffer
Groundwater	Environment Agency records of groundwater flooding	0	0
	Council records of groundwater flooding	0	0

Site Reference: Site 9 – ITV Centre and Gabriel’s Wharf, Upper Ground
Centre co-ordinates (x,y): 531,184 180,433
Size (ha): 1.77

Preferred Use: Mixed use – Office / Residential
Flood risk vulnerability classification: More vulnerable



		Map 1: Fluvial/Tidal Flood Zones			
		3B	3A	2	1
Tidal/Fluvial	Flood Zones in Site	NO	YES	YES	NO
	Area of site in Flood Zones (ha)	0	1.77	1.77	0
	% of site in Flood Zones	0	100	100	0

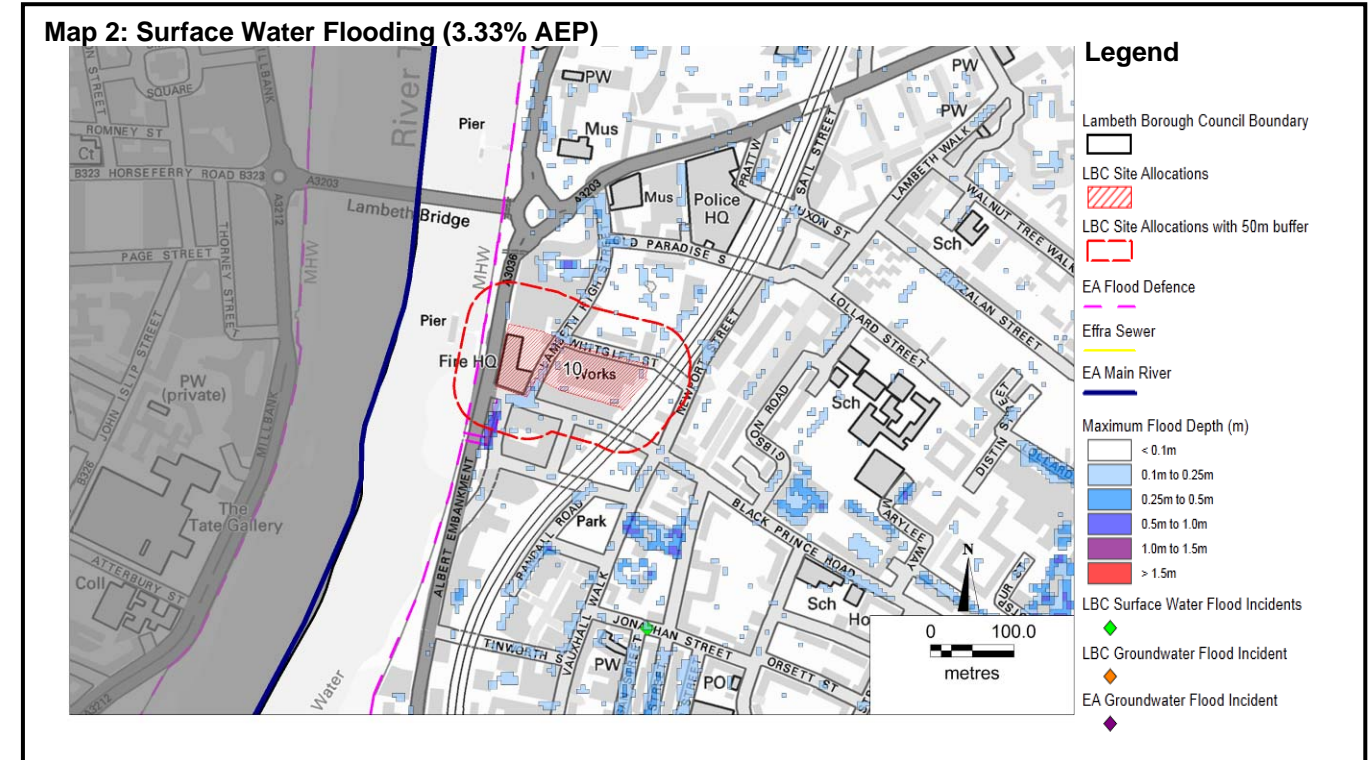
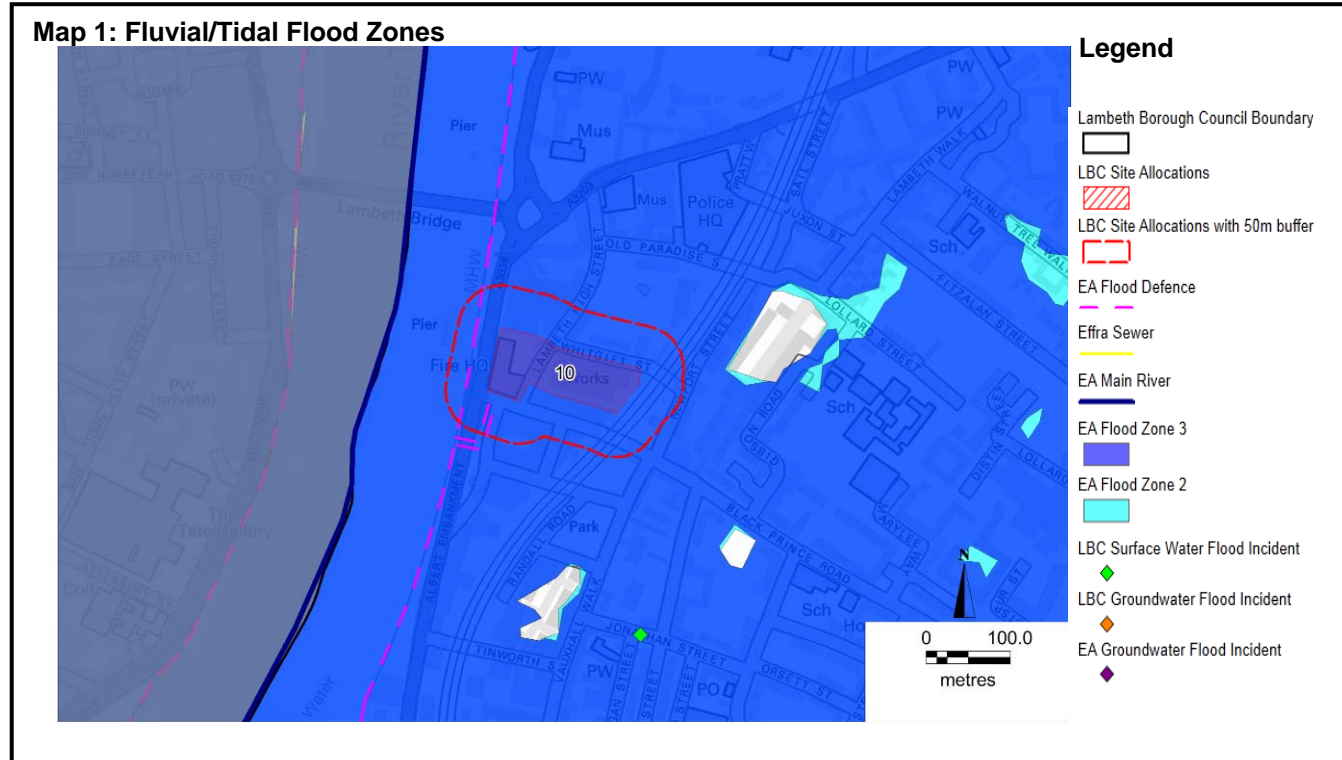
		Map 2: Surface Water Flooding					
		Return period	1 in 30yr (3.33% AEP)	1 in 75yr (1.33% AEP)	1 in 100yr (1% AEP)	1 in 200 (0.5% AEP)	In a Critical Drainage Area?
Surface Water	% of site at risk of surface water flooding		11.7	12.6	14	13.9	NO
			Within the site		Within the site + 50m buffer		
Council records of surface water flooding		0		0			

		Refer to Appendix A Figure 4
		Within the site
Sewer	TWUL records of internal sewer flooding	0
	TWUL records of external sewer flooding	0

		Map 1-2: Groundwater Flood Incidents	
		Within the site	Within the site + 50m buffer
Groundwater	Environment Agency records of groundwater flooding	0	0
	Council records of groundwater flooding	0	0

Site Reference: Site 10 - Albert Embankment, land to rear bounded by Lambeth High St, Whitgift St, the Railway Viaduct, Southbank House **Size (ha):** 1.03 **Centre co-ordinates (x,y):** 530,594 178,752

Preferred Use: Employment / Residential
Flood risk vulnerability classification: More vulnerable



		Map 1: Fluvial/Tidal Flood Zones			
		3B	3A	2	1
Tidal/Fluvial	Flood Zones in Site	NO	YES	YES	NO
	Area of site in Flood Zones (ha)	0	1.03	1.03	0
	% of site in Flood Zones	0	100	100	0

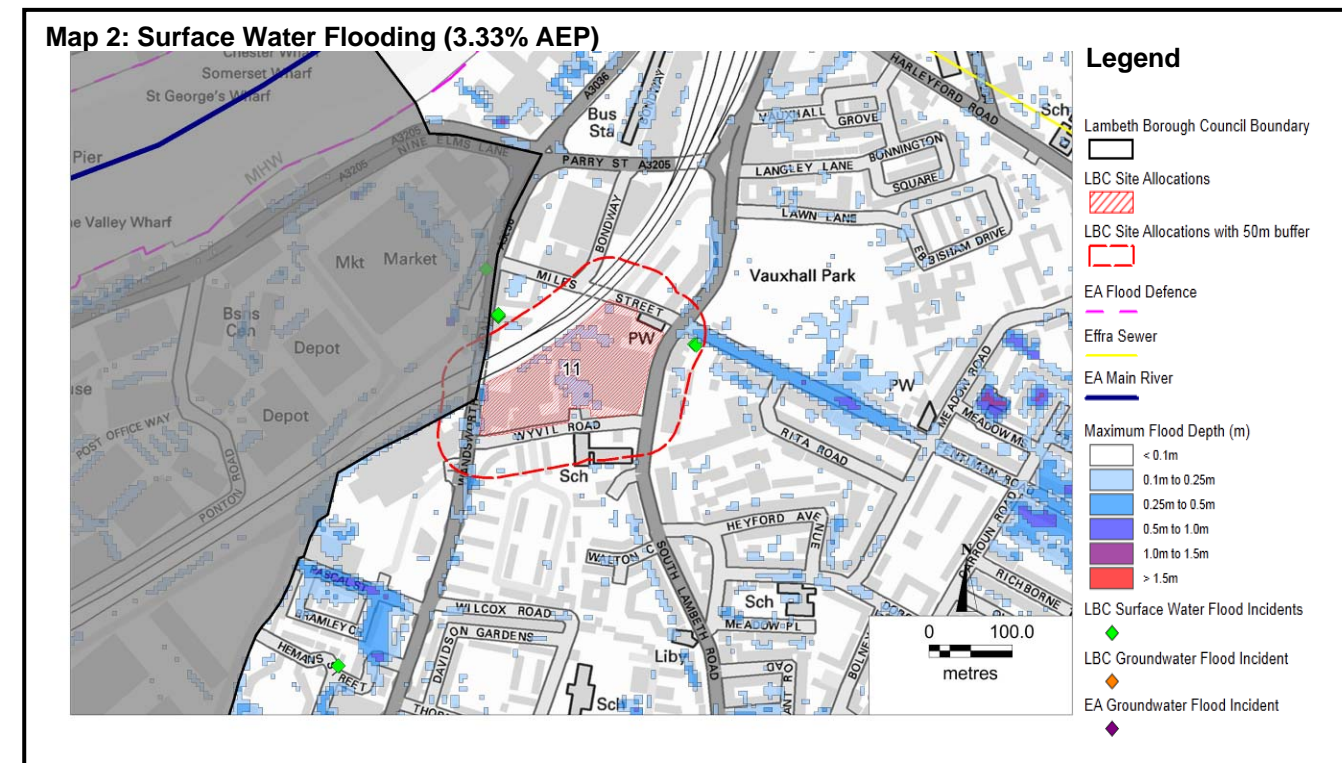
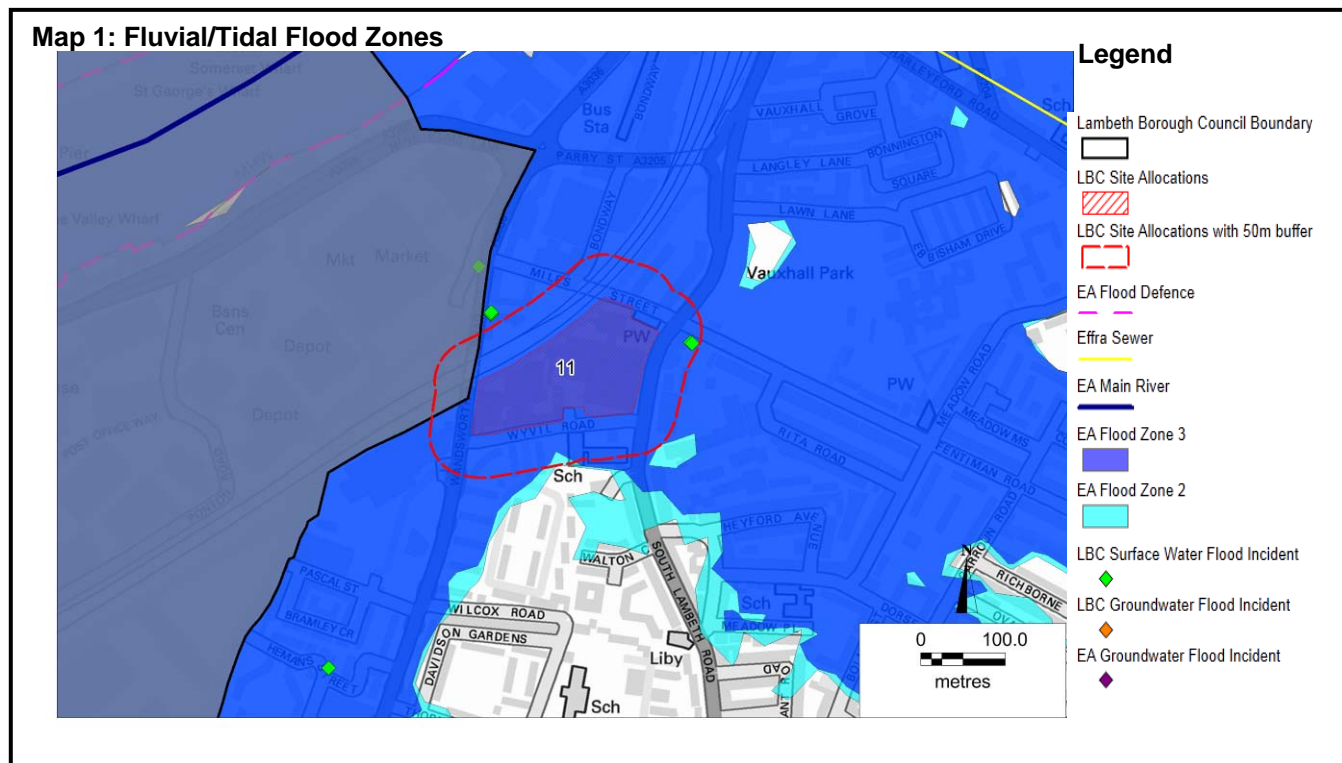
		Map 2: Surface Water Flooding				
		Return period	1 in 30yr (3.33% AEP)	1 in 75yr (1.33% AEP)	1 in 100yr (1% AEP)	1 in 200 (0.5% AEP)
Surface Water	% of site at risk of surface water flooding	5.3	12.5	19	30.2	NO
		Within the site		Within the site + 50m buffer		
	Council records of surface water flooding	0		0		

		Refer to Appendix A Figure 4
		Within the site
Sewer	TWUL records of internal sewer flooding	2
	TWUL records of external sewer flooding	0

		Map 1-2: Groundwater Flood Incidents	
		Within the site	Within the site + 50m buffer
Groundwater	Environment Agency records of groundwater flooding	0	0
	Council records of groundwater flooding	0	0

Site Reference: Site 11 - Keybridge House, 80 South Lambeth Road, 10 - 22 Wyvil Road (even) and 143 - 161 Wandsworth Road (odd) **Size (ha):** 1.99 **Centre co-ordinates (x,y):** 530,234 177,579

Preferred Use: Mixed use – Employment / Residential / Education
Flood risk vulnerability classification: More vulnerable



Map 1: Fluvial/Tidal Flood Zones		3B	3A	2	1
Tidal/Fluvial	Flood Zones in Site	NO	YES	YES	NO
	Area of site in Flood Zones (ha)	0	1.99	1.99	0
	% of site in Flood Zones	0	100	100	0

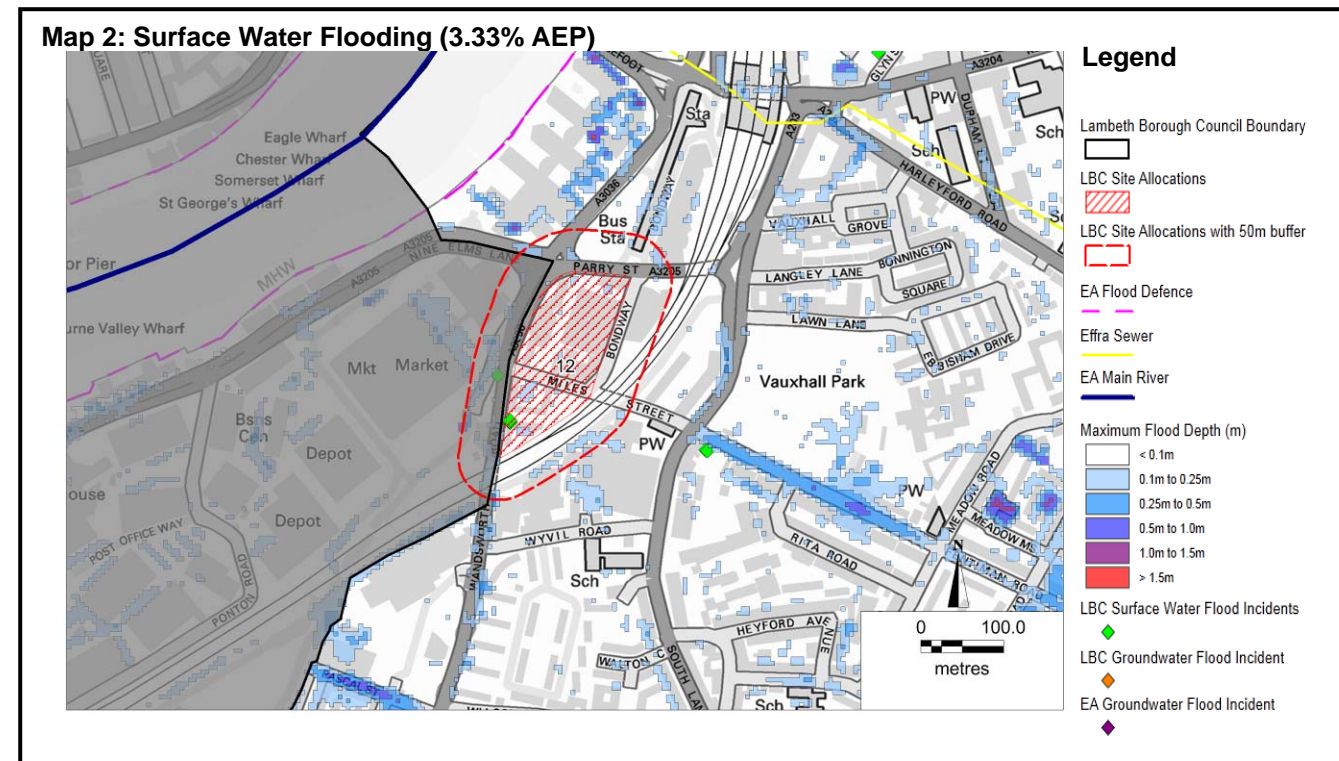
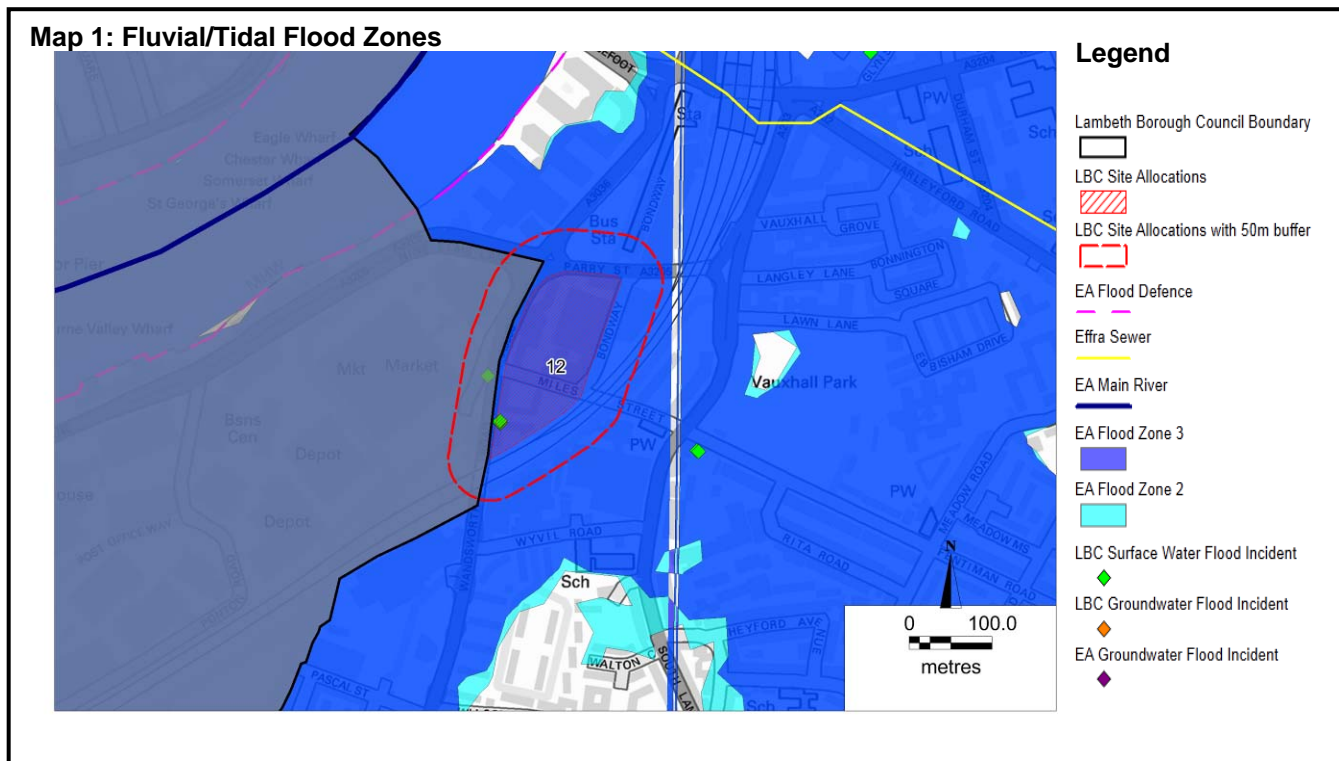
Map 2: Surface Water Flooding					
Return period	1 in 30yr (3.33% AEP)	1 in 75yr (1.33% AEP)	1 in 100yr (1% AEP)	1 in 200 (0.5% AEP)	In a Critical Drainage Area?
% of site at risk of surface water flooding	14.1	25.2	34.3	38.4	YES
	Within the site		Within the site + 50m buffer		
Council records of surface water flooding	0		5		

Refer to Appendix A Figure 4		Within the site
Sewer	TWUL records of internal sewer flooding	12
	TWUL records of external sewer flooding	1

Map 1-2: Groundwater Flood Incidents		
	Within the site	Within the site + 50m buffer
Environment Agency records of groundwater flooding	0	0
Council records of groundwater flooding	0	0

Site Reference: Site 12 - Land bounded by Wandsworth Road to the west, Parry Street to the north, Bondway and the railway viaduct to the east
Size (ha): 1.88 **Centre co-ordinates (x,y):** 530,213 177,709

Preferred Use: Mixed use – Employment / Residential / Community Facilities
Flood risk vulnerability classification: More vulnerable



Map 1: Fluvial/Tidal Flood Zones		3B	3A	2	1
Tidal/Fluvial	Flood Zones in Site	NO	YES	YES	NO
	Area of site in Flood Zones (ha)	0	1.88	1.88	0
	% of site in Flood Zones	0	100	100	0

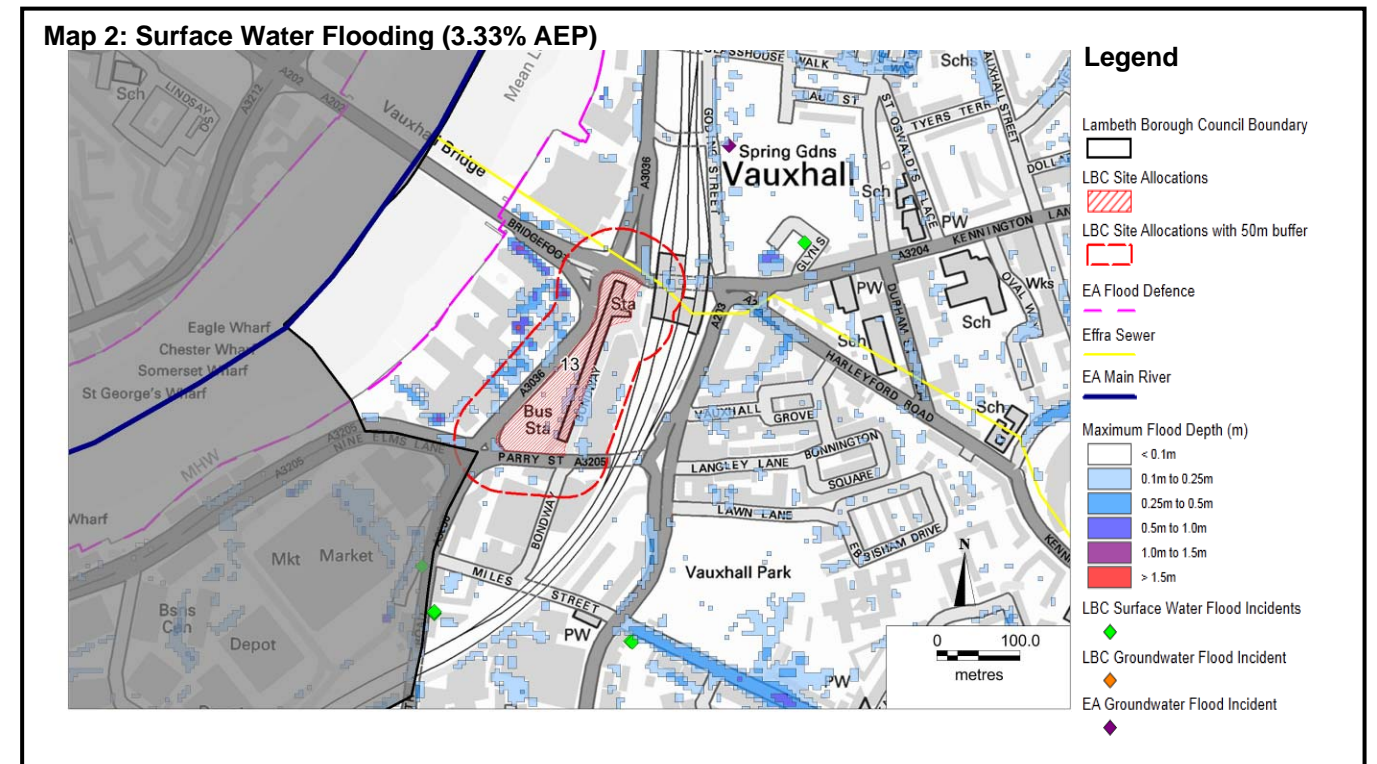
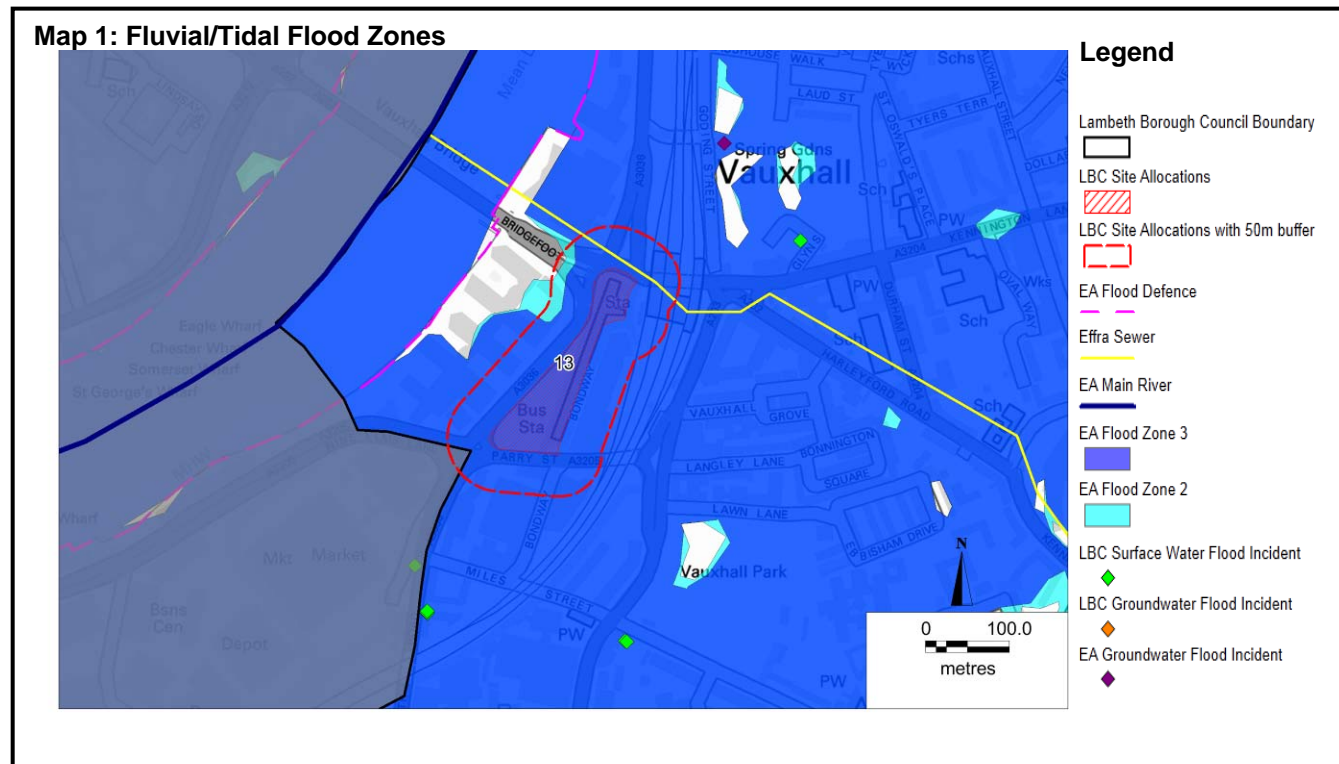
Map 2: Surface Water Flooding					
Return period	1 in 30yr (3.33% AEP)	1 in 75yr (1.33% AEP)	1 in 100yr (1% AEP)	1 in 200 (0.5% AEP)	In a Critical Drainage Area?
% of site at risk of surface water flooding	4.7	6.4	7.6	7.5	NO
	Within the site		Within the site + 50m buffer		
Council records of surface water flooding	4		8		

Refer to Appendix A Figure 4		Within the site
Sewer	TWUL records of internal sewer flooding	12
	TWUL records of external sewer flooding	1

Map 1-2: Groundwater Flood Incidents		
	Within the site	Within the site + 50m buffer
Environment Agency records of groundwater flooding	0	0
Council records of groundwater flooding	0	0

Site Reference: Site 13 - Plot bounded by 7- 93 Wandsworth Road, Parry Street and Bondway including the bus station SW8 (Vauxhall Island Site) **Size (ha):** 1.12 **Centre co-ordinates (x,y):** 530,309 177,940

Preferred Use: Mixed use – Retail / Residential
Flood risk vulnerability classification: More vulnerable



Map 1: Fluvial/Tidal Flood Zones		3B	3A	2	1
Tidal/Fluvial	Flood Zones in Site	NO	YES	YES	NO
	Area of site in Flood Zones (ha)	0	1.12	1.12	0
	% of site in Flood Zones	0	100	100	0

Map 2: Surface Water Flooding					
Return period	1 in 30yr (3.33% AEP)	1 in 75yr (1.33% AEP)	1 in 100yr (1% AEP)	1 in 200 (0.5% AEP)	In a Critical Drainage Area?
% of site at risk of surface water flooding	5.5	6.3	8	10.9	NO
	Within the site		Within the site + 50m buffer		
Council records of surface water flooding	0		0		

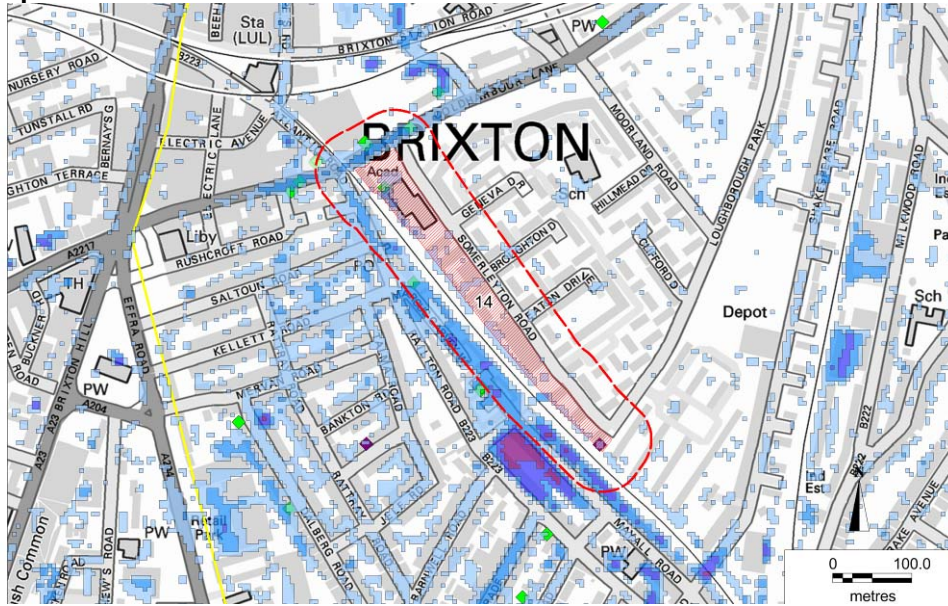
Refer to Appendix A Figure 4		Within the site
Sewer	TWUL records of internal sewer flooding	12
	TWUL records of external sewer flooding	1

Map 1-2: Groundwater Flood Incidents		
	Within the site	Within the site + 50m buffer
Environment Agency records of groundwater flooding	0	0
Council records of groundwater flooding	0	0

Site Reference: 14 - Somerleyton Road
Centre co-ordinates (x,y): 531,453 175,181
 Residential / Community

Size (ha): 1.54
Preferred Use: Mixed use – Employment /
Flood risk vulnerability classification: More vulnerable

Map 1: Fluvial/Tidal Flood Zones



Legend

- Lambeth Borough Council Boundary
- LBC Site Allocations
- LBC Site Allocations with 50m buffer
- EA Flood Defence
- Eftra Sewer
- EA Main River
- Maximum Flood Depth (m)
 - < 0.1m
 - 0.1m to 0.25m
 - 0.25m to 0.5m
 - 0.5m to 1.0m
 - 1.0m to 1.5m
 - > 1.5m
- LBC Surface Water Flood Incidents
- LBC Groundwater Flood Incident
- EA Groundwater Flood Incident

Tidal/Fluvial	Fluvial/Tidal Flood Zones				
		3B	3A	2	1
	Flood Zones in Site	NO	NO	NO	YES
	Area of site in Flood Zones (ha)	0	0	0	1.54
	% of site in Flood Zones	0	0	0	100
	Environment Agency Tidal Breach Modelling (0.5% AEP)				
	Maximum depth (m)				0
	Mean depth (m)				0
	Maximum hazard				0
	Mean hazard				0

Surface Water	Map 1: Surface Water Flooding					
	Return period	1 in 30yr (3.33% AEP)	1 in 75yr (1.33% AEP)	1 in 100yr (1% AEP)	1 in 200 (0.5% AEP)	In a Critical Drainage Area?
	% of site at risk of surface water flooding	19.8	26.4	27.6	32	YES
		Within the site		Within the site + 50m buffer		
	Council records of surface water flooding	1		26		

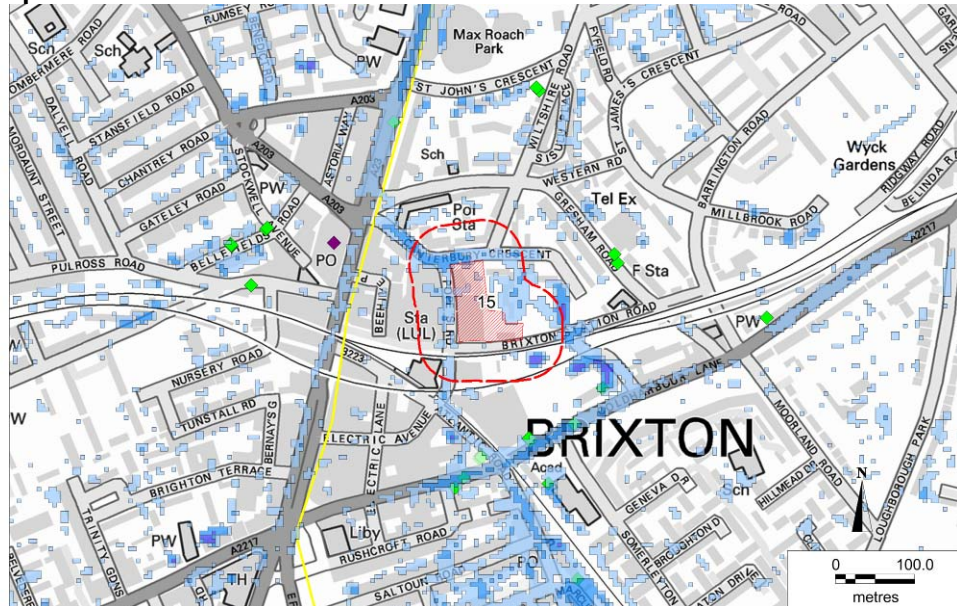
Sewer	Refer to Appendix A Figure 4	
		Within the site
	TWUL records of internal sewer flooding	35
	TWUL records of external sewer flooding	1

Groundwater	Map 1: Groundwater Flood Incidents		
		Within the site	Within the site + 50m buffer
	Environment Agency records of groundwater flooding	1	1
	Council records of groundwater flooding	0	0

Site Reference: 15 – Popes Road
Centre co-ordinates (x,y): 531,250 175,554
 Residential / Community

Size (ha): 0.52
Preferred Use: Mixed use – Commercial /
Flood risk vulnerability classification: More vulnerable

Map 1: Fluvial/Tidal Flood Zones



Legend

- Lambeth Borough Council Boundary
- LBC Site Allocations
- LBC Site Allocations with 50m buffer
- EA Flood Defence
- Effra Sewer
- EA Main River
- Maximum Flood Depth (m)
 - < 0.1m
 - 0.1m to 0.25m
 - 0.25m to 0.5m
 - 0.5m to 1.0m
 - 1.0m to 1.5m
 - > 1.5m
- LBC Surface Water Flood Incidents
- LBC Groundwater Flood Incident
- EA Groundwater Flood Incident

Tidal/Fluvial

Fluvial/Tidal Flood Zones

	3B	3A	2	1
Flood Zones in Site	NO	NO	NO	YES
Area of site in Flood Zones (ha)	0	0	0	0.52
% of site in Flood Zones	0	0	0	100

Environment Agency Tidal Breach Modelling (0.5% AEP)

Maximum depth (m)	0
Mean depth (m)	0
Maximum hazard	0
Mean hazard	0

Surface Water

Map 1: Surface Water Flooding

Return period	1 in 30yr (3.33% AEP)	1 in 75yr (1.33% AEP)	1 in 100yr (1% AEP)	1 in 200 (0.5% AEP)	In a Critical Drainage Area?
% of site at risk of surface water flooding	8.8	100	100	100	YES
	Within the site		Within the site + 50m buffer		
Council records of surface water flooding	0		0		

Sewer

Refer to Appendix A Figure 4

	Within the site
TWUL records of internal sewer flooding	0
TWUL records of external sewer flooding	0

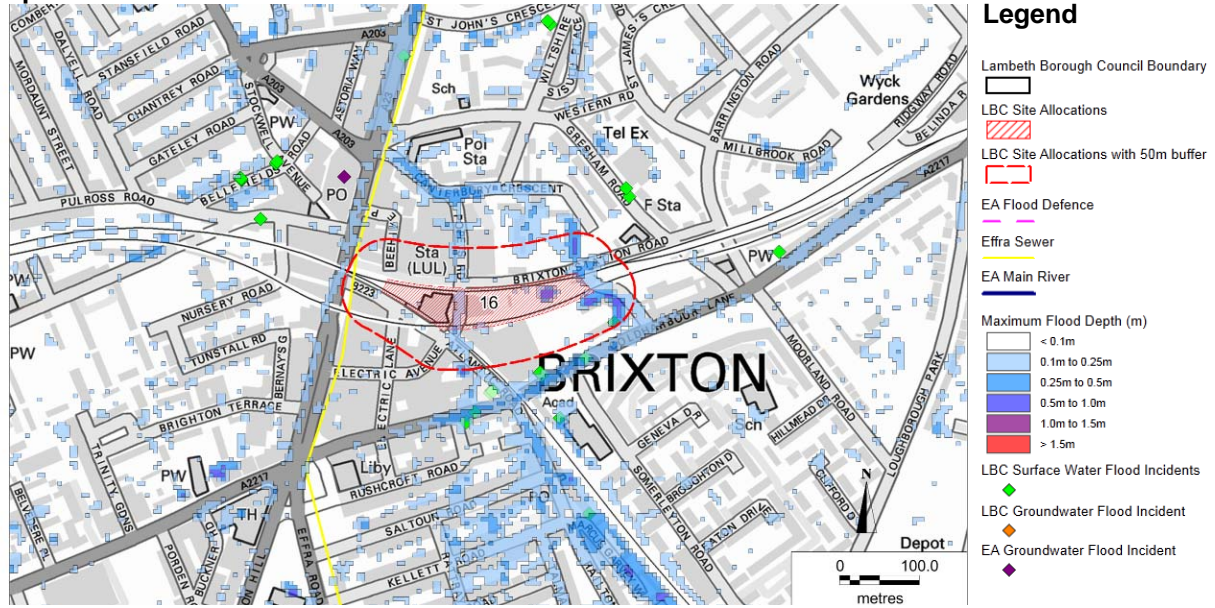
Groundwater

Map 1: Groundwater Flood Incidents

	Within the site	Within the site + 50m buffer
Environment Agency records of groundwater flooding	0	0
Council records of groundwater flooding	0	0

Site Reference: 16 – Brixton Central **Size (ha):** 1.05
Centre co-ordinates (x,y): 531,239 175,470 **Preferred Use:** Transport / Retail / Community / Leisure
Flood risk vulnerability classification: Essential Infrastructure / Less vulnerable

Map 1: Fluvial/Tidal Flood Zones

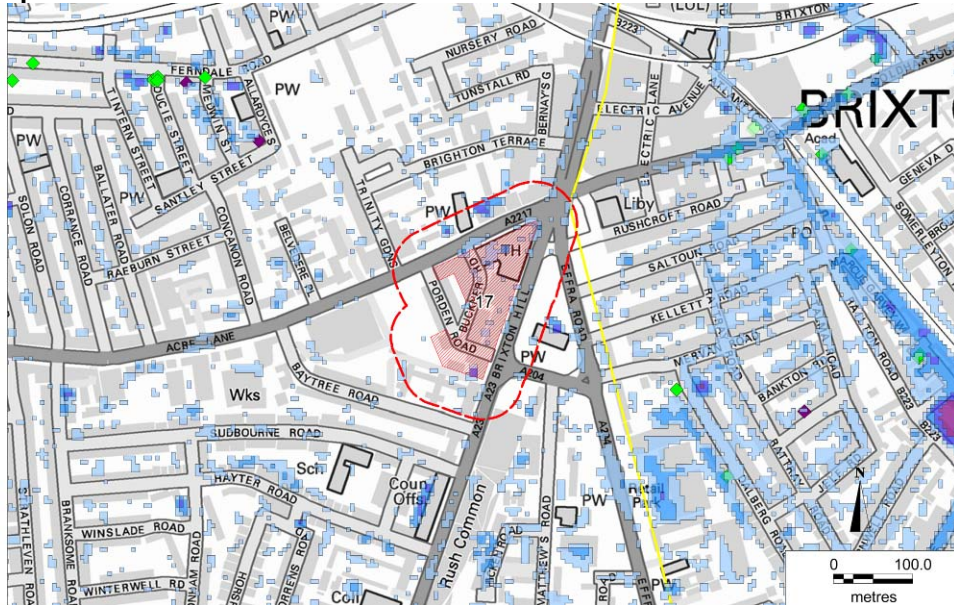


Tidal/Fluvial	Fluvial/Tidal Flood Zones					
		3B	3A	2	1	
	Flood Zones in Site	NO	NO	NO	YES	
	Area of site in Flood Zones (ha)	0	0	0	1.05	
	% of site in Flood Zones	0	0	0	100	
	Environment Agency Tidal Breach Modelling (0.5% AEP)					
	Maximum depth (m)				0	
	Mean depth (m)				0	
	Maximum hazard				0	
	Mean hazard				0	
Surface Water	Map 1: Surface Water Flooding					
	Return period	1 in 30yr (3.33% AEP)	1 in 75yr (1.33% AEP)	1 in 100yr (1% AEP)	1 in 200 (0.5% AEP)	In a Critical Drainage Area?
	% of site at risk of surface water flooding	14.3	73.7	100	100	YES
		Within the site		Within the site + 50m buffer		
	Council records of surface water flooding	0		1		
Sewer	Refer to Appendix A Figure 4					
		Within the site				
	TWUL records of internal sewer flooding	0				
	TWUL records of external sewer flooding	0				
Groundwater	Map 1: Groundwater Flood Incidents					
		Within the site		Within the site + 50m buffer		
	Environment Agency records of groundwater flooding	0		0		
	Council records of groundwater flooding	0		0		

Site Reference: 17 – SW2 Enterprise Centre
Centre co-ordinates (x,y): 530,903 175,140
 Service / Employment / Residential

Size (ha): 1.21
Preferred Use: Community / Public
Flood risk vulnerability classification: More vulnerable

Map 1: Fluvial/Tidal Flood Zones



Tidal/Fluvial

Fluvial/Tidal Flood Zones				
	3B	3A	2	1
Flood Zones in Site	NO	NO	NO	YES
Area of site in Flood Zones (ha)	0	0	0	1.21
% of site in Flood Zones	0	0	0	100

Environment Agency Tidal Breach Modelling (0.5% AEP)	
Maximum depth (m)	0
Mean depth (m)	0
Maximum hazard	0
Mean hazard	0

Surface Water

Map 1: Surface Water Flooding					
Return period	1 in 30yr (3.33% AEP)	1 in 75yr (1.33% AEP)	1 in 100yr (1% AEP)	1 in 200 (0.5% AEP)	In a Critical Drainage Area?
% of site at risk of surface water flooding	11.7	12.8	14.7	15.1	YES

	Within the site	Within the site + 50m buffer
Council records of surface water flooding	0	0

Sewer

Refer to Appendix A Figure 4	
	Within the site
TWUL records of internal sewer flooding	4
TWUL records of external sewer flooding	1

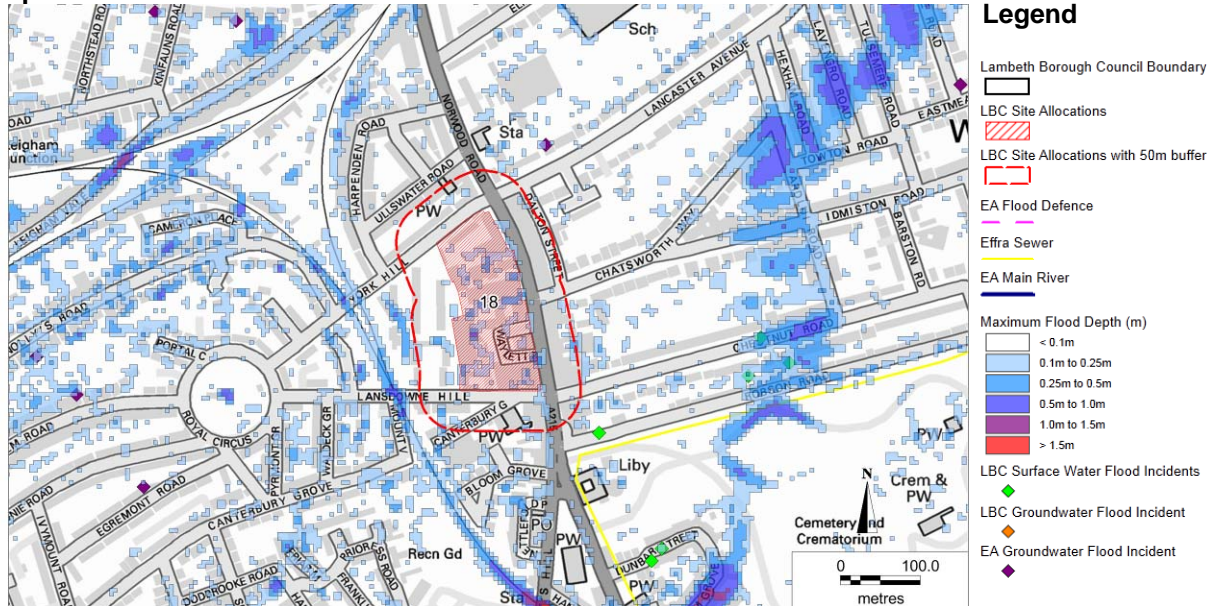
Groundwater

Map 1: Groundwater Flood Incidents		
	Within the site	Within the site + 50m buffer
Environment Agency records of groundwater flooding	0	0
Council records of groundwater flooding	0	0

Site Reference: 18 –286-362 Norwood Road
Centre co-ordinates (x,y): 531,828 172,404
 Residential / Retail

Size (ha): 1.89
Preferred Use: Mixed use –
Flood risk vulnerability classification: More vulnerable

Map 1: Fluvial/Tidal Flood Zones



Fluvial/Tidal Flood Zones				
	3B	3A	2	1
Flood Zones in Site	NO	NO	NO	YES
Area of site in Flood Zones (ha)	0	0	0	1.89
% of site in Flood Zones	0	0	0	100

Environment Agency Tidal Breach Modelling (0.5% AEP)	
Maximum depth (m)	0
Mean depth (m)	0
Maximum hazard	0
Mean hazard	0

Map 1: Surface Water Flooding					
Return period	1 in 30yr (3.33% AEP)	1 in 75yr (1.33% AEP)	1 in 100yr (1% AEP)	1 in 200 (0.5% AEP)	In a Critical Drainage Area?
% of site at risk of surface water flooding	23.9	28.0	27.8	26.7	NO
	Within the site		Within the site + 50m buffer		
Council records of surface water flooding	0		0		

Refer to Appendix A Figure 4	
	Within the site
TWUL records of internal sewer flooding	0
TWUL records of external sewer flooding	2

Map 1: Groundwater Flood Incidents		
	Within the site	Within the site + 50m buffer
Environment Agency records of groundwater flooding	0	0
Council records of groundwater flooding	0	0

Table 3.3: Allocated Sites for development identified in LB Lambeth Draft Local Plan

SITE NO.	SITE NAME	LOCAL PLAN USE TYPE	PREFERRED USE
1	Land north and south of and including 10 Royal Street, SE1 (Founders Place)	Social Infrastructure	Health use for the expansion of St Thomas' Hospital to provide clinical and ancillary hospital uses; replacement of affordable housing.
2	47-51 Acre Lane and land at the rear of Sudbourne Road Brixton SW2	Social Infrastructure	Education use to allow for the expansion of Sudbourne Primary School, subject to a land swap between the Council (owner of the Livity School site) and Genesis Housing (owner of the rear part of the site (47-49 Acre Lane)).
3	Vale Street Depot, Vale Street, SE27	Social Infrastructure	Education use (2 form entry primary school as a proposed expansion to an existing primary school) and/or housing. Retention or re-provision of the reuse and recycling centre.
4	New Park Road SW2	Social Infrastructure	Education use (2 forms of entry as a proposed expansion of nearby Telferscott primary school, with associated nursery places) with potential for enabling residential development.
5	Elizabeth House, York Road, SE1 7NQ	Neighbourhoods - PN1 Waterloo	Office led development with a mix of central London activities including ground floor active frontage uses and residential, with a new city square onto York Road.
6	Shell Centre, York Road, SE1	Neighbourhoods - PN1 Waterloo	Mixed use employment led development - office B1, residential including affordable housing, active ground floor frontage uses to include retail, cultural, sport, leisure, community facilities including the replacement of the police facility.
7	Waterloo Station, Waterloo Road, SE1	Neighbourhoods - PN1 Waterloo	Railway terminal and transport interchange, ground floor active uses, retail and office (B1) with a new station concourse at street level.
8	Cornwall Road Bus Garage, Cornwall Road, SE1 8TE	Neighbourhoods - PN1 Waterloo	Mix of central London activities including residential and commercial with ground floor active frontages uses where appropriate. Replacement bus garage or re-provision on an alternative site to be agreed with Transport for London.
9	ITV Centre and Gabriel's Wharf, Upper Ground SE1	Neighbourhoods - PN1 Waterloo	Mixed use, including B1 offices, residential including affordable housing, active frontage uses at ground floor level
10	8 Albert Embankment and land to the rear bounded by Lambeth High St, Whitgift St, the Railway Viaduct, and Southbank House, SE11	Neighbourhoods - PN2 Vauxhall	Retention/provision of an operational fire station. Mix of uses including residential and employment. Exceptionally, configuration of the site to include some residential within the KIBA boundary may be considered, if it can be demonstrated that this is necessary to achieve an acceptable scheme in all other respects. The amount of replacement employment should be maximised and should include space for small and medium enterprises.
11	Keybridge House, 80 South Lambeth Road, 10 - 22 Wyvil Road (even) and 143 - 161 Wandsworth Road (odd), SW8	Neighbourhoods - PN2 Vauxhall	Mixed use development with active frontages at ground floor levels, employment with residential on the upper levels and potential location for a new primary school
12	Land bounded by Wandsworth Road to the west, Parry Street to the north, Bondway and the railway viaduct to the east,	Neighbourhoods - PN2 Vauxhall	Town centre led mixed use development with employment, community uses and residential on the upper floors. A new urban square with a linear park connecting through the site and the re-provision of a hostel.

SITE NO.	SITE NAME	LOCAL PLAN USE TYPE	PREFERRED USE
	SW8		
13	Plot bounded by 7- 93 Wandsworth Road, Parry Street and Bondway including the bus station SW8 (Vauxhall Island Site)	Neighbourhoods - PN2 Vauxhall	Town centre led mixed use development centred on Bondway and the existing bus station. Retail and other town centre uses on the ground floor and above to form a new high street onto Bondway with active non-retail uses on the Wandsworth Road frontage and residential on the upper floors.
14	Somerleyton Road, SW9	Neighbourhoods - PN3 Brixton	Mixed use development of residential, employment, cultural and community facilities, social enterprise/ business start up spaces, and provision of open space. Education site required until 2015, potential for housing decant on part of the site. Depot provision to be retained or re-provided elsewhere in the borough.
15	Popes Road SW9	Neighbourhoods - PN3 Brixton	Mixed use development with retail, commercial, community, leisure, residential and town centre car and cycle parking.
16	Brixton Central (between the viaducts) SW9	Neighbourhoods - PN3 Brixton	Improvements to Brixton Station to include a new station entrance and pedestrian links. Mixed use development including retail, new workspace, food and drink, community, educational, leisure and recreation uses, possible market extension and associated uses. Development to include revitalised railway arches with options to provide links through to improve north south routes.
17	SW2 Enterprise Centre, SW2	Neighbourhoods - PN3 Brixton	Civic, community and public service uses with new outdoor civic space, redevelopment of the underused sites to provide additional community facilities, retail, residential and additional employment floorspace, and provide new active frontages along Brixton Hill and Acre Lane
18	286- 362 Norwood Road, SE27	Neighbourhoods - PN7 West Norwood	Retail led mixed use development to include housing; new public space and improved connections through the area; smaller retail units fronting Norwood Road and car parking provision.

4 SEQUENTIAL TEST

4.1.1 The following chapter details the process followed to apply the Sequential Test to the 18 Allocated Sites for development brought forward in the LB Lambeth Draft Local Plan.

1. Are the proposed development sites in Flood Zone 1 – ‘Low Probability’ of flood risk?	
Yes	<p>The following sites are located wholly in Flood Zone 1:</p> <ul style="list-style-type: none"> • Site 2: 47-51 Acre Lane and land at the rear of Sudbourne Road • *Site 3: Vale Street Depot, Vale Street • Site 4: New Park Road • *Site 14: Somerleyton Road • *Site 15: Popes Road • *Site 16: Brixton Central • *Site 17: SW2 Enterprise Centre • Site 18: 286-362 Norwood Road <p>All development sites fall within Flood Zone 1 and would be appropriate development and pass the Sequential Test</p> <p>Flood Risk Mapping in Section 3 and Table 5.1 should be consulted for information on flood risk to the sites aside from that posed fluvial and tidal sources.</p> <p>Surface water flooding may be a constraint for some sites across the borough. Sites identified as being within a critical drainage area include those sites marked with an asterisk (*) in the table. Therefore adequate considerations should be made for surface water attenuation and drainage. These sites may require a flood risk assessment. The LB Lambeth Surface Water Management Plan should be consulted for further details. All sites greater than 1 hectare require a flood risk assessment focusing on surface water management.</p>
No	<p>The following sites are located within Flood Zones 2 and 3a:</p> <ul style="list-style-type: none"> • Site 1: Land north and south of and including 10 Royal Street • Site 5: Elizabeth House, York Road • Site 6: Shell Centre, York Road • Site 7: Waterloo Station, Waterloo Road • Site 8: Cornwall Road Bus Garage, Cornwall Road • Site 9: ITV Centre and Gabriel's Wharf, Upper Ground • Site 10: 8 Albert Embankment and land to the rear bounded by Lambeth High St, Whitgift St, the Railway Viaduct, and Southbank House • Site 11: Keybridge House, 80 South Lambeth Road, 10 - 22 Wyvil Road

	<p>(even) and 143 - 161 Wandsworth Road (odd)</p> <ul style="list-style-type: none"> • Site 12: Land bounded by Wandsworth Road to the west, Parry Street to the north, Bondway and the railway viaduct to the east • Site 13: Plot bounded by 7- 93 Wandsworth Road, Parry Street and Bondway including the bus station SW8 (Vauxhall Island Site)
<p>2. Could the potential development sites located in Flood Zone 2 & 3 alternatively be located in an area at low risk of flooding?</p>	
No.	<p>Section 2.2 outlines relevant policy in relation to development within Lambeth borough. The Lambeth SFRA (2013) states that in Vauxhall there are 'no reasonably available sites in Flood Zone 1'. Mapping in Appendix A Figure 1 indicates that the extents of Flood Zones 2 and 3 are very similar. 'In the situation of Waterloo, the whole development opportunity area resides in Flood Zone 3a'. Therefore the sites within these areas cannot be redirected to Flood Zone 1.</p> <p>Additional justification for development in Vauxhall and Waterloo areas:</p> <p>Both Vauxhall and Waterloo have been identified as Opportunity Areas in the London Plan; areas designated as focus points for development and intensification. As stated in the LB Lambeth Draft Local Plan there is great competition for land on which to development, therefore severely limiting spatial options for development.</p>
<p>3. For Sites Located in EA Flood Zone 2,3 and 3b – 'Medium Probability', 'High Probability' and 'Functional Flood Plain'</p>	
<p>3a. Are any of the development proposals classified as 'Highly Vulnerable'?</p>	
No	<p>No sites are classified as 'highly vulnerable' according to the NPPF. Should the police station and fire station proposed in Site 6 and Site 10 respectively be required to be operational during flooding, these land uses would not be appropriate in Flood Zone 3a and would therefore fail the Sequential Test.</p>
<p>3b. Which category of the 'Flood Risk Vulnerability Classification' does each of the development sites proposed uses fall into?</p>	
	<p>(Note – Not all development sites have a single proposed future use and so will fall in more than 1 category of vulnerability; therefore the most vulnerable classification has been used)</p> <p>The following sites are classified as Essential Infrastructure:</p> <ul style="list-style-type: none"> • Site 7: Waterloo Station, Waterloo Road • *Site 8: Cornwall Road Bus Garage, Cornwall Road <p>The broad classification of the sites indicates them to be 'Essential Infrastructure'. The sites also contain proposed uses that are 'Less Vulnerable', which considered as appropriate development. However not all forms of employment or commercial development are as 'Less Vulnerable'; therefore Table 2 in the NPPF Technical Guidance should be consulted to confirm the vulnerability of any proposed land use.</p> <p>'Essential Infrastructure' land uses located within Flood Zone 3a are not considered to pass the Sequential Test. The sites are therefore subject to the Exception Test.</p> <p>The following sites are classified as More Vulnerable:</p> <ul style="list-style-type: none"> • *Site 1: Land north and south of and including 10 Royal Street

	<ul style="list-style-type: none"> • *Site 5: Elizabeth House, York Road • *Site 6: Shell Centre, York Road • Site 9: ITV Centre and Gabriel's Wharf, Upper Ground • Site 10: 8 Albert Embankment and land to the rear bounded by Lambeth High St, Whitgift St, the Railway Viaduct, and Southbank House • *Site 11: Keybridge House, 80 South Lambeth Road, 10 - 22 Wyvil Road (even) and 143 - 161 Wandsworth Road (odd) • Site 12: Land bounded by Wandsworth Road to the west, Parry Street to the north, Bondway and the railway viaduct to the east • Site 13: Plot bounded by 7- 93 Wandsworth Road, Parry Street and Bondway including the bus station SW8 (Vauxhall Island Site) • *Site 14: Somerleyton Road <p>Site specific Flood Risk Assessments would be required for the potential development sites to provide a greater level of understanding of the flood risks posed to the proposed developments.</p> <p>The sites marked with an asterisk(*) are located in a Critical Drainage Area for surface water, and at residual risk from tidal flooding.</p>
<p><i>3c. Can the 'More Vulnerable' aspects of proposals be directed to parts of the site where the risk of flooding is lower?</i></p>	
<p>No</p>	<p>The following sites are located entirely within Flood Zone 3a and so cannot be directed to areas of lower flood risk, and are classified as 'More Vulnerable' development:</p> <ul style="list-style-type: none"> • *Site 1: Land north and south of and including 10 Royal Street • *Site 5: Elizabeth House, York Road • *Site 6: Shell Centre, York Road • Site 9: ITV Centre and Gabriel's Wharf, Upper Ground • Site 10: 8 Albert Embankment and land to the rear bounded by Lambeth High St, Whitgift St, the Railway Viaduct, and Southbank House • *Site 11: Keybridge House, 80 South Lambeth Road, 10 - 22 Wyvil Road (even) and 143 - 161 Wandsworth Road (odd) • Site 12: Land bounded by Wandsworth Road to the west, Parry Street to the north, Bondway and the railway viaduct to the east • Site 13: Plot bounded by 7- 93 Wandsworth Road, Parry Street and Bondway including the bus station SW8 (Vauxhall Island Site) • *Site 14: Somerleyton Road <p>A site specific Flood Risk Assessment would be required for the potential development sites to provide a greater level of understanding of the flood risks posed to the sites in respect of the proposed development.</p>

	<p>Sites identified as being within a critical drainage area include those sites marked with an asterisk (*) in the table.</p> <p>The proposed uses at these sites are only compatible in Flood Zones 1 and 2. The sites do not pass the Sequential Test and therefore require consideration of the Exception Test for development due to their location within Flood Zone 3a. As all sites are located entirely within Flood Zone 3a, updated breach modelling, when available, should be utilised during the Exception Test in order to identify whether development is safe, and to inform placement of particular land uses within each site. This has been detailed further in Section 5.</p>
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4.2 Summary

- 4.2.1 The following Allocated Sites for development are located in Flood Zone 1 and are therefore sequentially appropriate in accordance with the Sequential Test;
 - Site 2: 47-51 Acre Lane and land at the rear of Sudbourne Road
 - *Site 3: Vale Street Depot, Vale Street
 - Site 4: New Park Road
 - *Site 14: Somerleyton Road
 - *Site 15: Popes Road
 - *Site 16: Brixton Central
 - *Site 17: SW2 Enterprise Centre
 - Site 18: 286-362 Norwood Road

- 4.2.2 The Lambeth Surface Water Management Plan indicates that a number of the sites are located within a Critical Drainage Area, indicated by an asterisk (*). The SWMP should be considered throughout the spatial planning process to maintain a sequential approach and ensure the effective management of surface water flooding.

- 4.2.3 All other Allocated Sites for development are located entirely within Flood Zone 3a and therefore as a result the proposed developments **do not pass the Sequential Test** for these sites. The Exception Test is therefore necessary and would provide a valid means of justifying sustainable exceptional development in these areas, to ensure that development is safe for its lifetime, will not increase flood risk elsewhere, and where possible will reduce flood risk overall.

- 4.2.4 A police facility, to be used as a rest area for policemen on patrol in the local area, is proposed within Site 6. The proposal does not constitute a police station required to remain operational during flooding and therefore is not classified according to the NPPF as 'Highly Vulnerable'. 'Highly Vulnerable' land uses **would not be appropriate under either the Sequential or Exception Test**. The fire station included within Site 10 is an existing operational fire station which would be retained in any re-development proposal. Therefore it is not classified as new development and therefore the application of the Sequential Test does not apply to this part of the re-development.

- 4.2.5 The SFRA and SWMP for Lambeth will assist in the application of the Exception Test. When available, the updated Thames Tidal Breach Modelling results, based on in-channel water levels presented in the TE2100 Plan, in particular should be utilised. Breach results may indicate that sites, whilst located in Flood Zone 3a, are not at residual risk from tidal flooding in the event of a breach of the Thames Flood Defences.

5 EXCEPTION TEST

- 5.1.1 The purpose of the Exception Test is to ensure that new development is only permitted in medium and high flood risk areas where flood risk is clearly outweighed by other sustainability factors and where the development will be safe during its lifetime, considering climate change. As set out in the NPPF the Exception Test comprises two criteria, part a) and b), both of which must be satisfied before a development may be considered appropriate within an area of medium or high flood risk.
- 5.1.2 'More vulnerable' development such as residential or educational uses should, according to the Sequential Test, only be permitted in Flood Zone 3a if the Exception Test is passed.
- 5.1.3 The SFRA and SWMP provide more detailed information regarding flood risk in the area, and will facilitate application of the Exception Test. In due course the Environment Agency will update their breach modelling for the Lambeth area, following which breach depths and hazard mapping can be used to inform residual flood risk to development sites. In some cases, it may be found that it will not be possible to demonstrate that the development will be safe and therefore the chosen site is not appropriate for development.

5.2 Part a) Wider Sustainability to the Community

- 5.2.1 It must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by the SFRA where one has been prepared.
- 5.2.2 As part of their Sustainability Appraisal to support the Draft Local Plan, LB Lambeth has prepared 18 sustainability objectives, which are included in Table 5.1. Individual developments should be scored against these sustainability criteria to determine whether they will provide wider sustainability benefits to the community that outweigh the flood risk and satisfy part a) of the Exception Test. Where a development fails to score positively against the SA, LB Lambeth could consider planning conditions or Section 106 Agreements.

Table 5.1: Criteria from LB Lambeth Sustainability Appraisal

LB LAMBETH SUSTAINABILITY APPRAISAL OBJECTIVES		
1	Crime and safety	Ensuring safe communities with reduced crime and disorder.
2	Health and well-being	Promoting a healthy borough with better health care services, reduced health inequalities and by reducing the causes of ill health.
3	Access and services	Create an environment that is accessible to and fully inclusive for all people including the elderly and disabled and improve accessibility to key services and facilities.
4	Provision of essential infrastructure	To ensure that the necessary infrastructure is planned or in place to meet current or likely future demands.
5	Equality and diversity	To ensure equitable outcomes for all communities, particularly those most liable to experience discrimination, poverty and social exclusion.
6	Housing	Ensuring everyone has the opportunity for an affordable decent home, quiet enjoyment of that home and the protection of local amenity.
7	Liveability and place	To design and sustain liveable, mixed-use physical and social environments that promote long-term social cohesion, sustainable lifestyles and a sense of place.
8	Built and	Improve the quality, attractiveness, character and sustainability of the

LB LAMBETH SUSTAINABILITY APPRAISAL OBJECTIVES		
	historic environment	built environment through high quality design and protection of open space, valued views and historic assets.
9	Transport and travel	Integrating planning and transport decisions, to reduce the need to travel, reducing reliance on the private car and the overall level of road traffic whilst prioritising walking, cycling and public transport.
10	Biodiversity	To conserve and enhance biodiversity, and to bring nature closer to people.
11	Climate change and energy	Minimise energy consumption and increase energy efficiency and the use of renewable energy. Reduce greenhouse gases and prepare the Borough for the unavoidable effects of climate change.
12	Water resources and flood risk management	To improve the quality of surface waters and groundwater, to achieve the wise management and sustainable use of water resources and to minimise flood risk.
13	Waste	Ensure that Lambeth manages its waste in a sustainable manner, minimising the production of waste and increasing re-use, recycling, remanufacturing and recovery rates.
14	Air quality	To improve air quality.
15	Education and skills	To maximise the education and skills levels of the population.
16	Local economy	Create and sustain prosperity and business growth in a strong and dynamic local economy and improve the social and environmental performance of businesses.
17	Regeneration and efficient use of land	To stimulate regeneration that maximises benefits to the most deprived areas and communities, and to improve efficiency in land use through the re-use of previously developed land and existing buildings.
18	Tackling worklessness	Increase the amount of and access to employment generating activities and offer all residents the opportunity for rewarding, well-located and satisfying employment.

5.2.3 Alternative options for future development sites for Lambeth have been considered. It has been concluded that alternative areas are not suitable to accommodate the redevelopment proposed within Lambeth due to the requirement for large sections of brownfield land to accommodate the residential and employment targets set out within the London Plan, and also due to the high population density with the borough.

5.2.4 The Allocated Sites for development may provide benefits with regards to a number of criteria set out in Table 5.1, for example with regard to growth targets set by the London Plan.

5.3 Part b) Safe from Flood Risk

5.3.1 A site-specific FRA must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall. The NPPF also requires that it must be demonstrated that:

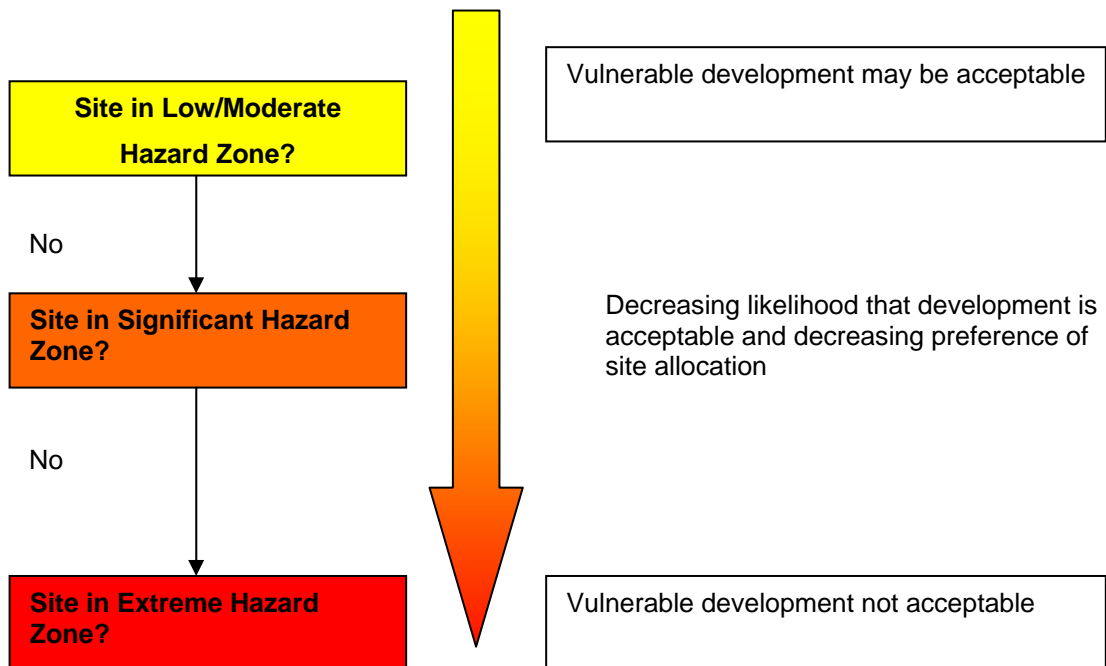
- *‘Within the site, the most vulnerable development is located in areas of lowest flood risk unless there are overriding reasons to prefer a different location;*

- *Development is appropriately flood resilient and resistant, including safe access and escape routes where required, and that any residual risk can be safely managed, including by emergency planning; and it gives priority to the use of sustainable drainage systems'*

5.3.2 The definition of safe should be clarified and agreed between LB Lambeth and the Environment Agency and may require additional considerations depending on the precise nature of the proposed development and flood risk on a site by site basis.

5.3.3 LB Lambeth's decision to allocate development land within areas where Hazard Zone maps have been produced in the SFRA should examine all of the following:

- The vulnerability of the proposed development type to flooding;
- The residual risk to the development and;
- The options for managing the residual risk.



5.3.4 Allocated Development Sites requiring the Exceptions Test should be ranked according to the breach hazard, which will help to identify those sites at lowest residual risk. The breach hazard will be updated when the Environment Agency update their breach modelling for the area. Table 5.1 provides flood risk statistics for all 18 Allocated Sites for Development, and will allow LB Lambeth to assess flood risk to each site when carrying out the Exception Test. These statistics should be supplemented by updated Thames Tidal Breach Modelling outputs, when made available by the Environment Agency.

Table 5.2: Ranking of sites based on flood risk

DEVELOPMENT SITE REFERENCE	SITE SIZE		CENTRE COORDINATES		HIGHEST FLOOD ZONE ON THE SITE	OTHER FLOOD ZONES AT THE SITE				% OF SITE AT RISK OF SURFACE WATER FLOODING				SURFACE WATER FLOODING INCIDENTS	SEWER FLOODING INCIDENTS		GROUNDWATER FLOODING INCIDENTS	
	Area (m2)	Area (ha)	Centre_X	Centre_Y		In Flood Zone 1?	In Flood Zone 2?	In Flood Zone 3a?	In Flood Zone 3b?	% Site SW Flooding 3.33% AEP	% Site SW Flooding 1.33% AEP	% Site SW Flooding 1% AEP	% Site SW Flooding 0.5% AEP		Council records of surface water flooding (in site)	TWUL records of internal sewer flooding in last 20 years (in site)	TWUL records of external sewer flooding in last 20 years (in site)	Environment Agency records of groundwater flooding (in site)
15	5186	0.52	531,250	175,554	1	YES	NO	NO	NO	8.8	100	100	100	0	0	0	0	0
2	5687	0.57	530,590	175,034	1	YES	NO	NO	NO	9.8	10.2	10.2	11.2	0	4	1	0	0
17	12092	1.21	530,903	175,140	1	YES	NO	NO	NO	11.7	12.8	14.7	15.1	0	4	1	0	0
4	4676	0.47	530,110	173,517	1	YES	NO	NO	NO	12.4	12.4	13.3	12.4	0	6	3	0	0
16	10483	1.05	531,239	175,470	1	YES	NO	NO	NO	14.3	73.7	100	100	0	0	0	0	0
14	15352	1.54	531,453	175,181	1	YES	NO	NO	NO	19.8	26.4	27.6	32	1	35	1	1	0
18	18851	1.89	531,828	172,404	1	YES	NO	NO	NO	23.9	28.0	27.8	26.7	0	0	2	0	0
3	5811	0.58	532,567	172,039	1	YES	NO	NO	NO	34.2	28.5	34.6	29.9	0	3	2	0	0
13	11233	1.12	530,309	177,940	3a	NO	YES	YES	NO	5.5	6.3	8	10.9	0	12	1	0	0
11	19862	1.99	530,234	177,579	3a	NO	YES	YES	NO	14.1	25.2	34.3	38.4	0	12	1	0	0
12	18791	1.88	530,213	177,709	3a	NO	YES	YES	NO	4.7	6.4	7.6	7.5	4	12	1	0	0
10	10342	1.03	530,594	178,752	3a	NO	YES	YES	NO	5.3	12.5	19	30.2	0	2	0	0	0
1	16866	1.69	530,870	179,432	3a	NO	YES	YES	NO	10.8	13.7	15.9	20.1	0	0	0	0	0
8	3769	0.38	531,340	179,930	3a	NO	YES	YES	NO	85.6	95.1	99.1	100	0	0	0	0	0
7	91608	9.16	531,016	179,815	3a	NO	YES	YES	NO	12.8	16.9	17.9	20.3	0	0	0	0	0
9	17722	1.77	531,184	180,433	3a	NO	YES	YES	NO	11.7	12.6	14	13.9	0	0	0	0	0
6	25464	2.55	530,855	180,003	3a	NO	YES	YES	NO	23.6	27.6	29.1	31.3	0	0	0	0	0
5	8827	0.88	530,913	179,912	3a	NO	YES	YES	NO	49.3	39.5	49.1	50.8	0	0	0	0	0

6 WINDFALL SITES

- 6.1.1 Windfall Sites are sites which become available for development unexpectedly and are therefore not included as allocated land in a planning authority's development plan.
- 6.1.2 Should a site become available that is not one of the Allocated Sites which has been sequentially tested in this report, the Sequential Test should be applied on an individual site basis. The developer will need to provide evidence to the LPA that they have adequately considered other reasonably available sites, including other sites allocated as suitable for housing plans.
- 6.1.3 The following steps should be followed for windfall sites:
1. Identify if the sequential test is required; NPPF states that if the application is minor development or for a change of use, the Sequential Test or Exception Test is not required. The application will still need to meet the requirements of an FRA as set out in the NPPF.
 2. If the Sequential Test is required, identify which Flood Zone the site is located within using the Environment Agency flood maps (included in Appendix A).
 3. Should the site be located within Flood Zone 3a or 3b consult updated breach hazard mapping when available.
 4. Agree scope and considerations for the site specific Sequential Test and Exception Test if necessary with the LPA and Environment Agency.

7 CONCLUSIONS AND RECOMMENDATIONS

7.1 The Sequential Test

- 7.1.1 The Sequential Test process has confirmed that eight of LB Lambeth's Allocated Sites are located in Flood Zone 1; therefore all types of future development are sequentially appropriate in accordance with the NPPF. The flood risks from sources other than tidal and fluvial must still be considered. Surface water flooding may be a constraint for some sites across the borough, with a number of sites located within Critical Drainage Areas, and an FRA may be required to accompany a planning application.
- 7.1.2 The remaining ten Allocated Sites, located within the Vauxhall and Waterloo areas are located within Flood Zone 3a. Due to the vulnerability of proposed development on these sites, they do not satisfy the requirements of the Sequential Test.
- 7.1.3 Consideration of the Exception Test will be required in order to determine whether each site meets the stated criteria in order for development to be appropriate. It must be demonstrated that flood risk is clearly outweighed by other sustainability factors and that the development will be safe during its lifetime, considering climate change.
- 7.1.4 As the sites are located in Flood Zone 3a, the sites should be ranked based on the breach hazard for each site in order to identify preferential sites for development, and also utilise other flood risk data sets covering surface water, sewer and groundwater flooding.

7.2 Windfall Sites

- 7.2.1 A suitable process for application of the Sequential and Exception Test for windfall sites has been outlined in this document. The Sequential Test should be applied on an individual site basis for sites not allocated for development in the Draft Local Plan.

7.3 Recommendations

Exception Test

- 7.3.1 The Exception Test should be carried out by the developer as part of the planning application process for a proposed development on any of the ten sites which do not satisfy the Sequential Test, if and when such an application is made, in order to consider the flood risks. It is recommended that the updated breach modelling outputs, yet to be published, and surface water flooding information will form the principal data sets for determination of whether 'safe development' can be achieved on the sites.

Emergency Planning

- 7.3.2 It is recommended that the LB Lambeth Emergency Planning Team are involved throughout the planning process to ensure that, where necessary, strategies are put in place and the Emergency Plan adapted in order to direct people to safety during times of flood.
- 7.3.3 Flood evacuation plans for individual developments should also be developed through liaison with the emergency planners and emergency services.

APPENDIX A – FIGURES

FIGURE 1 – ENVIRONMENT AGENCY FLOOD ZONES

FIGURE 2 – SEWER FLOOD INCIDENT RECORDS

APPENDIX B – ENVIRONMENT AGENCY CORRESPONDENCE

REFERENCES

- ¹ London Borough of Lambeth (January 2011) Lambeth Local Development Framework Core Strategy
- ² London Borough of Lambeth (August 2007) Lambeth Unitary Development Plan – Policies Saved Beyond 05 August 2010 and not superseded by the Local Development Framework Core Strategy January 2011
- ³ URS (March 2013) Lambeth Borough Council Strategic Flood Risk Assessment.
- ⁴ Capita Symonds URS (August 2011) Lambeth Borough Council Surface Water Management Plan
- ⁵ Communities and Local Government. (March 2012) National Planning Policy Framework.
- ⁶ Communities and Local Government. (March 2012) Technical Guidance to the National Planning Policy Framework.
- ⁷ Greater London Authority (July 2011) The London Plan – Spatial Development Strategy for Greater London
- ⁸ Greater London Authority (October 2009) The London Strategic Housing Land Availability Assessment and Housing Capacity Study (SHLAA/HCS)
- ⁹ London Borough of Lambeth (March 2013) Waterloo Area Supplementary Planning Document
- ¹⁰ London Borough of Lambeth (January 2013) Vauxhall Area Supplementary Planning Document
- ¹¹ Greater London Authority (March 2012) Vauxhall Nine Elms Battersea Opportunity Area Planning Framework
- ¹² London Borough of Lambeth (June 2013) Brixton Area Supplementary Planning Document
- ¹³ Halcrow (April 2011) Thames Tidal Breach Modelling – Bermondsey Embayment. Environment Agency.
- ¹⁴ Environment Agency (November 2012) Thames Estuary 2100 Plan – Managing flood risk through London and the Thames estuary