

LEGEND

--- Borough Boundary

LiDAR Topographic Survey (m AOD)

- >8m
- 8m
- 5m
- 3m
- 1m
- 0m

NOTES

1. Light Detection and Ranging (LiDAR) is an airborne mapping technique, which uses a laser to measure the distance between the aircraft and the ground.
2. This dataset has a spatial resolution of 1m. The Environment Agency's LiDAR data archive contains digital elevation data derived from surveys carried out since 1998.

Newham London

Strategic Flood Risk Assessment

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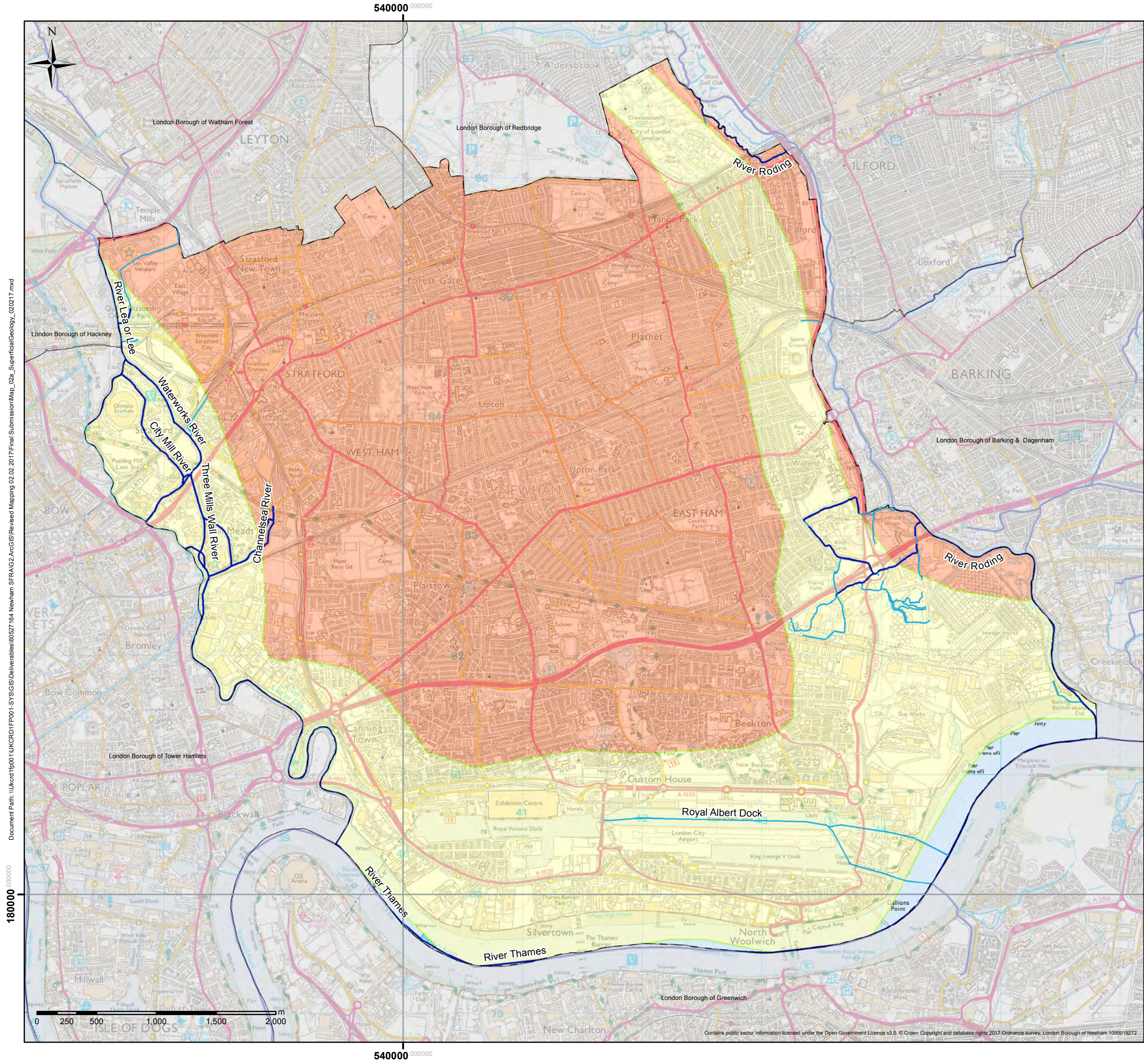
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LiDAR Topographical Survey				
GIS:	Checked:	Approved:	Date:	30/05/17
BN	CG	JR	Status	Final
Map 001			Scale - 1:30,000	
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Document Path: \\ukcrd1f001\UKCRD1\FP001\SYSTEMS\Deliverables\60527164 Newham SFRA\GIS\Deliverables\60527164 Final Submission\Map_01_Location\Topography_0130217.mxd

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LEGEND

- Borough Boundary
- Ordinary Watercourses
- Main River

Superficial Geology

- Alluvium
- River Terrace Deposits (Undifferentiated)

NOTES

1. The 1:625,000 scale digital map data is generalised and the geological interpretation should be used only as a guide to the geology at a local level, not as a site-specific geological plan based on detailed site investigations

Strategic Flood Risk Assessment

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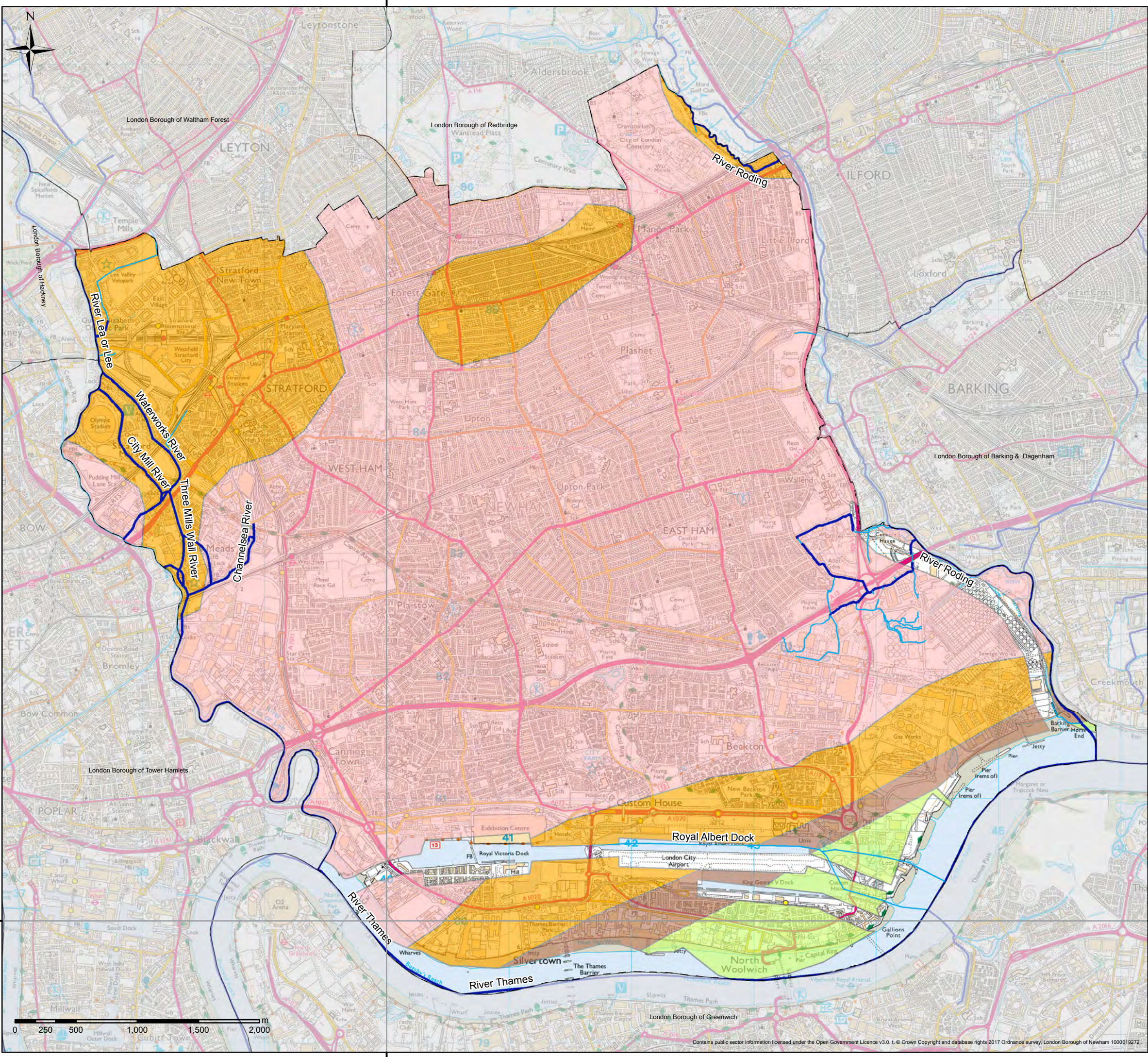
Superficial Geology				
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Map 002A			Scale - 1:30,000	
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LEGEND

- Borough Boundary
- Ordinary Watercourses
- Main River
- Bedrock Geology**
- Lambeth Group
- Thames Group
- Thanet Sands Formation
- White Chalk Subgroup

NOTES

1. The 1:625,000 scale digital map data is generalised and the geological interpretation should be used only as a guide to the geology at a local level, not as a site-specific geological plan based on detailed site investigations
2. BGS data does not cover the whole of the study area, with small gaps in data along the River Roding corridor and in areas of open water - the Royal Docks. This is however, the best available data at the time of writing.



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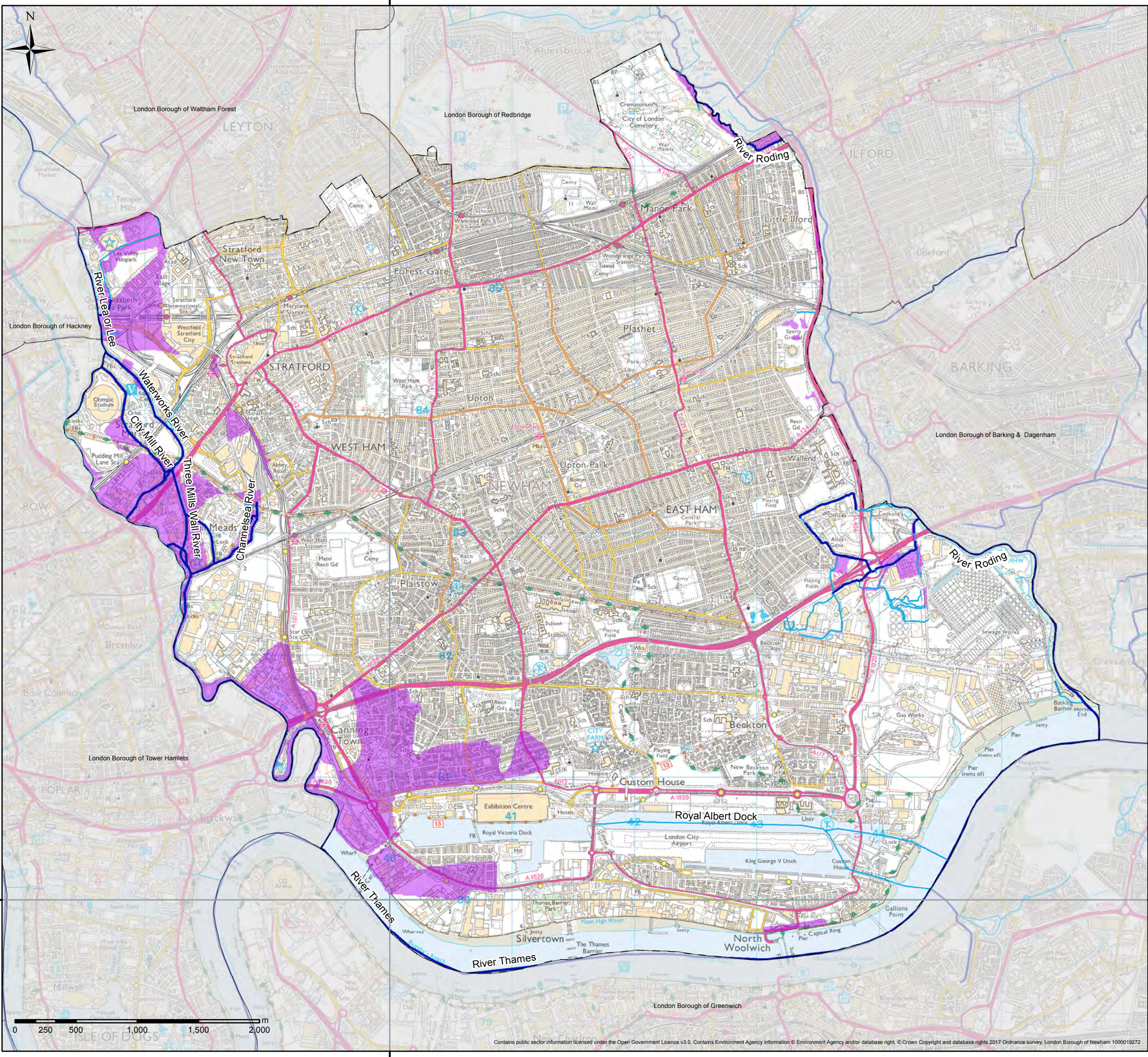
Bedrock Geology

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BN	CG	JR	Status	Final

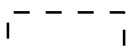



Map 002B Scale - 1:30,000

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LEGEND

-  Borough Boundary
-  Ordinary Watercourses
-  Main River
-  Historic Flood Mapping

NOTES

1. Flood History dataset has been received from the Environment Agency spatial data catalogue. Flooding from rivers, the sea and groundwater springs have been collated in this dataset.
2. The historic flood mapping takes into account any defences that were present at the time of the flood event. Areas that do not have historical flooding do not mean the area has never flooded, only that there are no records of flooding in this area held by the Environment Agency.



Strategic Flood Risk Assessment



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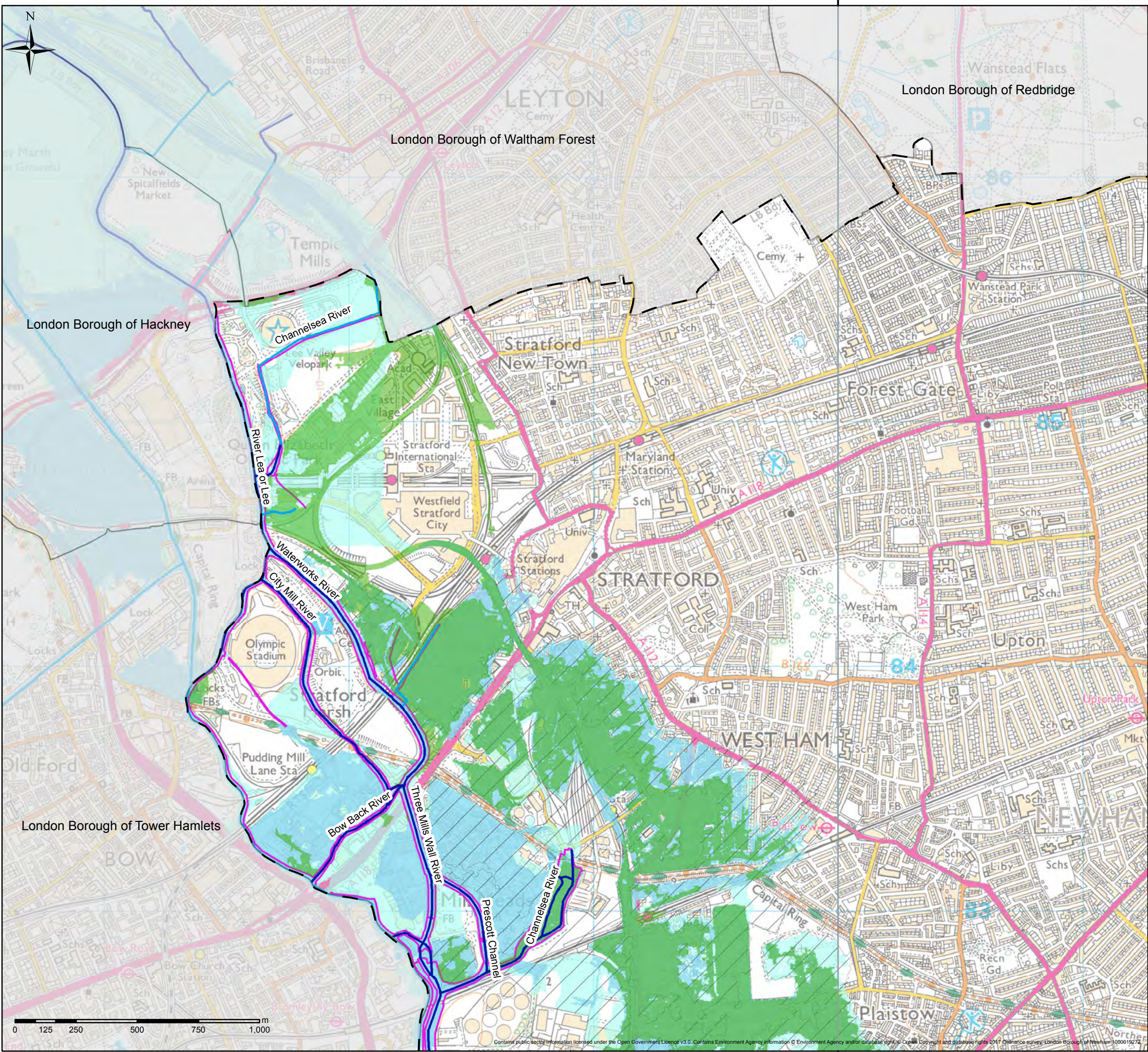
Flood History

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Map 003 Scale - 1:30,000

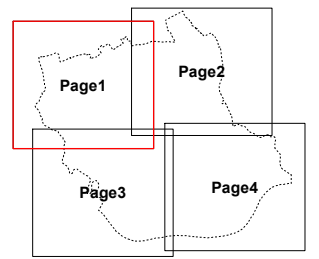
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LEGEND

- Borough Boundary
- Ordinary Watercourses
- Main River
- River Roding 1 in 100 year + CC extent³
- River Lee 1 in 100 year + 70% CC Extent³
- Flood Defences
- Areas Benefitting from Flood Defences
- Flood Zone 3
- Flood Zone 2



NOTES

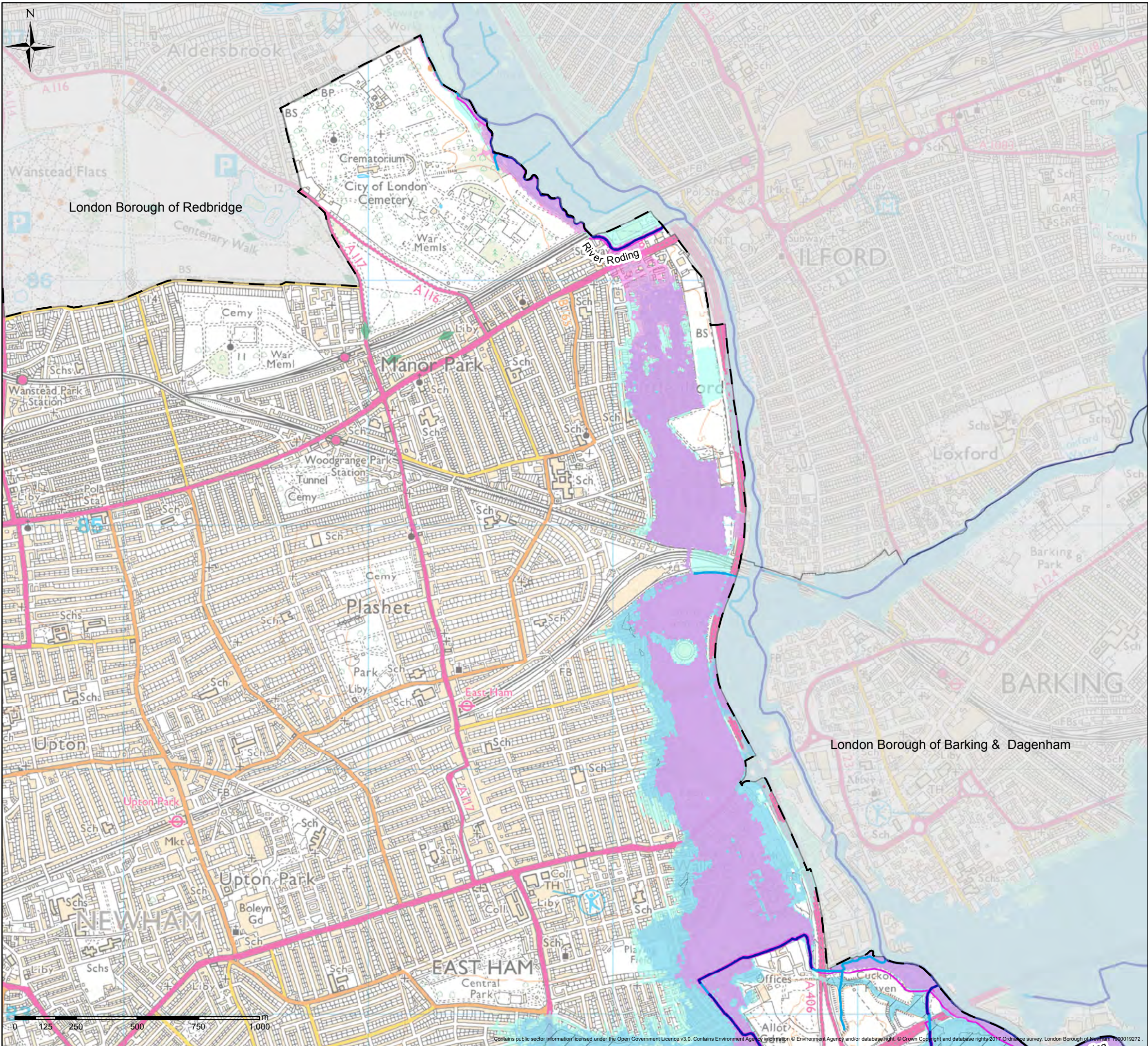
- This map shows the predicted likelihood of fluvial flooding based on the Environment Agency's Flood Map for Planning (Rivers and the Sea) and catchment modelling studies, which may be subject to revision in the future. The Flood Map for Planning is provided on the Environment Agency's website.
- The probability of fluvial flooding is divided into the following categories:
 - Flood Zone 1 : Land having less than 0.1% annual probability of river or sea flooding (<1 in 1000 chance each year).
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 - Flood Zone 3 : Land having greater than 1% or greater annual probability of river flooding (>1 in 100 chance) and 0.5% (1 in 200 chance each year) from sea flooding.
- Climate change allowances have been added based on :
 - 1 in 1000 year flood extent for River Roding, in absence of updated hydraulic modelling for the 1 in 100 year + 70% event.
 - 1 in 100 year + 70% allowance flood extent for the River Lee as part of the Environment Agency's updated modelling (Section 2.3 of Main Report).
- There are no areas classified as Flood Zone 3B within Newham.

Strategic Flood Risk Assessment










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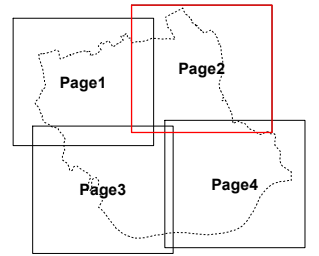
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Flood Risk From Rivers & Sea				
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Map 004		Page 1		Scale - 1:15,000
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LEGEND

-  Borough Boundary
-  Ordinary Watercourses
-  Main River
-  River Roding 1 in 100 year + CC extent³
-  River Lee 1 in 100 year + 70% CC Extent³
-  Flood Defences
-  Areas Benefitting from Flood Defences
-  Flood Zone 3
-  Flood Zone 2



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4. There are no areas classified as Flood Zone 3B within Newham.



Strategic Flood Risk Assessment



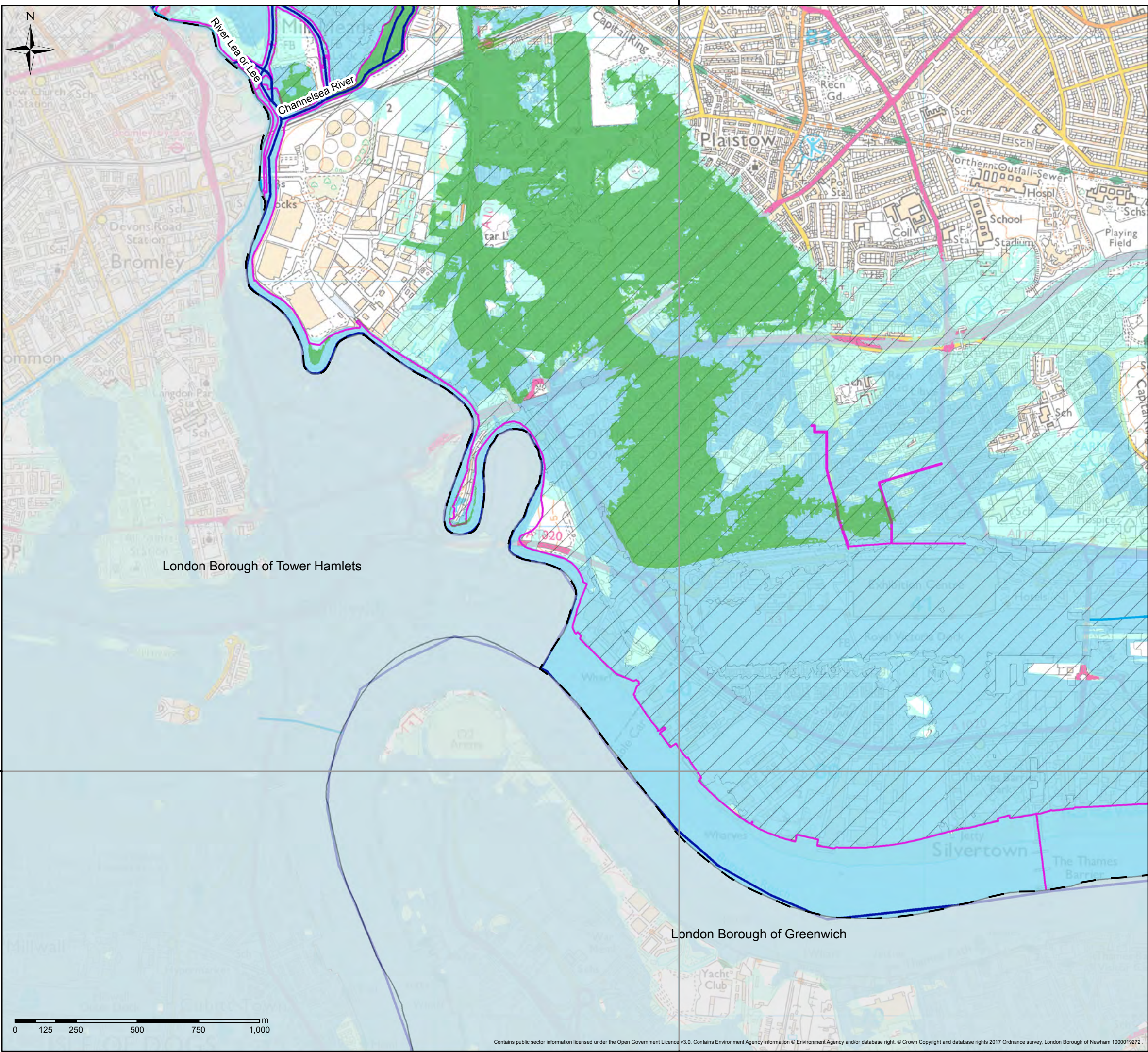
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Flood Risk From Rivers & Sea

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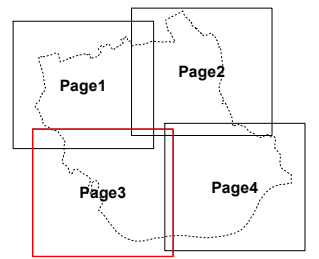
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LEGEND

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- Main River
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- River Lee 1 in 100 year + 70% CC Extent³
- Flood Defences
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- Flood Zone 3
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Strategic Flood Risk Assessment



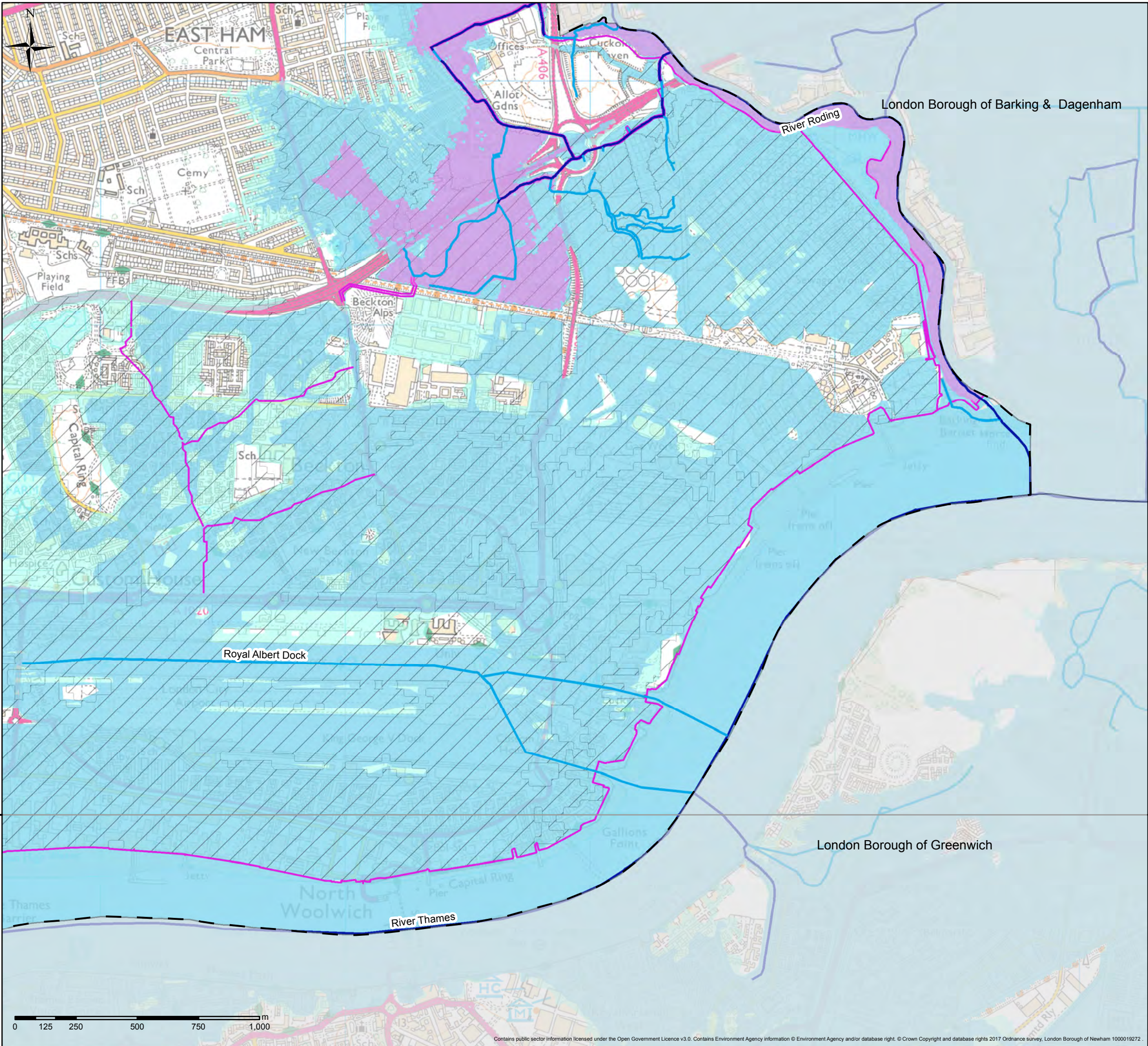
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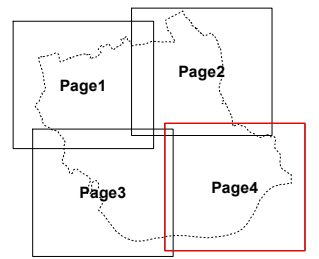
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Strategic Flood Risk Assessment



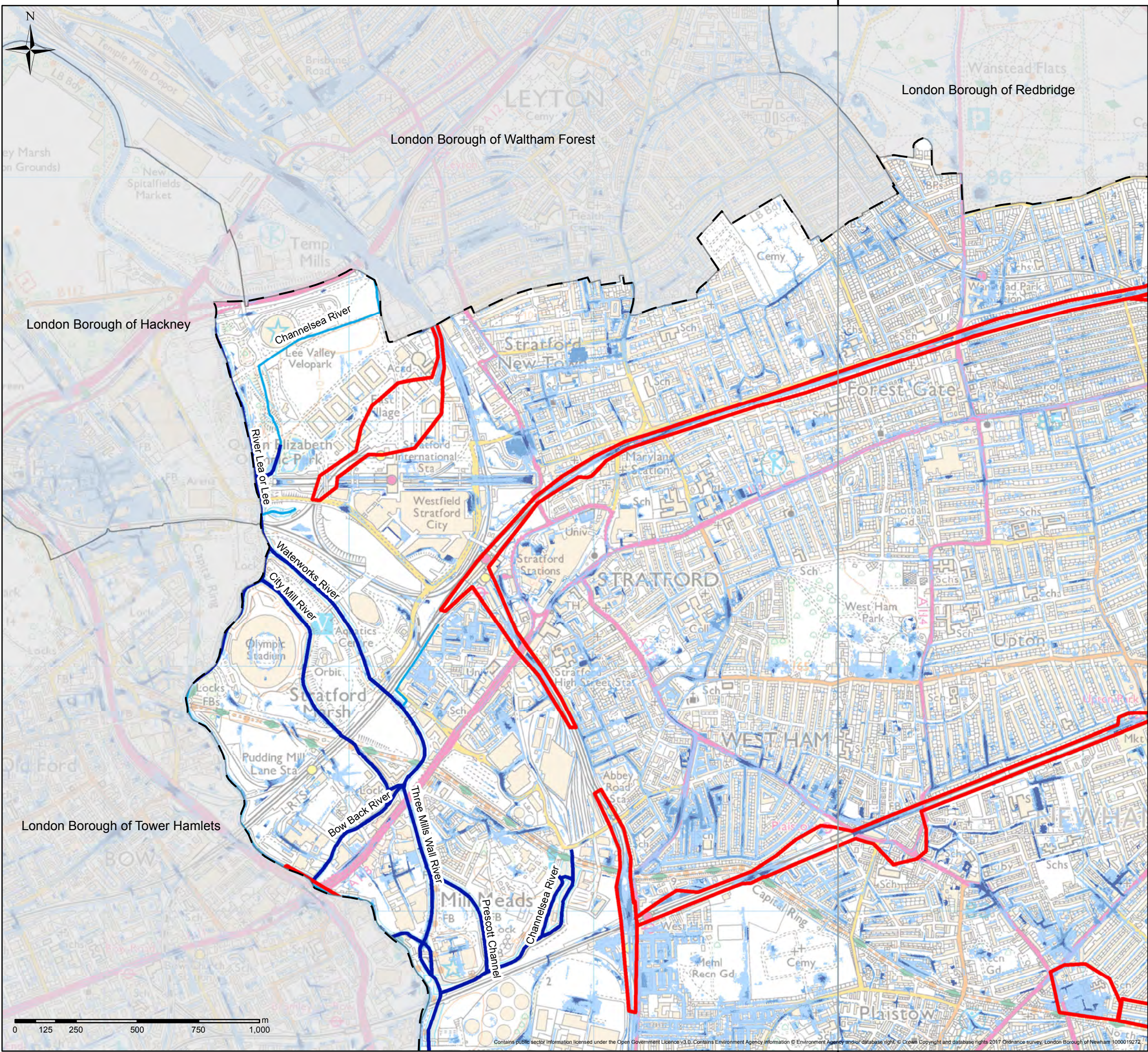
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Flood Risk From Rivers & Sea

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LEGEND

- Borough Boundary
- Critical Drainage Areas
- Ordinary Watercourses
- Main River
- 1 in 30 year (3.3% annual probability)
- 1 in 100 year (1% annual probability)
- 1 in 1000 year (0.1% annual probability)

Page1 Page2

Page3 Page4

- NOTES**
1. This map shows the predicted likelihood of surface water flooding based on the Environment Agency's updated Flood Map for Surface Water data, which may be subject to further analysis in the future.
 2. The Risk from Surface Water Flooding is divided into three categories :
 - Low : Each year, the chance of flooding is greater than 1 in 30 (3.3%)
 - Medium : each year, the chance of flooding is between 1 in 30 (3.3%) and 1 in 100 (1%)
 - High : Each year, the chance of flooding is less than 1 in 1000 (0.1%).
 3. The potential impact of surface water flooding can vary according to the depth of water and velocity (speed and direction of flow).
 4. Surface water flooding happens when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead. This type of flooding can be difficult to predict as it is hard to forecast exactly where or how much rain will fall in any storm.
 5. Flood records do not refer to internal property flooding, rather areas that have been susceptible to flooding in the past. Refer to Map 009 (TW Flood Data) for records of internal flooding.
 6. This map is intended to provide a strategic overview of susceptibility to surface water flooding, and should not be used to assess flood risk for individual properties.

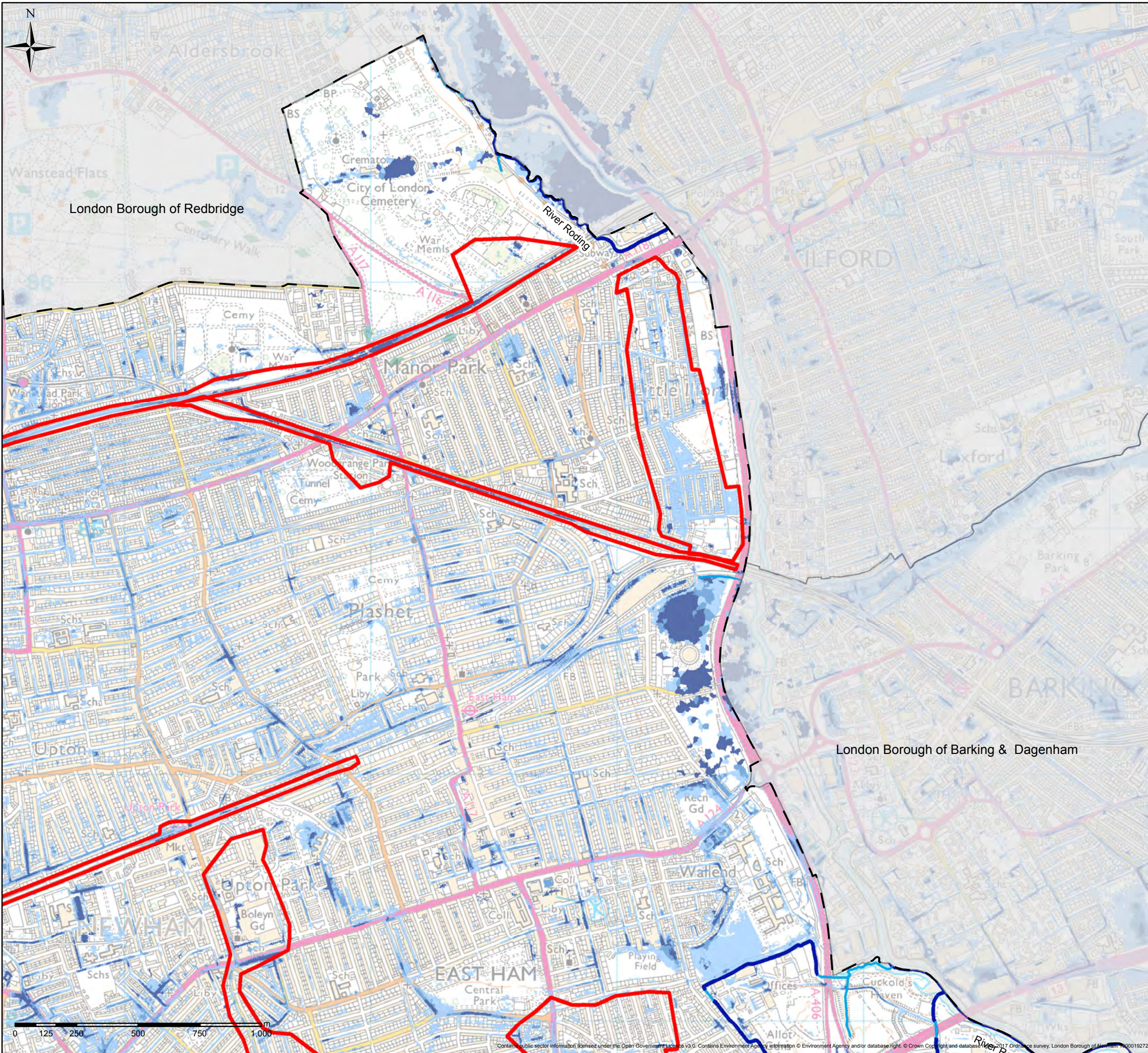
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Flood Risk From Surface Water

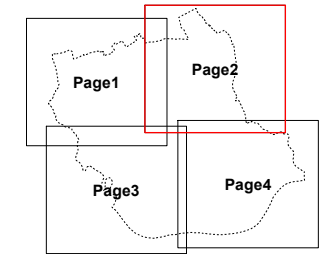
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Map 005		Page 1		Scale - 1:15,000

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LEGEND

- Borough Boundary
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- 1 in 100 year (1% annual probability)
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Strategic Flood Risk Assessment

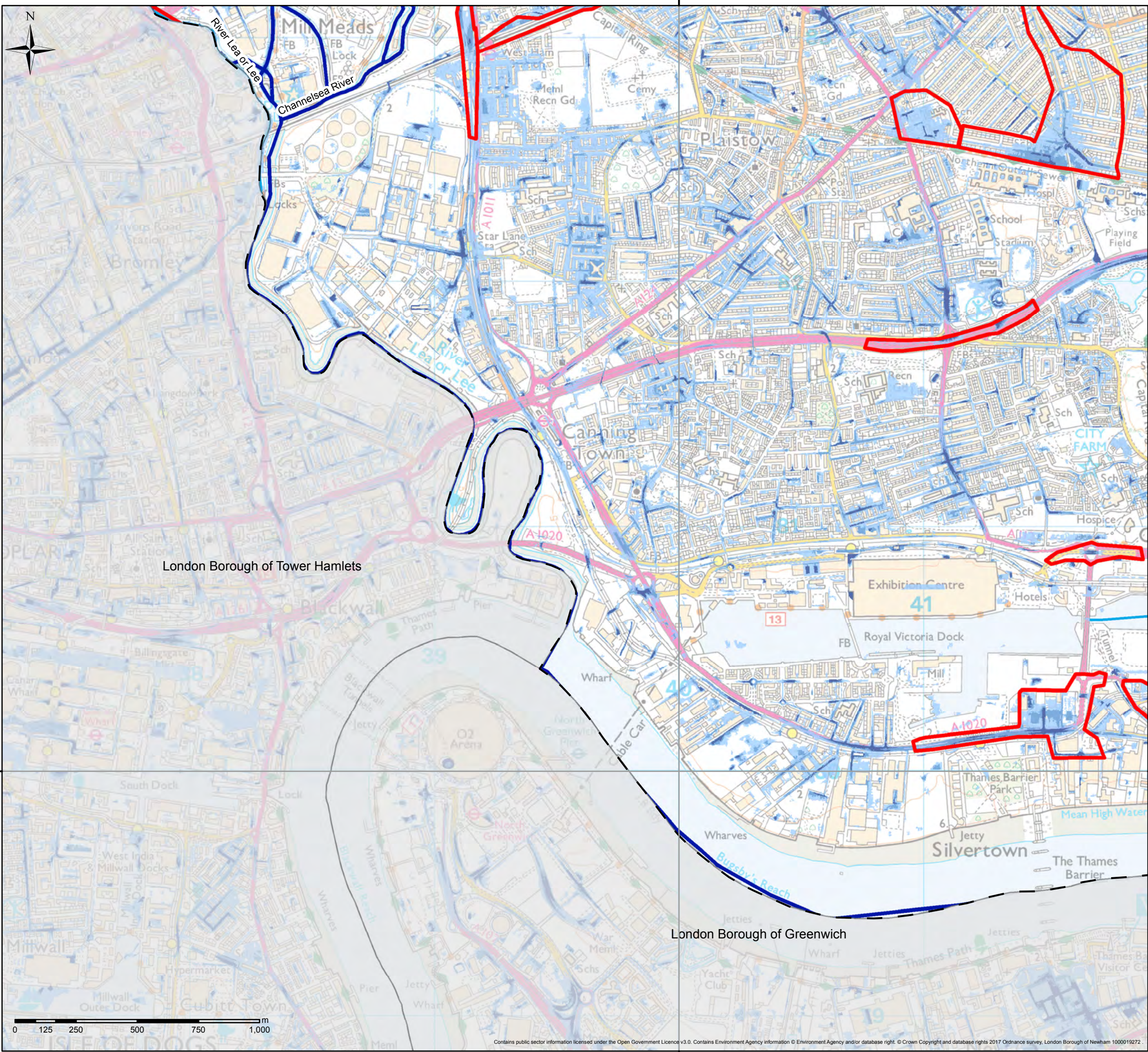


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Flood Risk From Surface Water

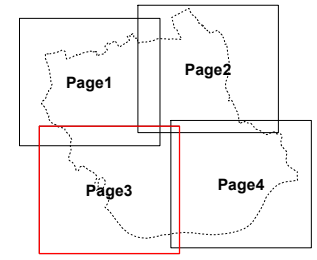
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Map 005	Page 2	Scale - 1:15,000		

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Newham London

Strategic Flood Risk Assessment

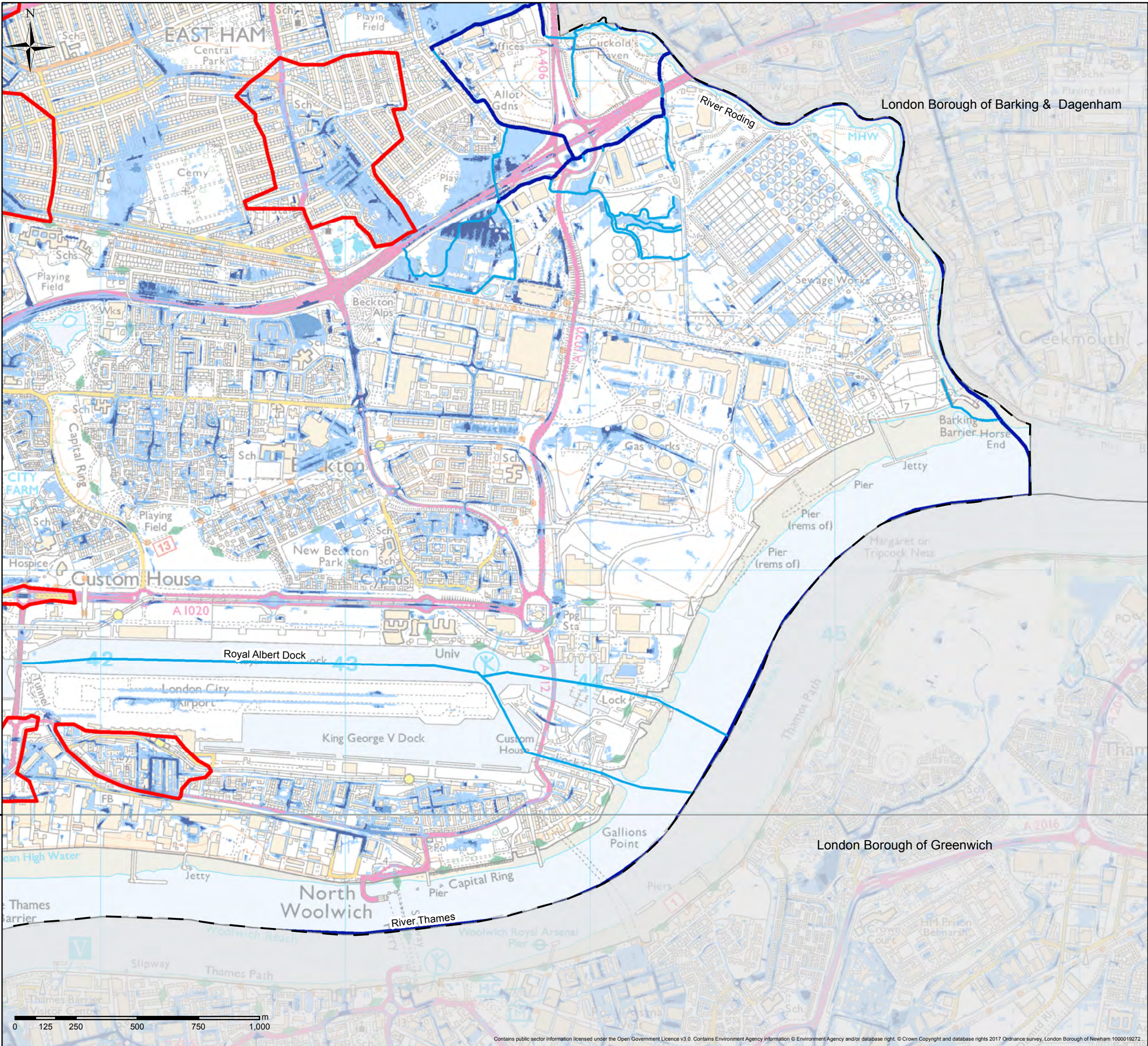
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Flood Risk From Surface Water

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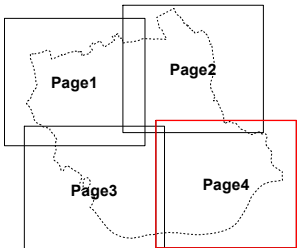
Map 005
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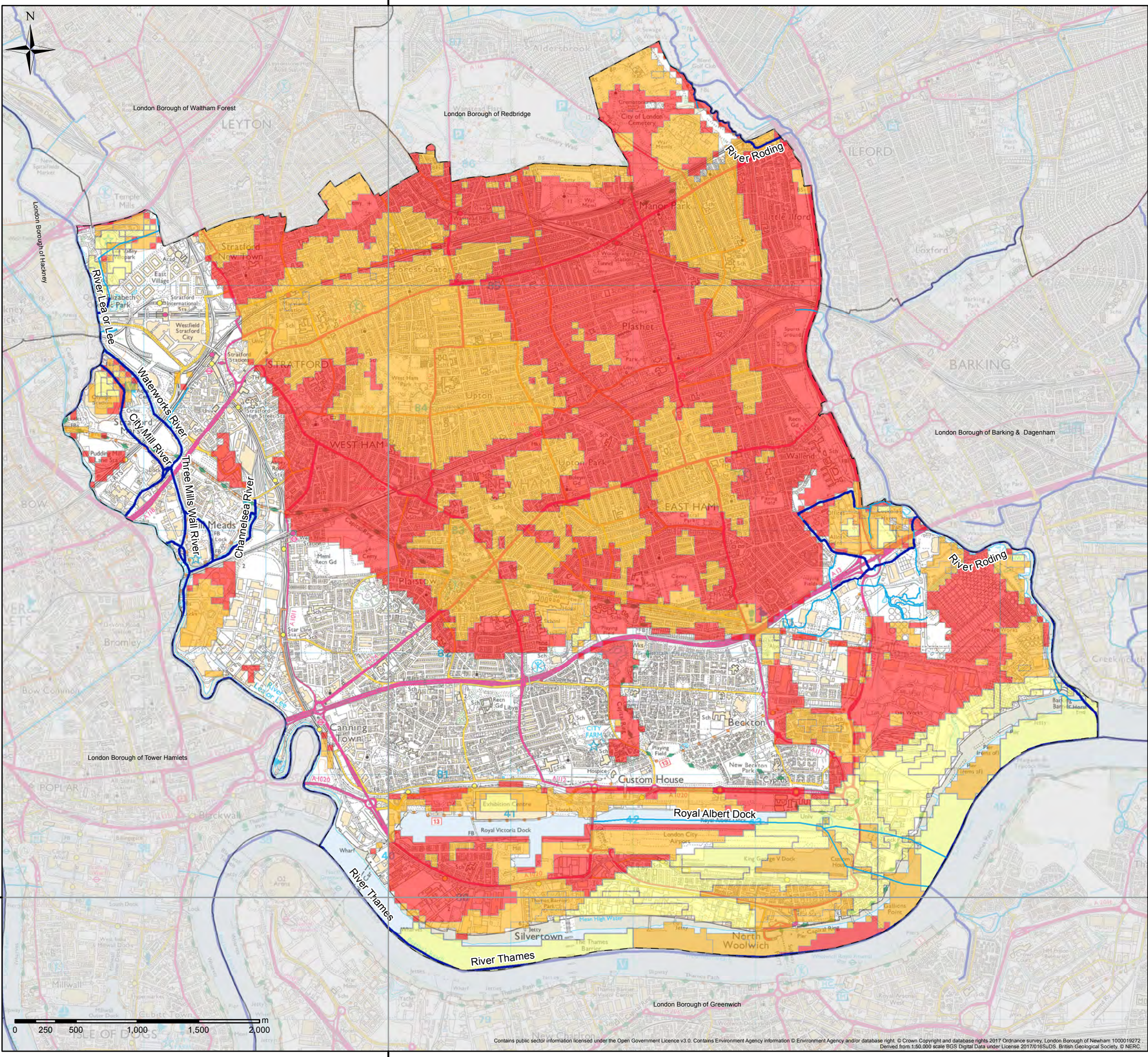
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BN	CG	JR	Status	Final
Map 005		Page 4		Scale - 1:15,000
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LEGEND

- Borough Boundary
- Ordinary Watercourses
- Main River
- Not considered to be prone to groundwater flooding
- Limited potential for groundwater flooding to occur
- Potential for groundwater flooding of property situated below ground level
- Potential for groundwater flooding to occur at surface

NOTES

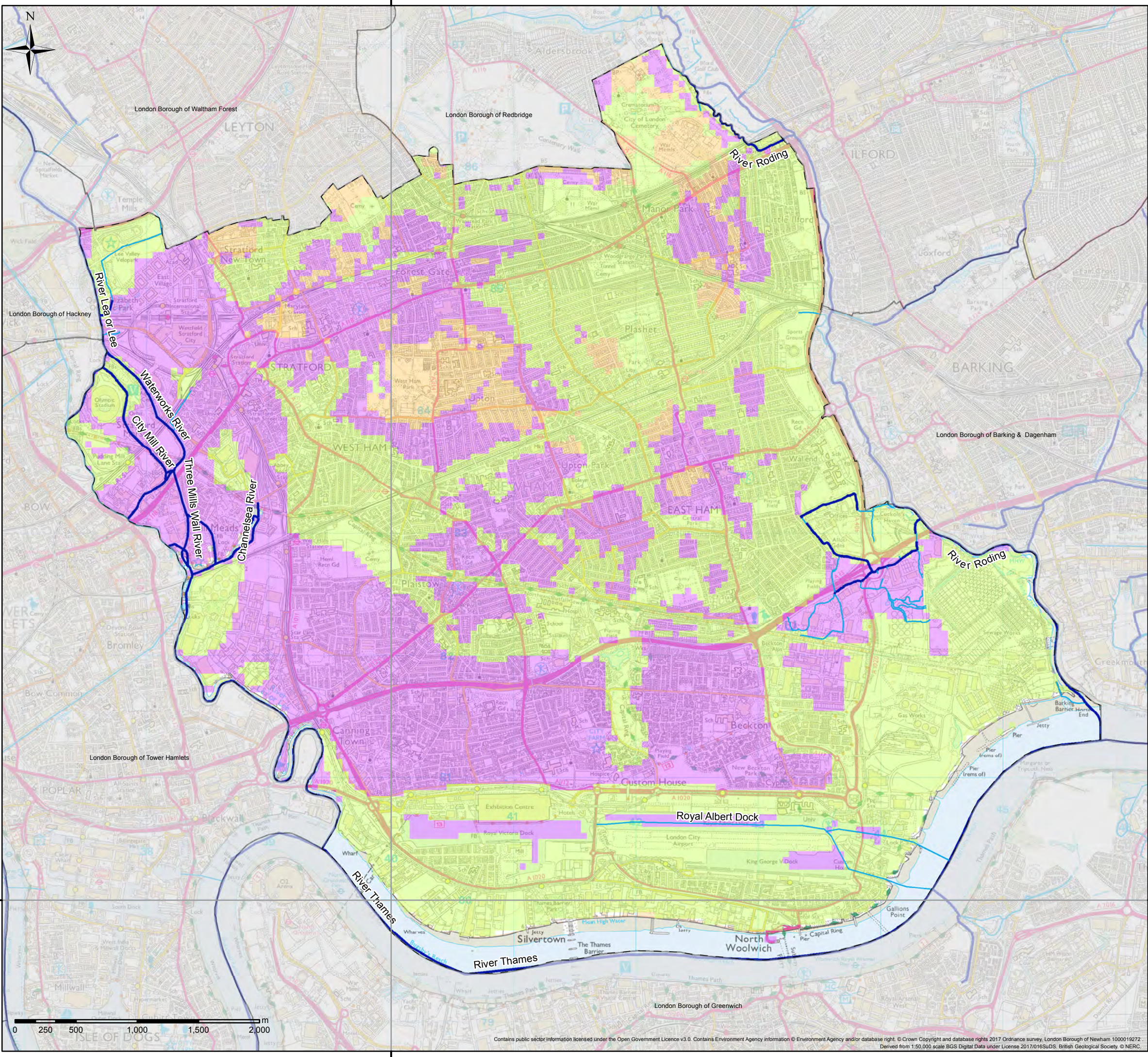
- The 1:50,000 scale digital map data is generalised and the geological interpretation should only be used as a guide to the geology at a local level, not as a site specific geologica plan basd on detail site investigations.
- This map is intended to provide a strategic over-view of susceptibility to groundwater flooding and should not be used to assess flood risk for individual properties.

Strategic Flood Risk Assessment

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Susceptibility to Groundwater Flooding				
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Map 006A			Scale - 1:30,000	
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LEGEND

- Borough Boundary
- Ordinary Watercourses
- Main River
- Highly Compatible for infiltration SuDS
- Opportunities for bespoke infiltration SuDS
- Probably compatible for infiltration SuDS
- Very significant constraints are indicated

NOTES

1. The 1:50,000 scale digital map data is generalised and the groundwater flood risk interpretation should only be used as a guide to risk at a local level, not as a site specific assessment of risk which should be based on more detailed site specific information

Descriptions of each of the categories are detailed in Appendix B and as follows:

- Highly compatible for infiltration SuDS : The sub-surface is likely to be suitable for free draining infiltration SuDS
- Probably compatible for infiltration SuDS : The sub-surface is probably suitable for infiltration SuDS, although the design may be influenced by ground conditions.
- Opportunities for bespoke infiltration SuDS : The subsurface is potentially suitable for infiltration SuDS, although design will be influenced by the ground conditions.
- Very significant constraints are indicated : There is a very significant potential for one or more geohazards associated with infiltration.

2. This map is intended to provide a strategic over-view of susceptibility to groundwater flooding and should not be used to assess flood risk for individual properties.



Strategic Flood Risk Assessment



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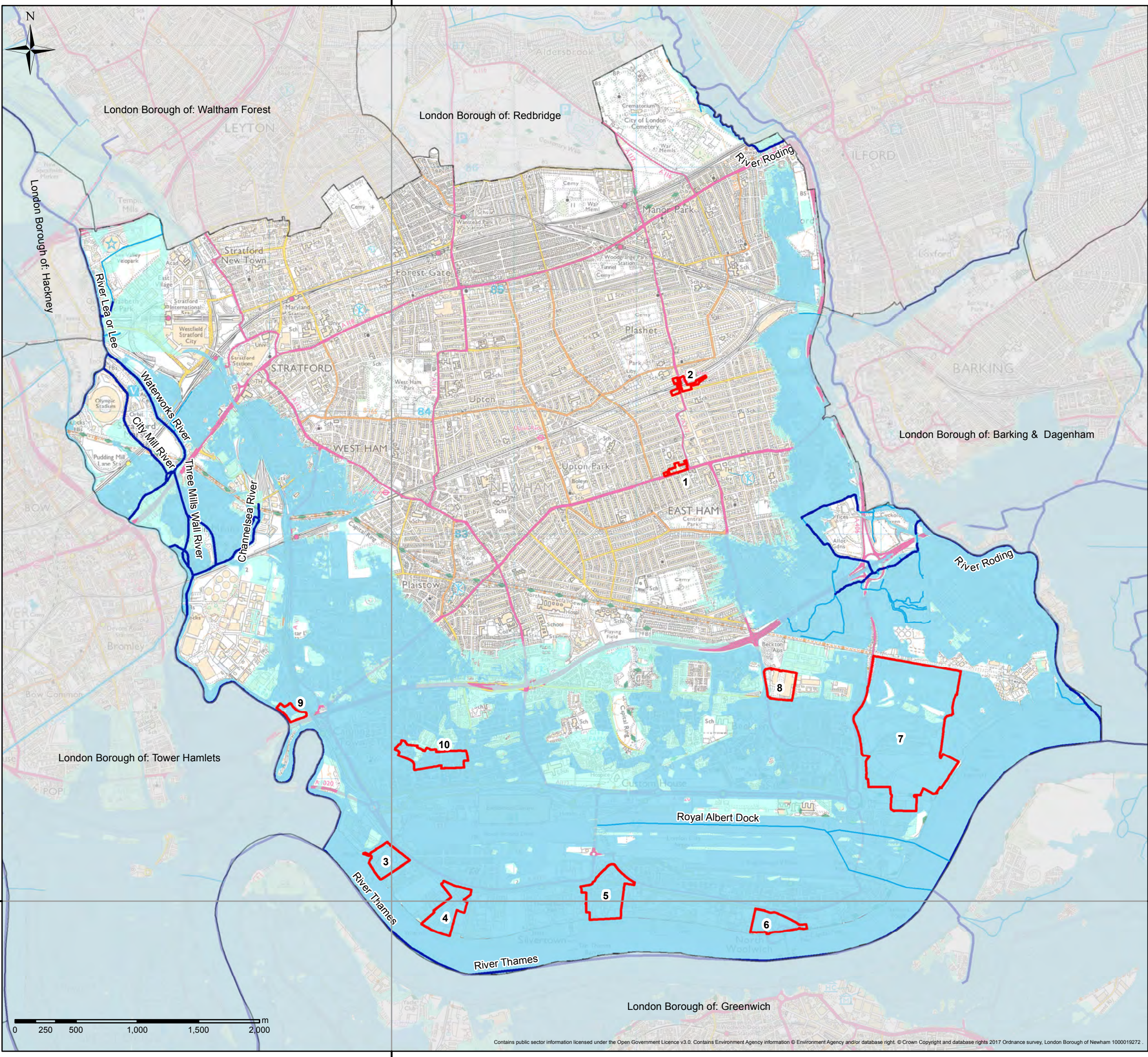
BGS Infiltration SuDS Map

GIS:	Checked:	Approved:	Date:	21/08/2017
BN	CG	JR	Status	Final







Map 006B Scale - 1:30,000

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Document Path: \\ukord1p001\UKCRD1\FP001-SYS\GIS\Deliverables\60527164-Newham-SFRA\G2-ArcGIS\Revised Mapping 02.02.2017\Final Submission Map_06B_FloodRiskFromGroundWater_260517.mxd



LEGEND

-  Borough Boundary
-  Strategic LPR Sites
-  Ordinary Watercourses
-  Main River
-  Flood Zone 3
-  Flood Zone 2

Site reference *	Site Name
1	East Ham Western Gateway
2	East Ham Northern Gateway
3	Silvertown Landing
4	Lyle Park West
5	Connaught Riverside
6	North Woolwich Gateway
7	Beckton Riverside
8	Alpine Way Retail Park
9	Canning Town Riverside
10	Coolfin North

NOTES
 This map shows the predicted likelihood of fluvial flooding based on Environment Agency data.


Newham London
 Strategic Flood Risk Assessment

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Proposed Development Sites

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BN	CG	JR	Status:	Final

Map 007 Scale - 1:30,000

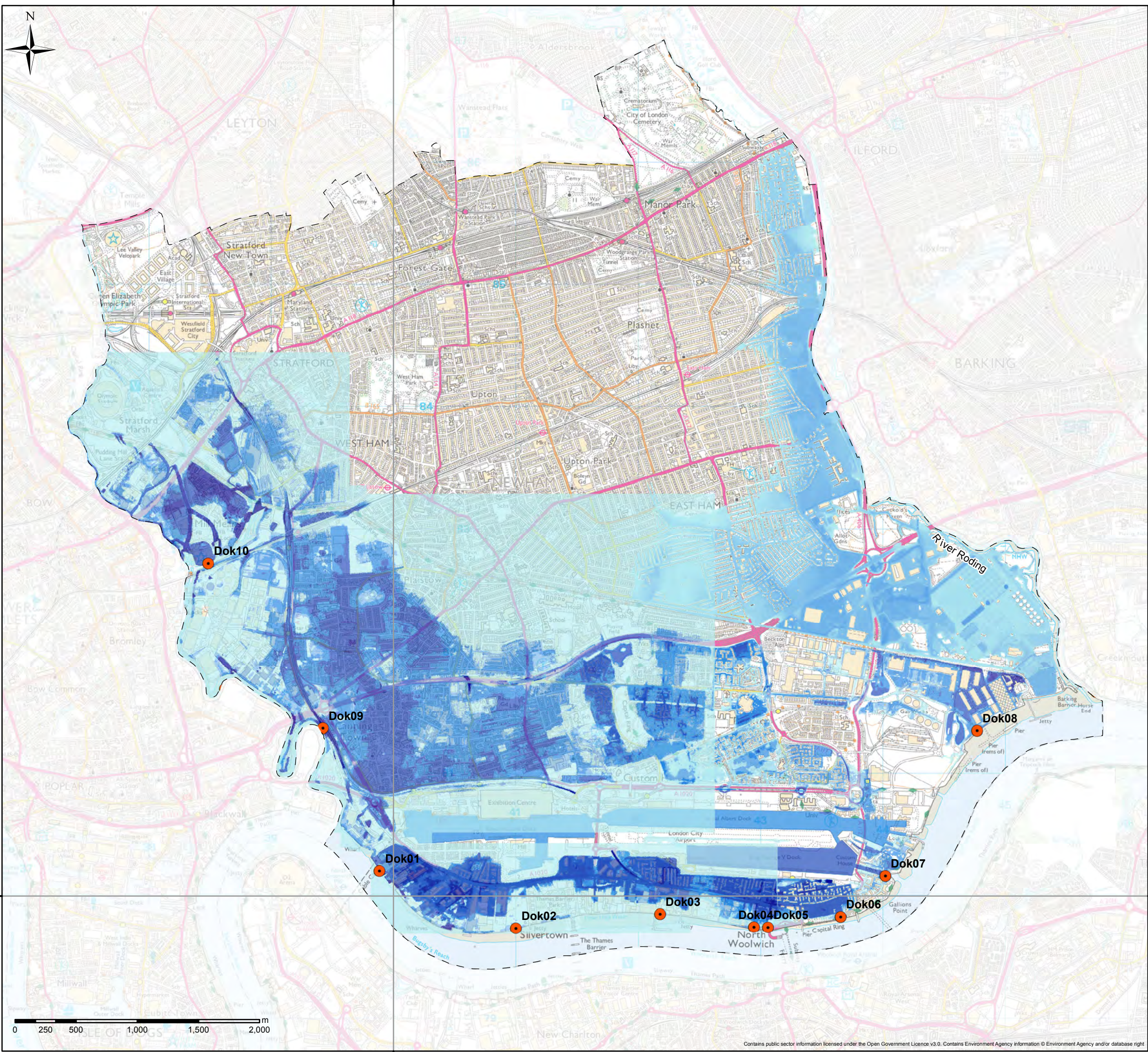
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LEGEND

- Borough Boundary
- BreachLocations

Breach Mapping : 0.1% Annual probability

Depth (m)

- <0.25
- 0.25 - 0.50
- 0.50 - 1.00
- 1.00 - 2.00
- >2.00

NOTES:

- This is a composite map containing modelled breach data from the Environment Agency's TE2100 detailed modelling studies. The two datasets are:
 - The MLWL breach modelling data, which was last updated in May 2017. For breaches upriver of the Thames Barrier, there is no return period for modelled levels as the levels are controlled by barrier closures. The levels used are referred to as Maximum Likely Water Levels (MLWLs).
 - The 1:200 yr breach modelling data, which was last updated in March 2015. The breach locations downstream of the Thames Barrier the 1:200 yr return period has been mapped.
- The LiDAR data used within the Thames Estuary 2100 model has been dated as 2015.

Strategic Flood Risk Assessment

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Breach Extents -2100 scenario

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SB	CG	JR	Status	Final

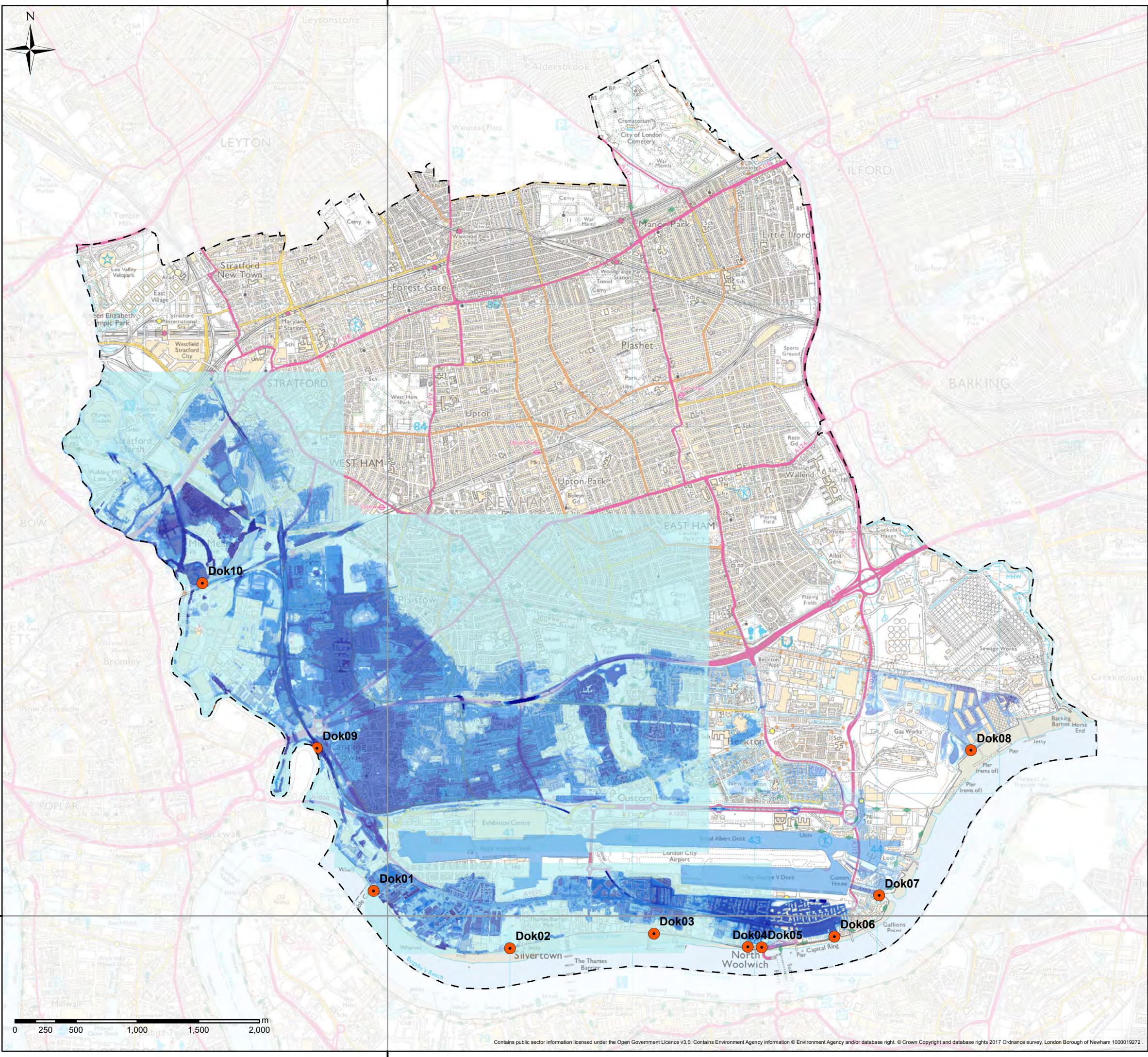
Map 08a Scale - 1:30,000

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LEGEND

- Borough Boundary
- Breach Locations

Breach Mapping : 0.5% Annual probability

Depth (m)

- <0.25
- 0.25 - 0.50
- 0.50 - 1.00
- 1.00 - 2.00
- >2.00

NOTES

1. This is a composite map containing modelled breach data from the Environment Agency's TE2100 detailed modelling studies. The two datasets are:
 - a) The MLWL breach modelling data, which was last updated in May 2017. For breaches upriver of the Thames Barrier, there is no return period for modelled levels as the levels are controlled by barrier closures. The levels used are referred to as Maximum Likely Water Levels (MLWLs).
 - b) The 1:200 yr breach modelling data, which was last updated in March 2015. The breach locations downstream of the Thames Barrier the 1:200 yr return period has been mapped.
2. The LiDAR data used within the Thames Estuary 2100 model has been dated as 2015.



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Breach Extents - 1:200 yr scenario

GIS: SB	Checked: CG	Approved: JR	Date: 18/08/17
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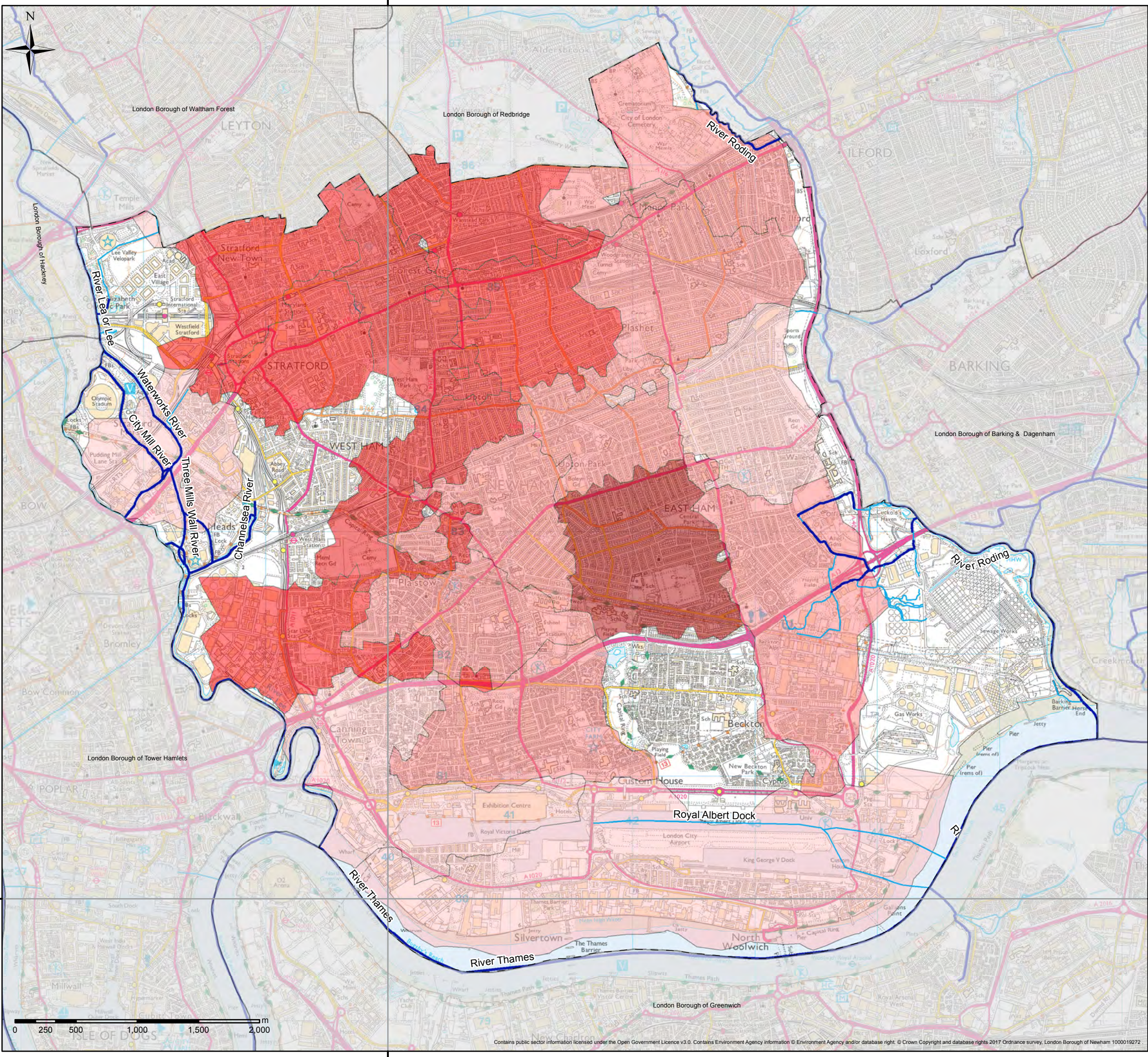
Map 08b	Scale - 1:30,000
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LEGEND

- Borough Boundary
- Ordinary Watercourses
- Main River

Thames Water : Internal Flooding Incidents by Postcode

- 0 - 3
- 4 - 7
- 8 - 17
- 18 - 34
- 35 - 50

NOTES

1. The map displays the DG5 record of sewer flood incidents supplied by Thames Water. The data shows the number of properties (sewer flood incidents) affected by internal sewer flooding over the past decade.
2. It should be noted that these are flood incidents that have been reported to TWUL by the home owners - there may be incidents that do not get reported and therefore will not show on the register.
3. This map is intended to provide a strategic overview of historic sewer flooding and should not be used to assess flood risk for individual properties.



Strategic Flood Risk Assessment



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Thames Water DG5 : Internal Flooding by Postcode

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BN	CG	JR	Status	Final

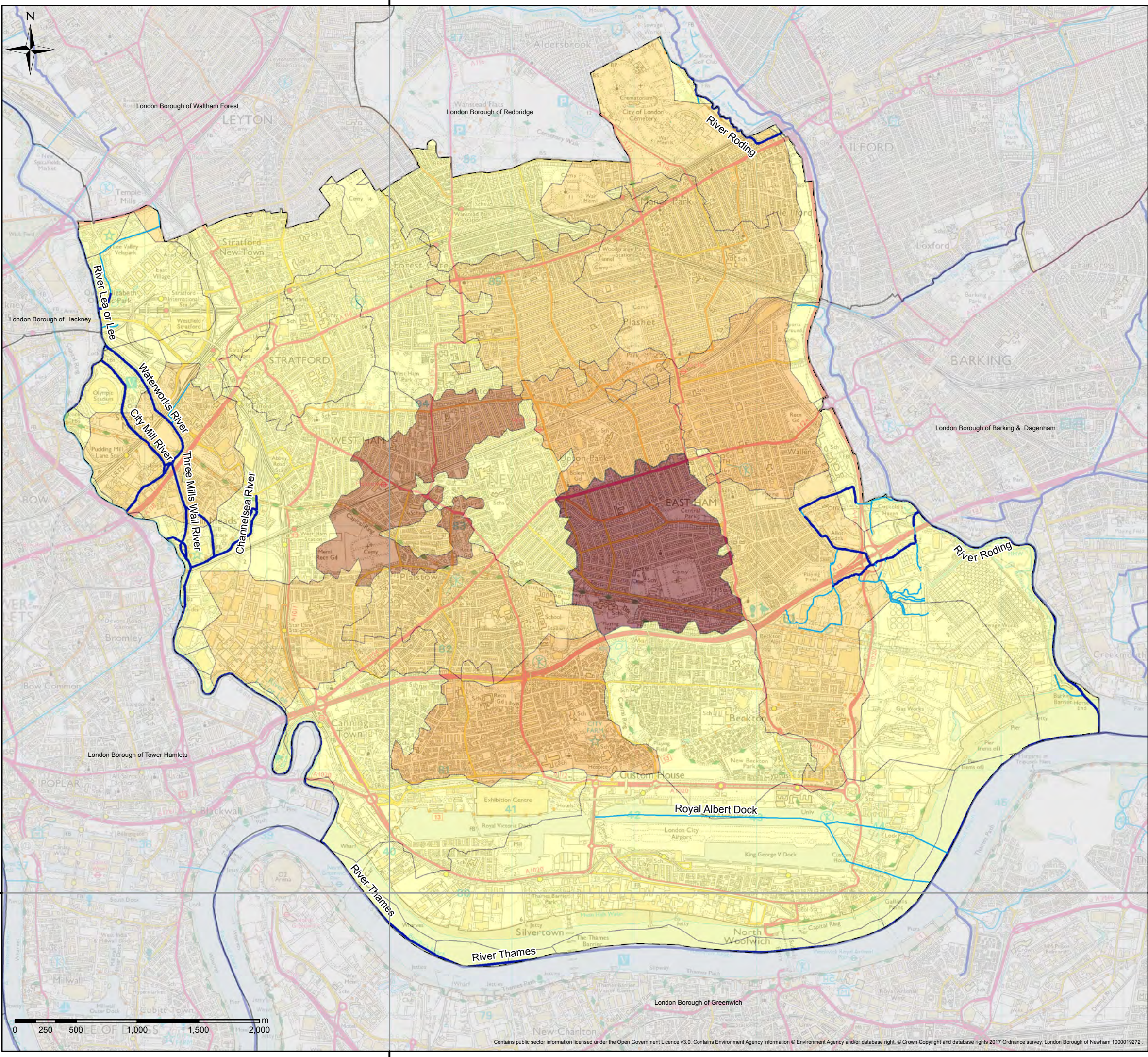
Map 009A Scale - 1:30,000

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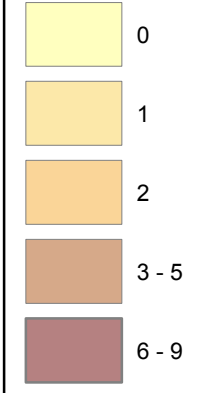
180000



LEGEND

- Borough Boundary
- Ordinary Watercourses
- Main River

Thames Water : External Flooding Incidents by Postcode



NOTES

1. The map displays the DG5 record of sewer flood incidents supplied by Thames Water. The data shows the number of properties (sewer flood incidents) affected by external sewer flooding over the past decade.
2. It should be noted that these are flood incidents that have been reported to TWUL by the home owners - there may be incidents that do not get reported and therefore will not show on the register.
3. This map is intended to provide a strategic overview of historic sewer flooding and should not be used to assess flood risk for individual properties.



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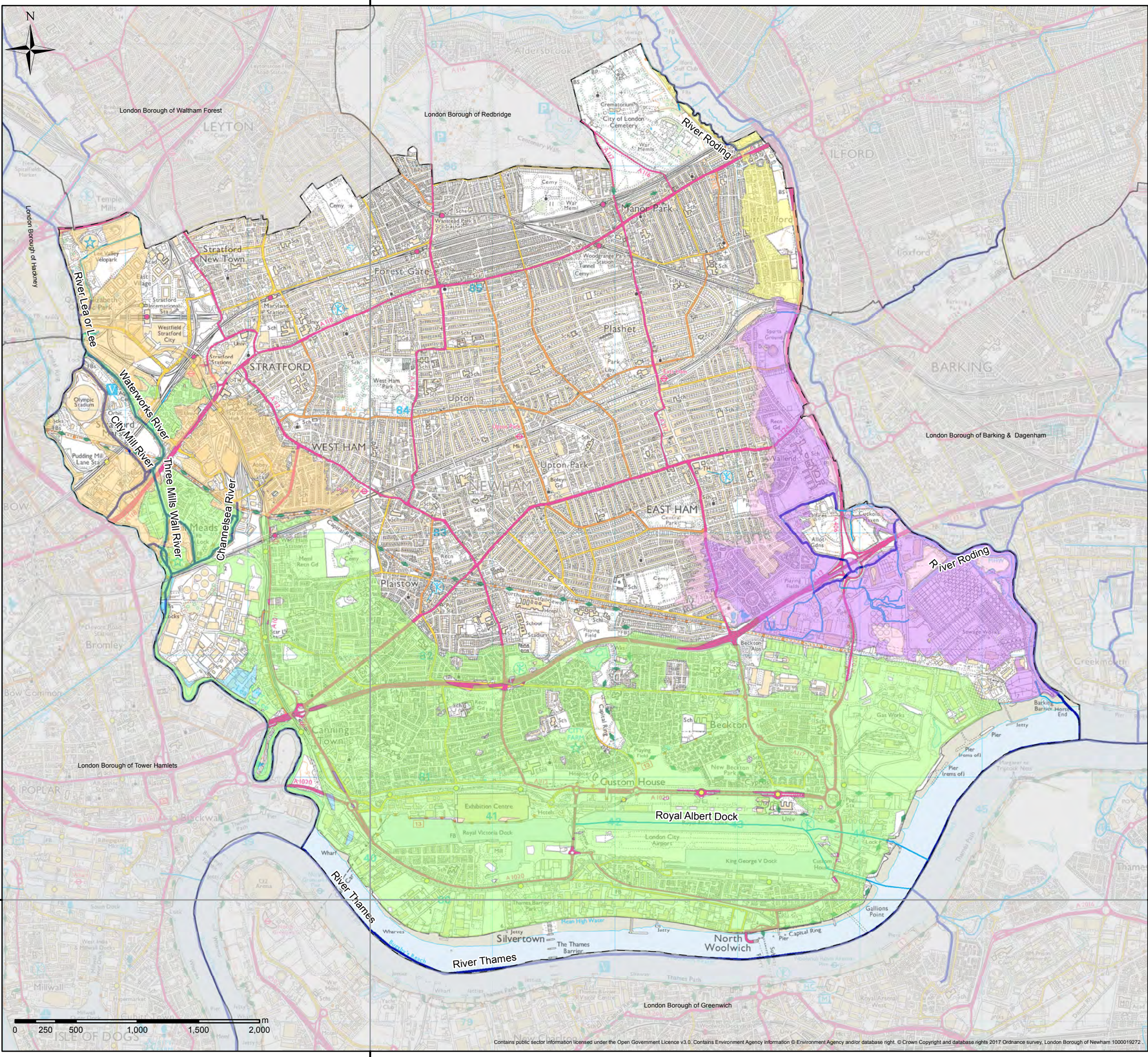
Thames Water DG5 : External Flooding by Postcode

GIS:	Checked:	Approved:	Date:	21/08/2017
BN	CG	JR	Status	Final

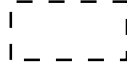





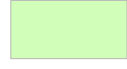


Map 009B Scale - 1:30,000

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LEGEND

-  Borough Boundary
- Flood Warning Area**
-  Lower River Lee at Stratford
-  Lower River Lee from West Ham and Canning Town
-  River Roding at Barking
-  River Roding in Redbridge
-  Tidal Thames at Beckton Sewage Works
-  Tidal Thames from Beckton Sewage Works to the River Lee
-  Ordinary Watercourses
-  Main River

NOTES

1. The Environment Agency provides a free flood warning service for many areas at risk of flooding from rivers and the sea. In some parts of England, the Environment Agency may be able to provide warnings where flooding from groundwater is possible. This free warning service can provide advance notice of flooding and can provide time to prepare.
2. The Environment Agency issue flood warnings to homes and businesses when flooding is expected. Upon receipt of a warning, occupants should take immediate action



Strategic Flood Risk Assessment



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Flood Warning Areas

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BN	CG	JR	Status	Final

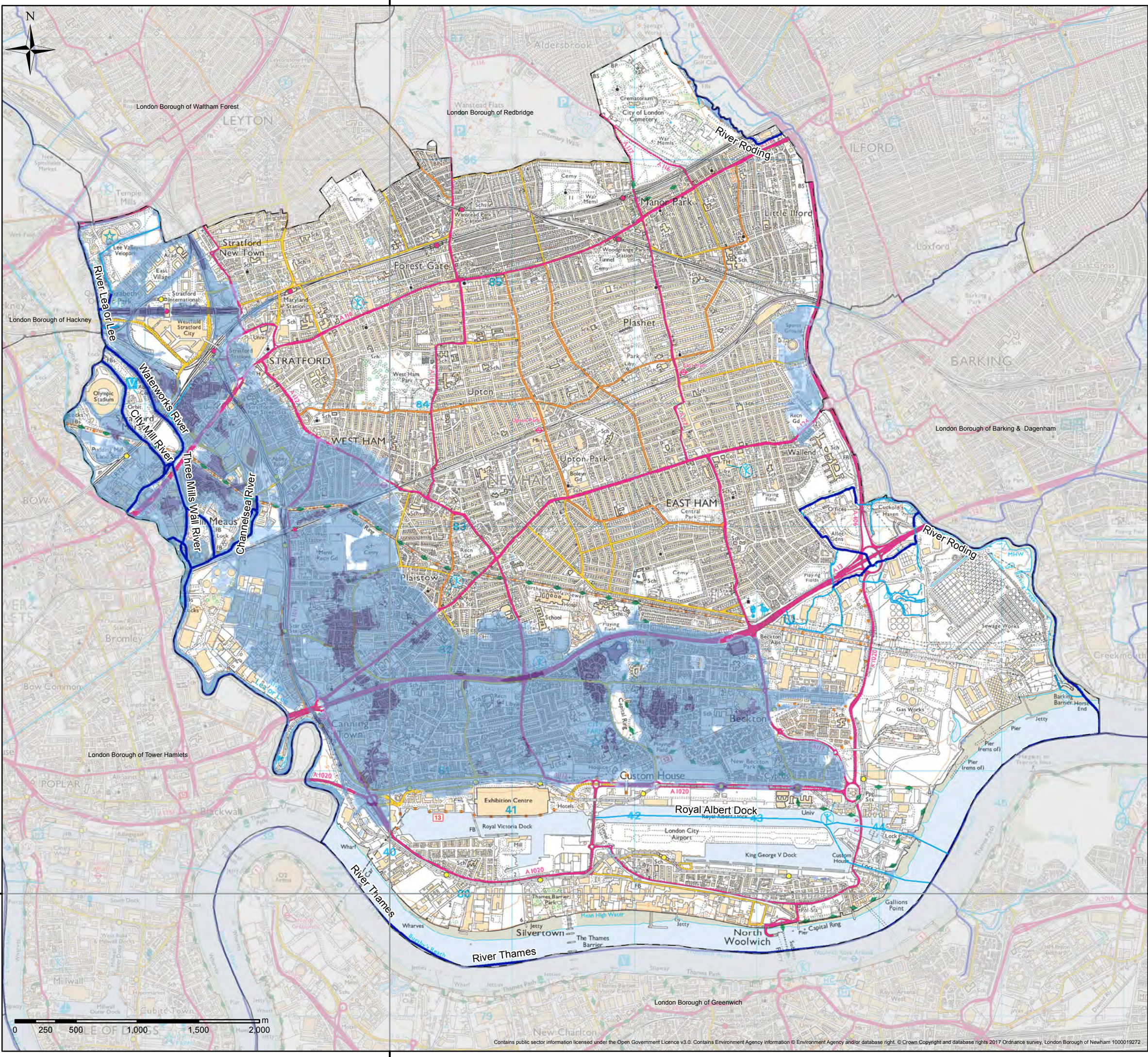
Map 010 Scale - 1:30,000

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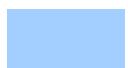


180000



LEGEND

-  Borough Boundary
-  Ordinary Watercourses
-  Main River

Depth of Residual Reservoir Flood Risk (metres)

-  Below 0.3m
-  Between 0.3 and 2m
-  Over 2m

NOTES

1. This map shows the likelihood of flood risk from impounded reservoirs over 25 metres cubed. This is a residual risk, meaning that reservoir flooding occurs due to structural failure, and it is assumed that any such breach occurs for the full height and width of the impounded structure when water level is near its crest.
2. This map is intended to provide a strategic overview of susceptibility to reservoir flooding, and should not be used to assess flood risk for individual properties.
3. The Royal Docks are not considered as reservoirs in accordance with the EA definition and hence their risk is assessed on Map 008 - Breach Modelling



Strategic Flood Risk Assessment



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Flood Risk From Reservoirs

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Map 011 Scale - 1:30,000

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