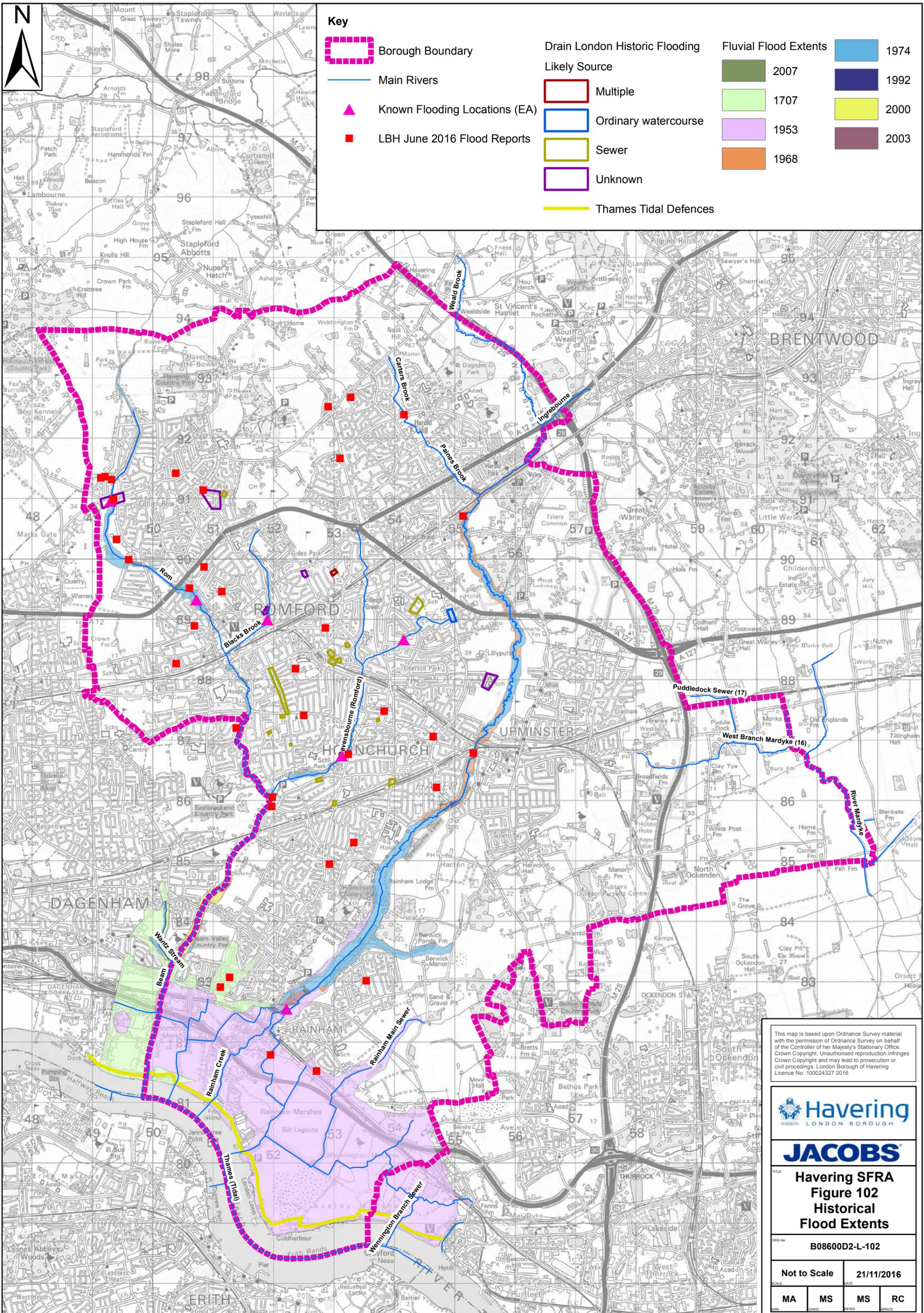


Notes:
 1) Areas of no LiDAR data are in grey or left blank

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Havering SFRA Figure 101 Location Plan			
DRG No. B08600D2-L-101			
Not to Scale		21/11/2016	
MA	MS	MS	RC



- Key**
- Borough Boundary
 - Main Rivers
 - ▲ Known Flooding Locations (EA)
 - LBH June 2016 Flood Reports

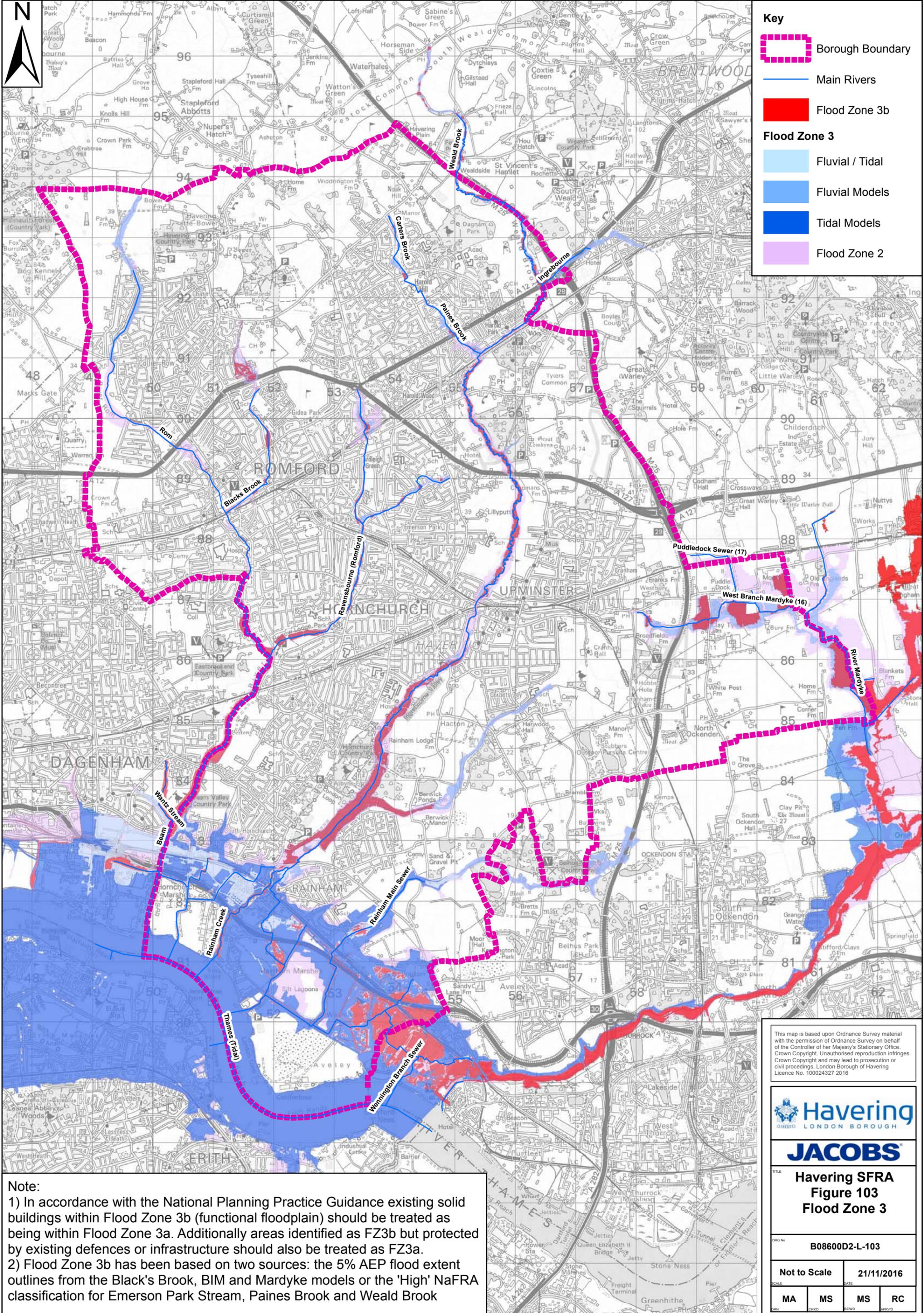
- Drain London Historic Flooding Likely Source**
- Multiple
 - Ordinary watercourse
 - Sewer
 - Unknown
 - Thames Tidal Defences

- Fluvial Flood Extents**
- 1974
 - 1992
 - 2007
 - 1707
 - 1953
 - 2000
 - 1968
 - 2003

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TITLE			
Havering SFRA Figure 102 Historical Flood Extents			
DRG No			
B08600D2-L-102			
Not to Scale		21/11/2016	
SCALE	DATE		
MA	MS	MS	RC
<small>DRN</small>	<small>CHKD</small>	<small>REWD</small>	<small>APPRD</small>



Key

- Borough Boundary
- Main Rivers
- Flood Zone 3b

Flood Zone 3

- Fluvial / Tidal
- Fluvial Models
- Tidal Models
- Flood Zone 2

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Havering SFRA Figure 103 Flood Zone 3			
DRG No: B08600D2-L-103			
Not to Scale		21/11/2016	
MA	MS	MS	RC
DRN	CHKD	REWD	APPRVD

Note:

- 1) In accordance with the National Planning Practice Guidance existing solid buildings within Flood Zone 3b (functional floodplain) should be treated as being within Flood Zone 3a. Additionally areas identified as FZ3b but protected by existing defences or infrastructure should also be treated as FZ3a.
- 2) Flood Zone 3b has been based on two sources: the 5% AEP flood extent outlines from the Black's Brook, BIM and Mardyke models or the 'High' NaFRA classification for Emerson Park Stream, Paines Brook and Weald Brook

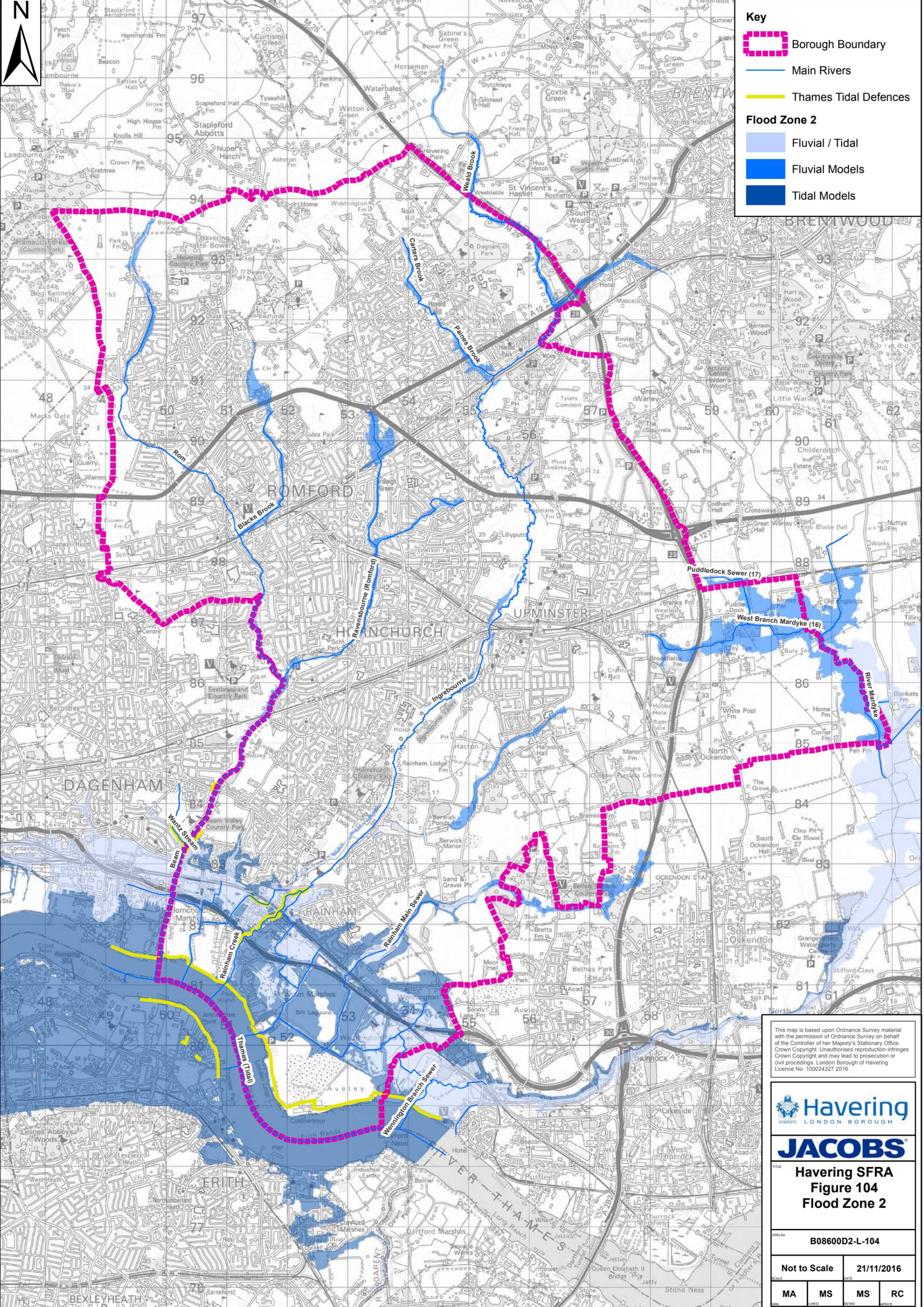


Key

-  Borough Boundary
-  Main Rivers
-  Thames Tidal Defences

Flood Zone 2

-  Fluvial / Tidal
-  Fluvial Models
-  Tidal Models



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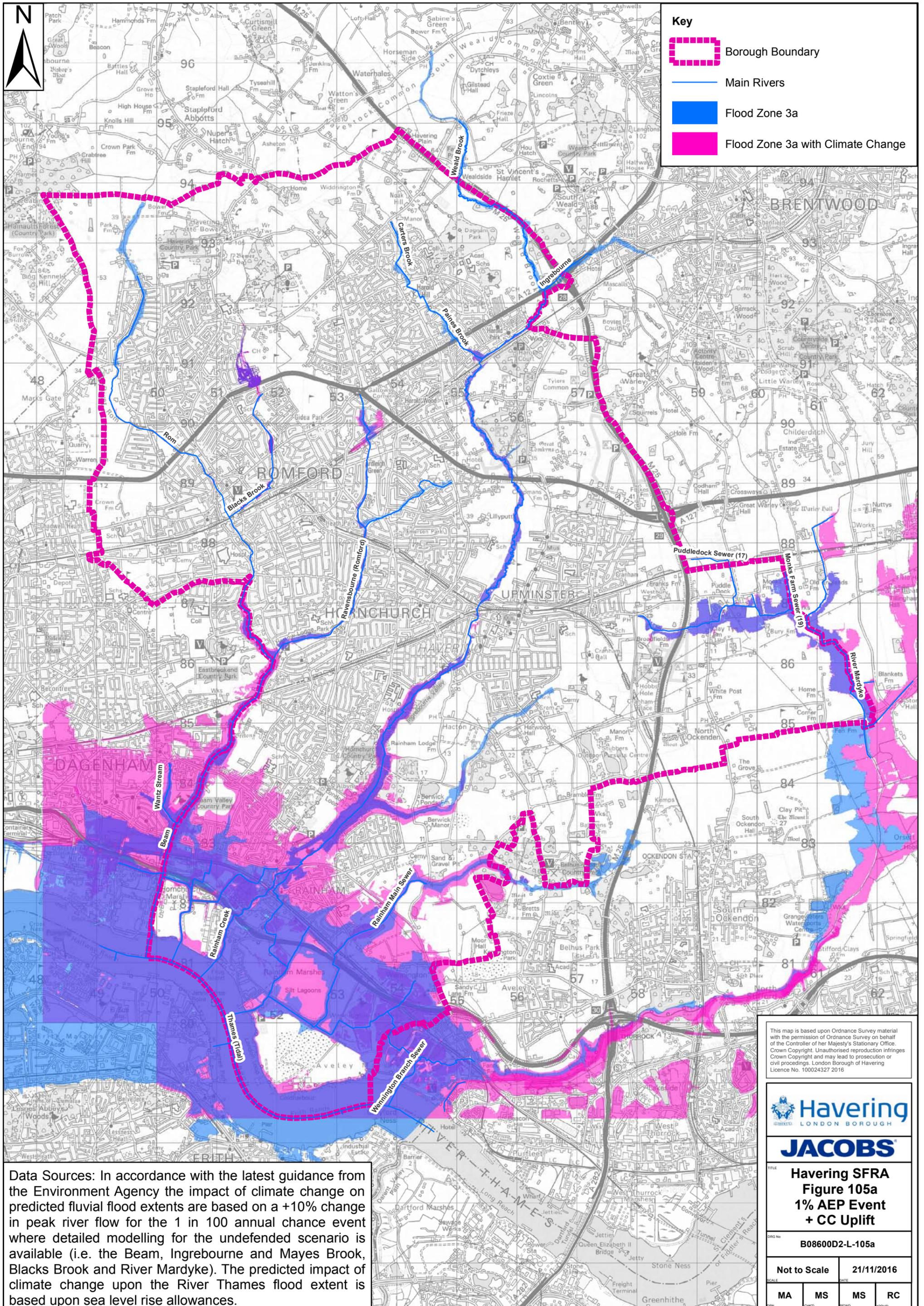


**Havering SFRA
Figure 104
Flood Zone 2**

DRG No **B08600D2-L-104**

Not to Scale **21/11/2016**

MA	MS	MS	RC
<small>DRN</small>	<small>CHKD</small>	<small>REWD</small>	<small>APRVD</small>



Key

- Borough Boundary
- Main Rivers
- Flood Zone 3a
- Flood Zone 3a with Climate Change

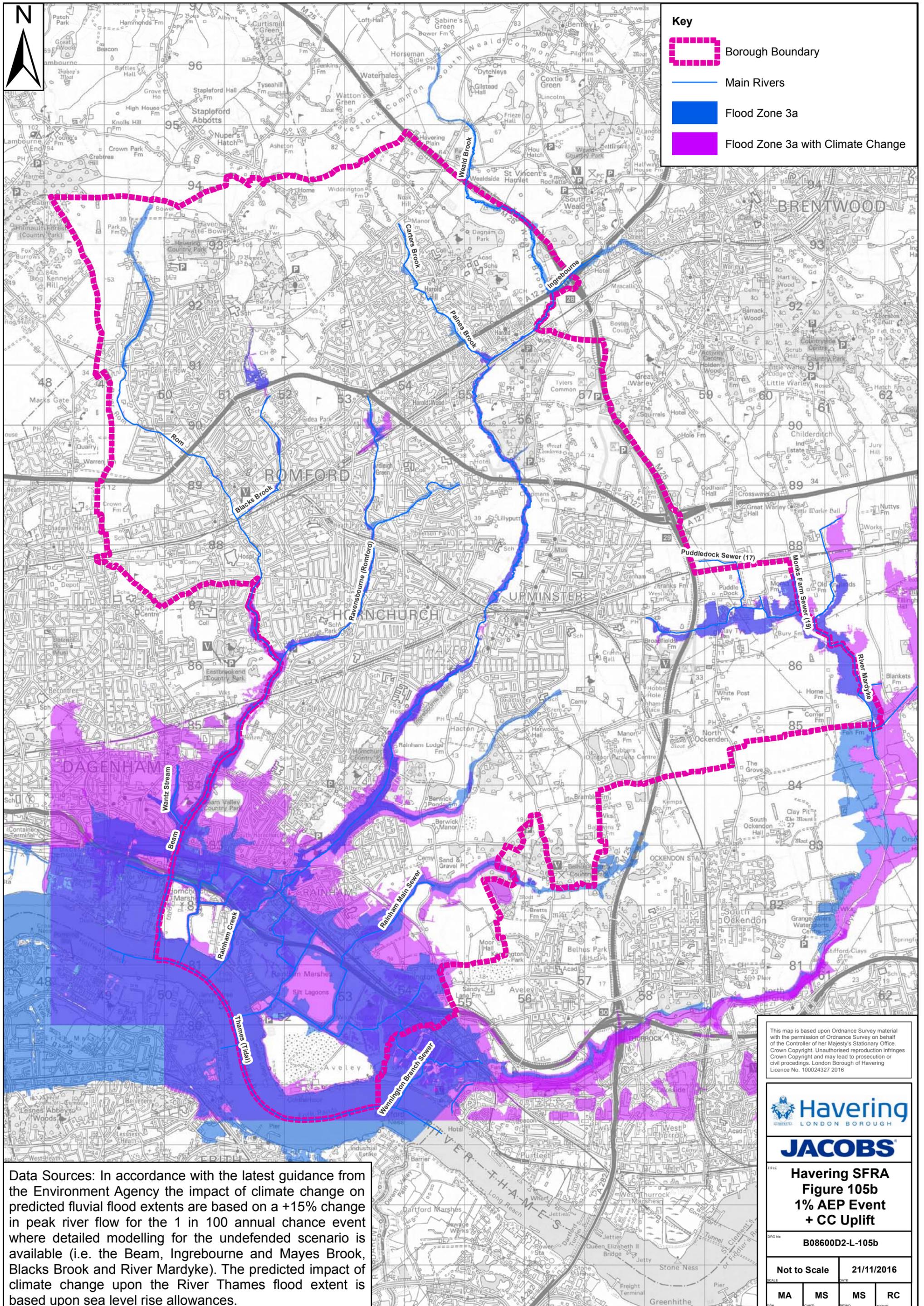
Data Sources: In accordance with the latest guidance from the Environment Agency the impact of climate change on predicted fluvial flood extents are based on a +10% change in peak river flow for the 1 in 100 annual chance event where detailed modelling for the undefended scenario is available (i.e. the Beam, Ingrebourne and Mayes Brook, Blacks Brook and River Mardyke). The predicted impact of climate change upon the River Thames flood extent is based upon sea level rise allowances.

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**Havering SFRA
Figure 105a
1% AEP Event
+ CC Uplift**

DRG No B08600D2-L-105a			
Not to Scale		21/11/2016	
MA	MS	MS	RC
DRN	CHKD	SEWD	APRD



Key

- Borough Boundary
- Main Rivers
- Flood Zone 3a
- Flood Zone 3a with Climate Change

Data Sources: In accordance with the latest guidance from the Environment Agency the impact of climate change on predicted fluvial flood extents are based on a +15% change in peak river flow for the 1 in 100 annual chance event where detailed modelling for the undefended scenario is available (i.e. the Beam, Ingrebourne and Mayes Brook, Blacks Brook and River Mardyke). The predicted impact of climate change upon the River Thames flood extent is based upon sea level rise allowances.

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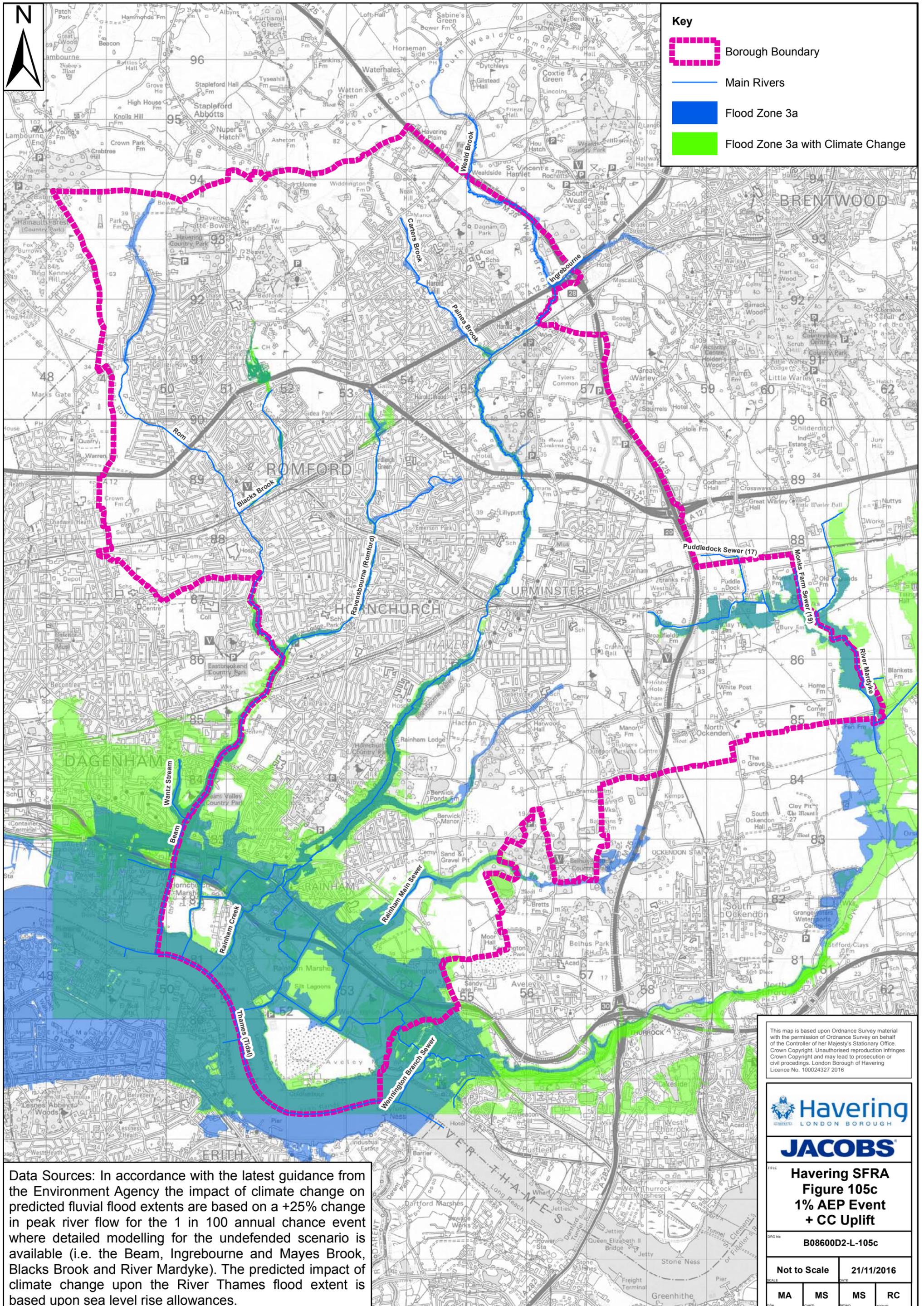


Havering
LONDON BOROUGH



JACOBS

Havering SFRA			
Figure 105b			
1% AEP Event			
+ CC Uplift			
DRG No B08600D2-L-105b			
Not to Scale		21/11/2016	
MA	MS	MS	RC
DRN	CHKD	SEWD	APRVD



Key

- Borough Boundary
- Main Rivers
- Flood Zone 3a
- Flood Zone 3a with Climate Change

Data Sources: In accordance with the latest guidance from the Environment Agency the impact of climate change on predicted fluvial flood extents are based on a +25% change in peak river flow for the 1 in 100 annual chance event where detailed modelling for the undefended scenario is available (i.e. the Beam, Ingrebourne and Mayes Brook, Blacks Brook and River Mardyke). The predicted impact of climate change upon the River Thames flood extent is based upon sea level rise allowances.

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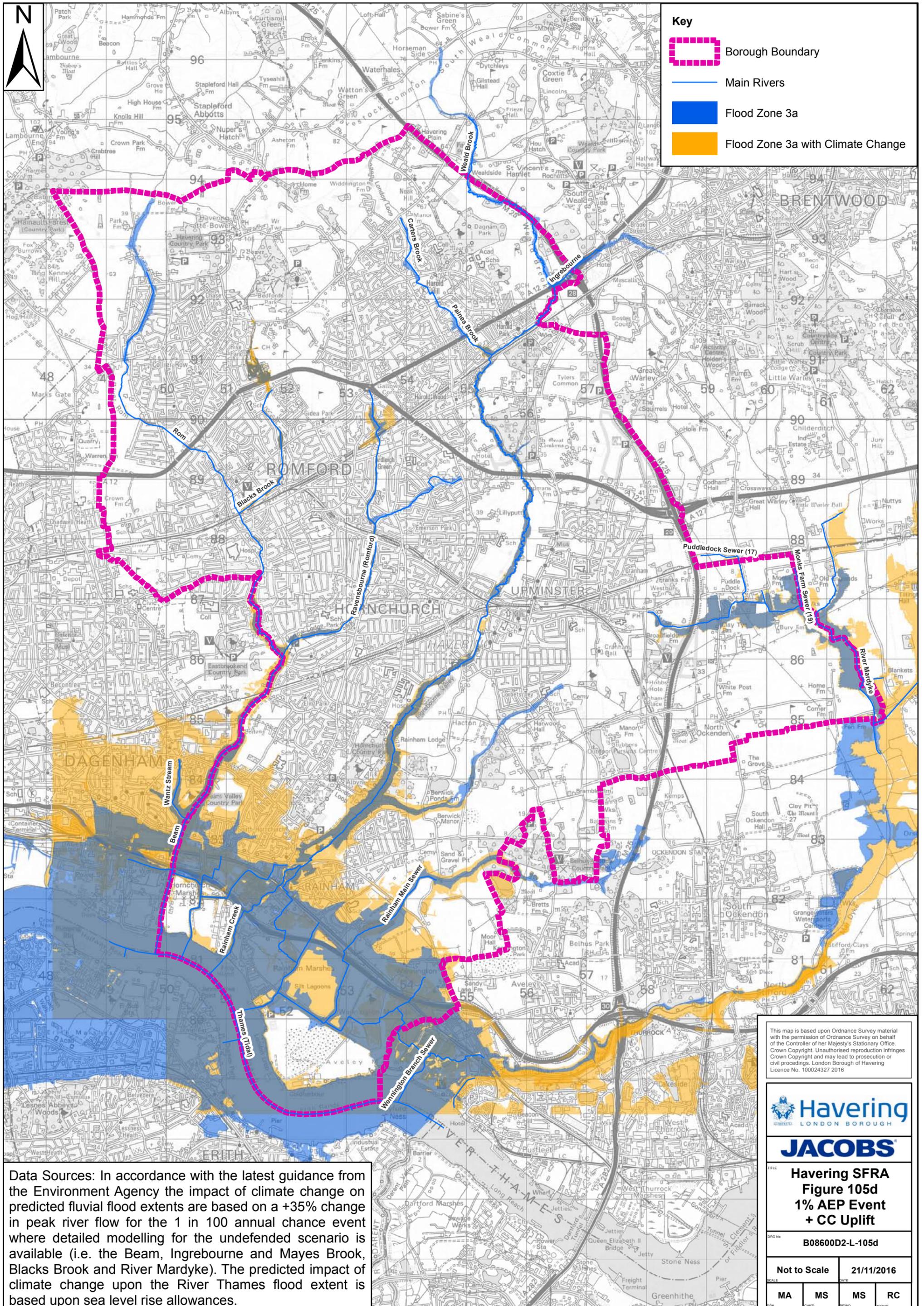
Havering
LONDON BOROUGH

JACOBS

**Havering SFRA
Figure 105c
1% AEP Event
+ CC Uplift**

DRG No: **B08600D2-L-105c**

Not to Scale	21/11/2016		
MA	MS	MS	RC



Key

- Borough Boundary
- Main Rivers
- Flood Zone 3a
- Flood Zone 3a with Climate Change

Data Sources: In accordance with the latest guidance from the Environment Agency the impact of climate change on predicted fluvial flood extents are based on a +35% change in peak river flow for the 1 in 100 annual chance event where detailed modelling for the undefended scenario is available (i.e. the Beam, Ingrebourne and Mayes Brook, Blacks Brook and River Mardyke). The predicted impact of climate change upon the River Thames flood extent is based upon sea level rise allowances.

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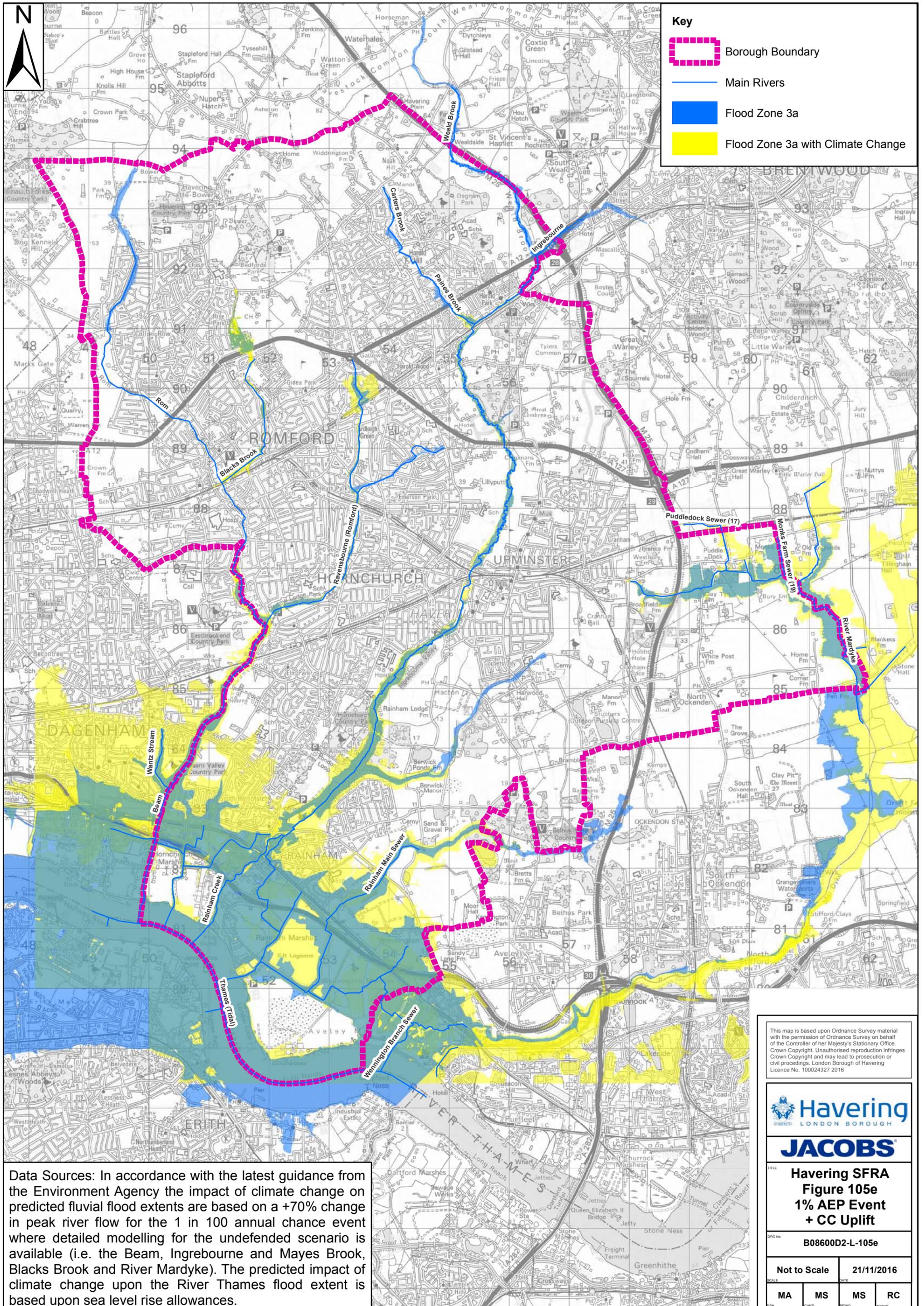
Havering
LONDON BOROUGH

JACOBS

**Havering SFRA
Figure 105d
1% AEP Event
+ CC Uplift**

DRG No: **B08600D2-L-105d**

Not to Scale		21/11/2016	
MA	MS	MS	RC
DRAWN	CHECKED	REVISED	APPROVED



Key

- Borough Boundary
- Main Rivers
- Flood Zone 3a
- Flood Zone 3a with Climate Change

Data Sources: In accordance with the latest guidance from the Environment Agency the impact of climate change on predicted fluvial flood extents are based on a +70% change in peak river flow for the 1 in 100 annual chance event where detailed modelling for the undefended scenario is available (i.e. the Beam, Ingrebourne and Mayes Brook, Blacks Brook and River Mardyke). The predicted impact of climate change upon the River Thames flood extent is based upon sea level rise allowances.

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Havering
LONDON BOROUGH

JACOBS

TITLE: **Havering SFRA
Figure 105e
1% AEP Event
+ CC Uplift**

DWG No: **B08600D2-L-105e**

Not to Scale		21/11/2016	
MA	MS	MS	RC