

Key

- Borough Boundary
- Strategic Development Area
- Main Rivers
- Flood Zone 3b
- Flood Zone 3**
- Fluvial / Tidal
- Fluvial Models
- Tidal Models
- Flood Zone 2

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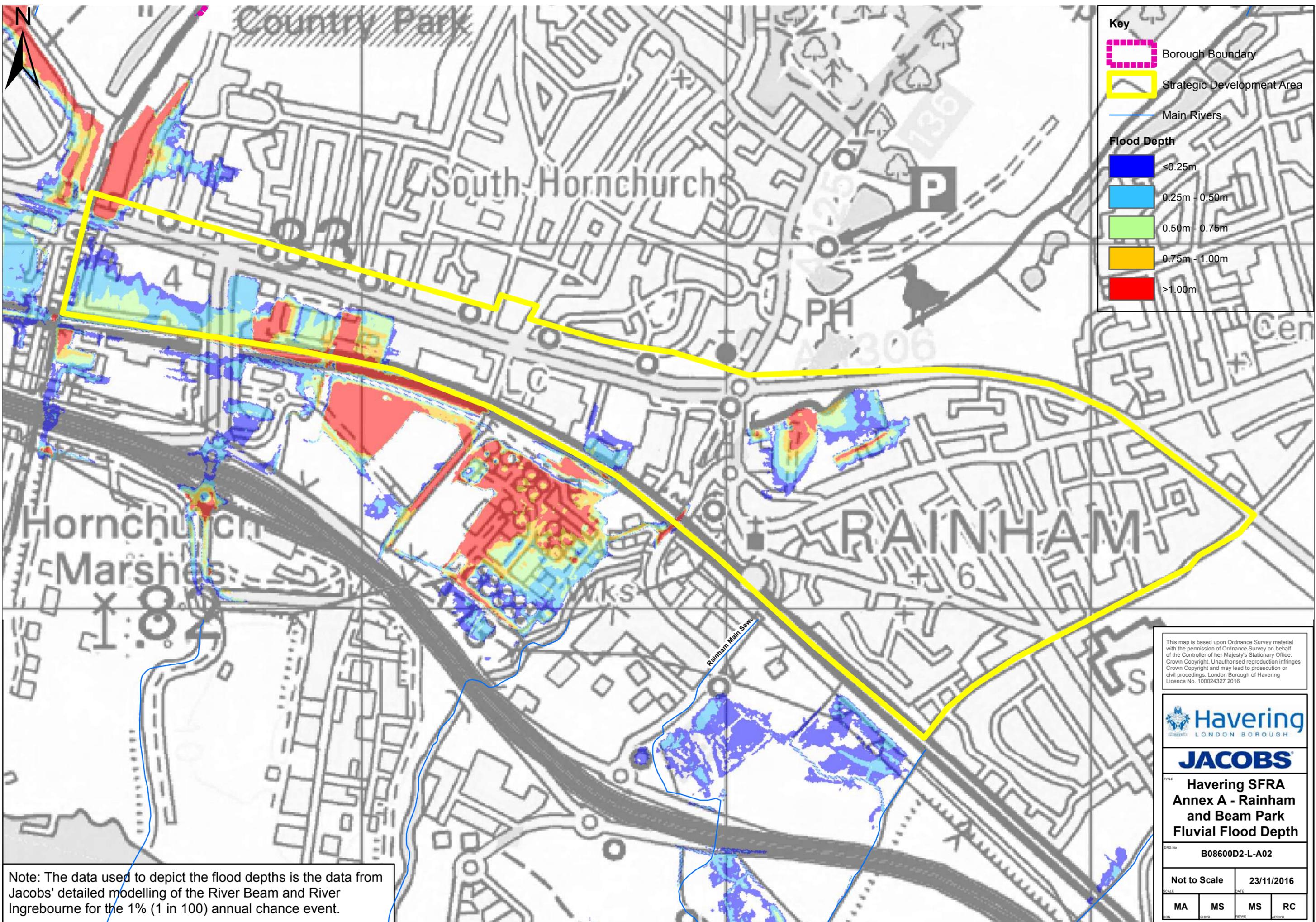
TITLE
Havering SFRA Annex A - Rainham and Beam Park Flood Zones

PROJ NO
B08600D2-L-A01

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

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

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
- Strategic Development Area
- Main Rivers

Flood Depth

- <0.25m
- 0.25m - 0.50m
- 0.50m - 0.75m
- 0.75m - 1.00m
- >1.00m

Note: The data used to depict the flood depths is the data from Jacobs' detailed modelling of the River Beam and River Ingrebourne for the 1% (1 in 100) annual chance event.

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TITLE
 Havering SFRA
 Annex A - Rainham
 and Beam Park
 Fluvial Flood Depth

DRG No
 B08600D2-L-A02

Not to Scale	23/11/2016
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MA	MS	MS	RC
<small>DRN</small>	<small>CHKD</small>	<small>REWD</small>	<small>APPRVD</small>



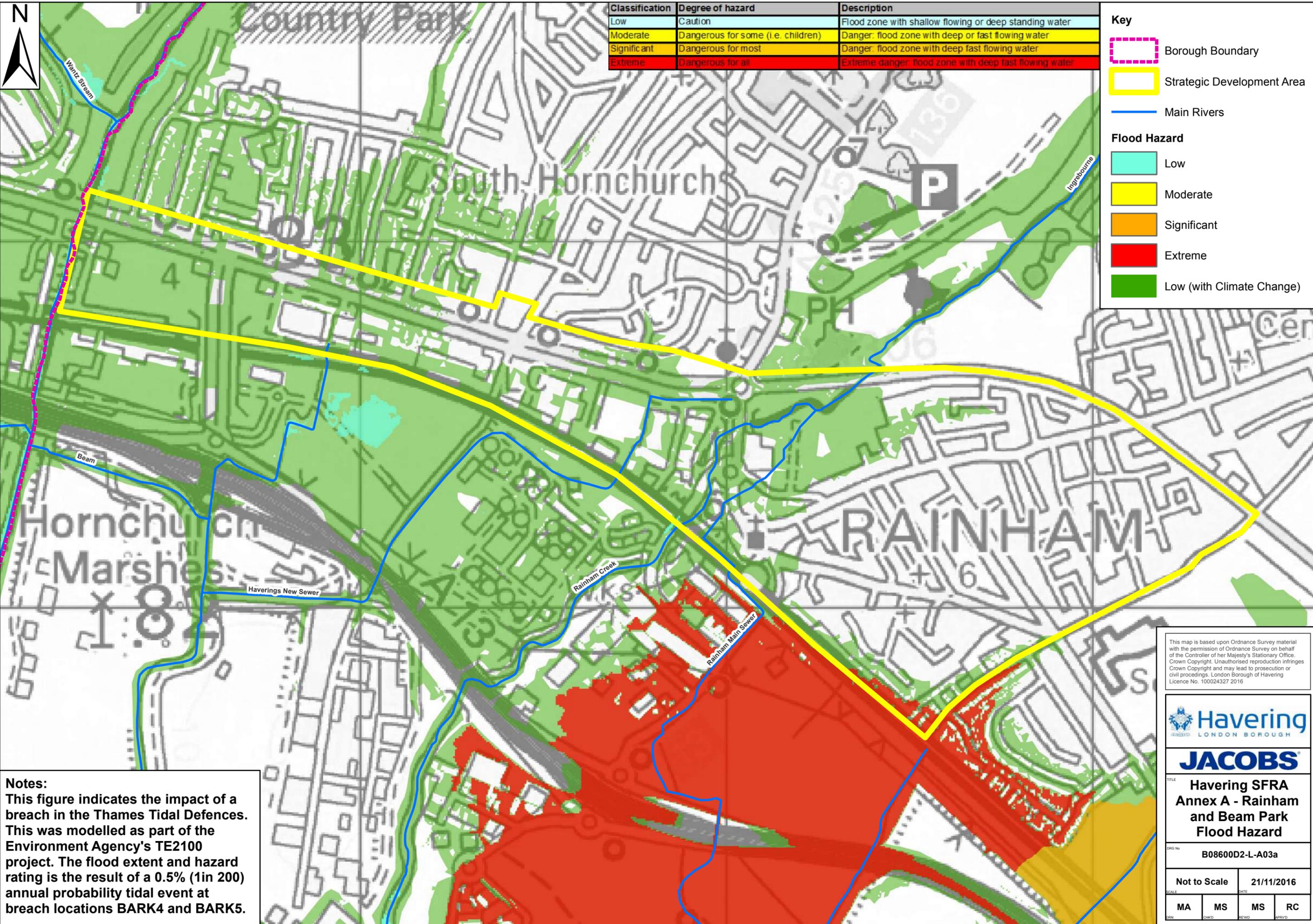
Classification	Degree of hazard	Description
Low	Caution	Flood zone with shallow flowing or deep standing water
Moderate	Dangerous for some (i.e. children)	Danger: flood zone with deep or fast flowing water
Significant	Dangerous for most	Danger: flood zone with deep fast flowing water
Extreme	Dangerous for all	Extreme danger: flood zone with deep fast flowing water

Key

- Borough Boundary
- Strategic Development Area
- Main Rivers

Flood Hazard

- Low
- Moderate
- Significant
- Extreme
- Low (with Climate Change)



Notes:
 This figure indicates the impact of a breach in the Thames Tidal Defences. This was modelled as part of the Environment Agency's TE2100 project. The flood extent and hazard rating is the result of a 0.5% (1in 200) annual probability tidal event at breach locations BARK4 and BARK5.

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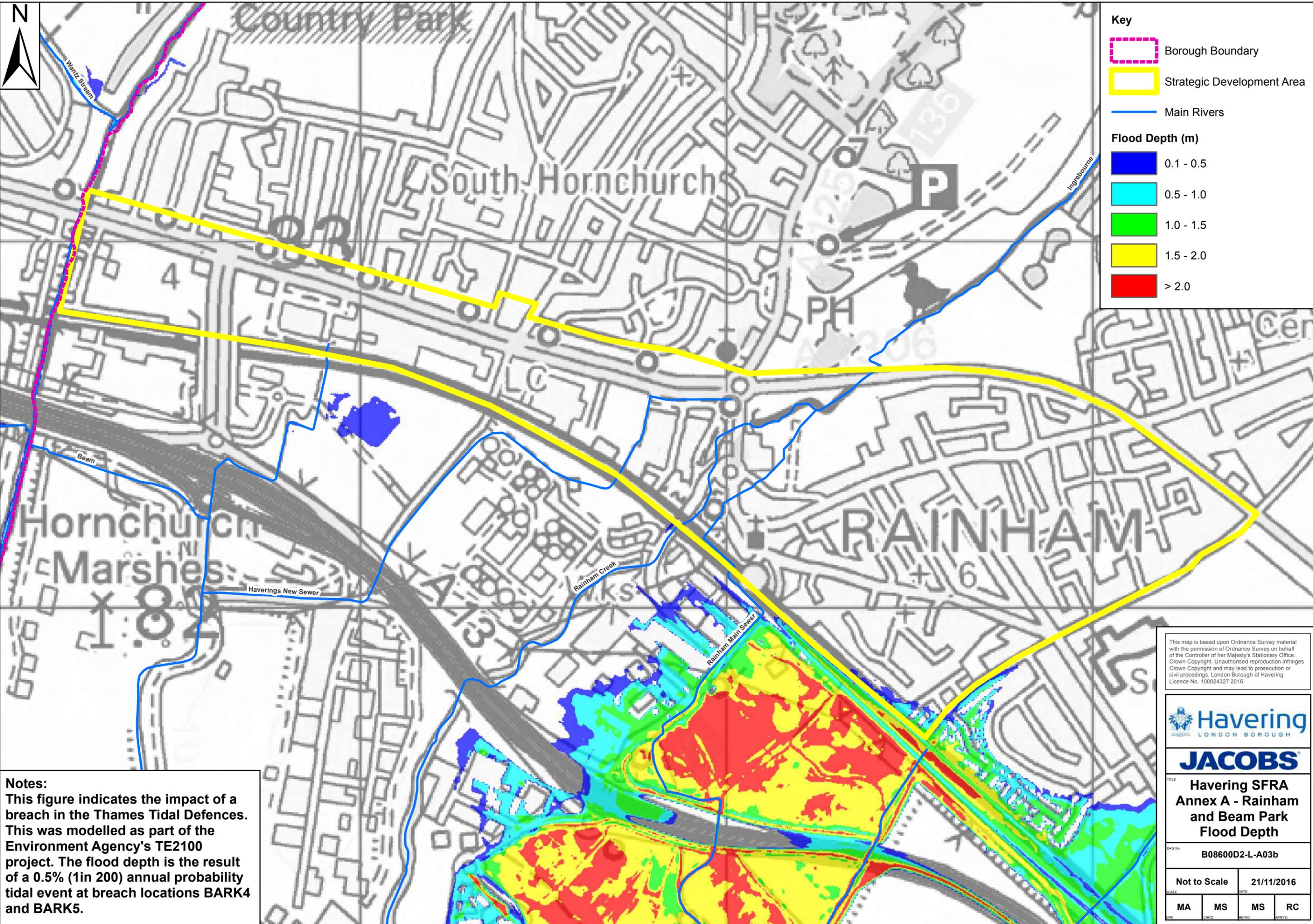


TITLE
 Havering SFRA
 Annex A - Rainham
 and Beam Park
 Flood Hazard

DRG No
 B08600D2-L-A03a

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

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



Key

-  Borough Boundary
-  Strategic Development Area
-  Main Rivers

Flood Depth (m)

-  0.1 - 0.5
-  0.5 - 1.0
-  1.0 - 1.5
-  1.5 - 2.0
-  > 2.0

Notes:
 This figure indicates the impact of a breach in the Thames Tidal Defences. This was modelled as part of the Environment Agency's TE2100 project. The flood depth is the result of a 0.5% (1 in 200) annual probability tidal event at breach locations BARK4 and BARK5.

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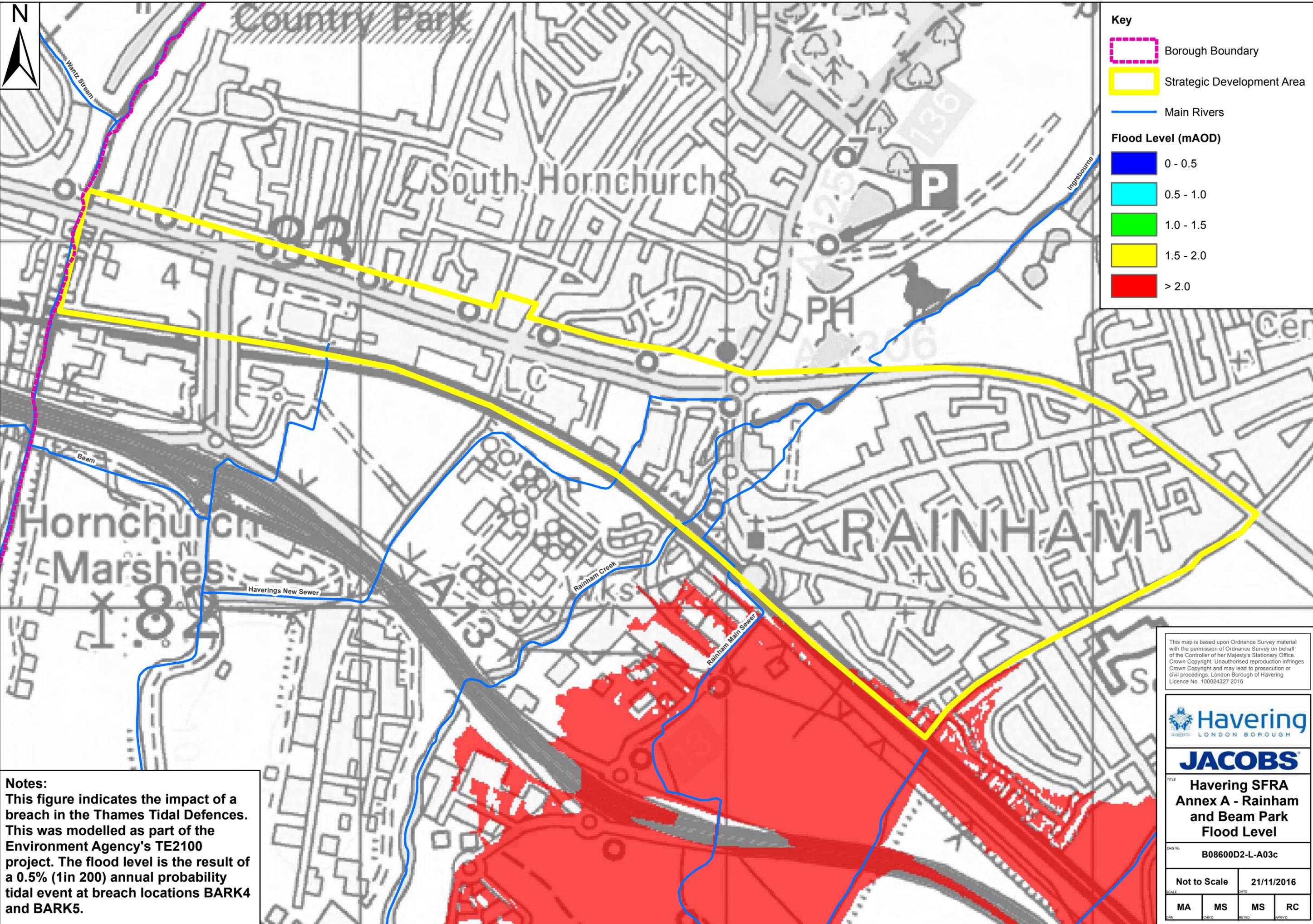


TITLE
 Havering SFRA
 Annex A - Rainham
 and Beam Park
 Flood Depth

DRG No
 B08600D2-L-A03b

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

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



Key

- Borough Boundary
- Strategic Development Area
- Main Rivers

Flood Level (mAOD)

- 0 - 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- 1.5 - 2.0
- > 2.0

Notes:
 This figure indicates the impact of a breach in the Thames Tidal Defences. This was modelled as part of the Environment Agency's TE2100 project. The flood level is the result of a 0.5% (1in 200) annual probability tidal event at breach locations BARK4 and BARK5.

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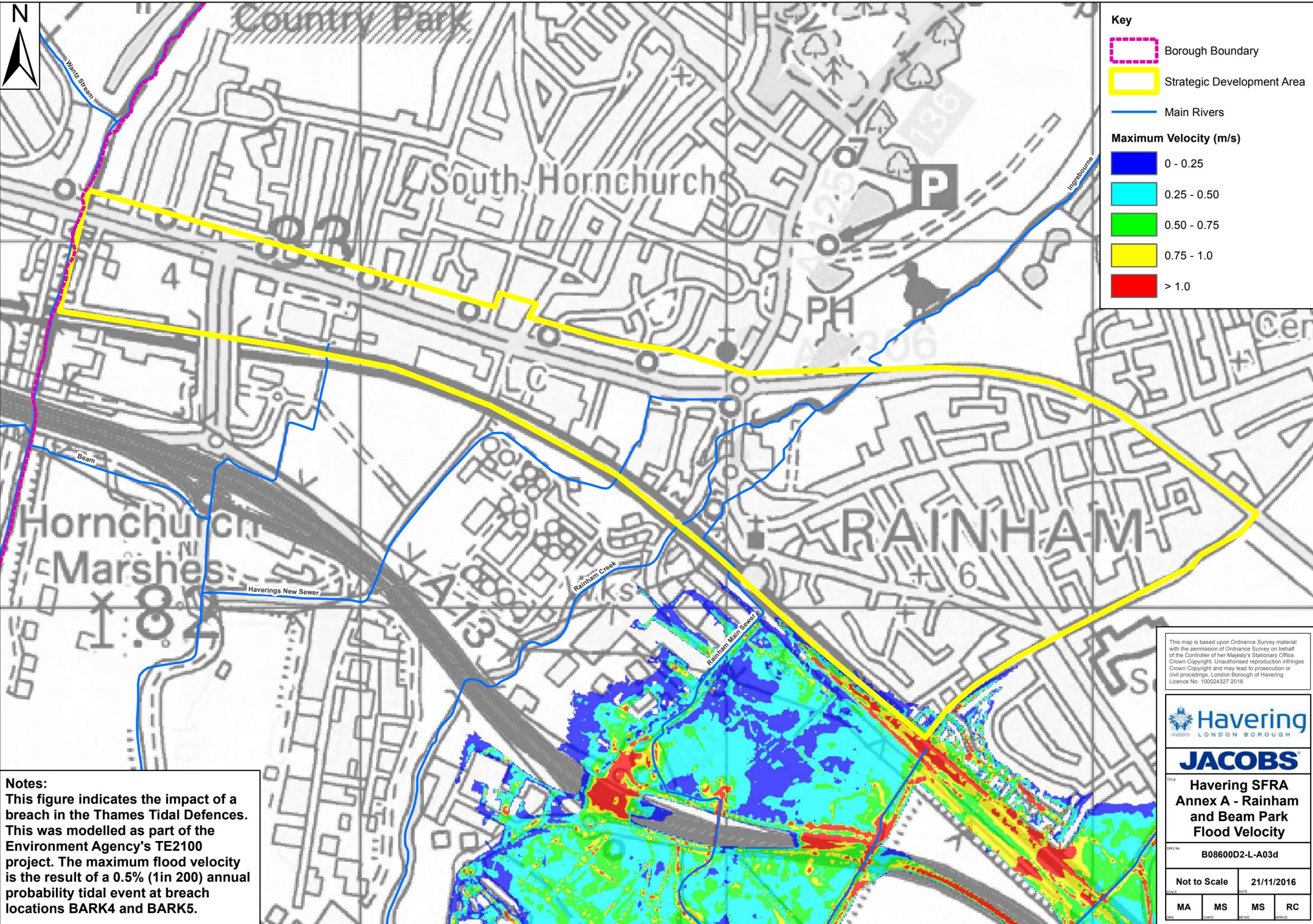


TITLE
 Havering SFRA
 Annex A - Rainham
 and Beam Park
 Flood Level

DRG No
 B08600D2-L-A03c

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

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



Key

- Borough Boundary
- Strategic Development Area
- Main Rivers

Maximum Velocity (m/s)

- 0 - 0.25
- 0.25 - 0.50
- 0.50 - 0.75
- 0.75 - 1.0
- > 1.0

Notes:
 This figure indicates the impact of a breach in the Thames Tidal Defences. This was modelled as part of the Environment Agency's TE2100 project. The maximum flood velocity is the result of a 0.5% (1 in 200) annual probability tidal event at breach locations BARK4 and BARK5.

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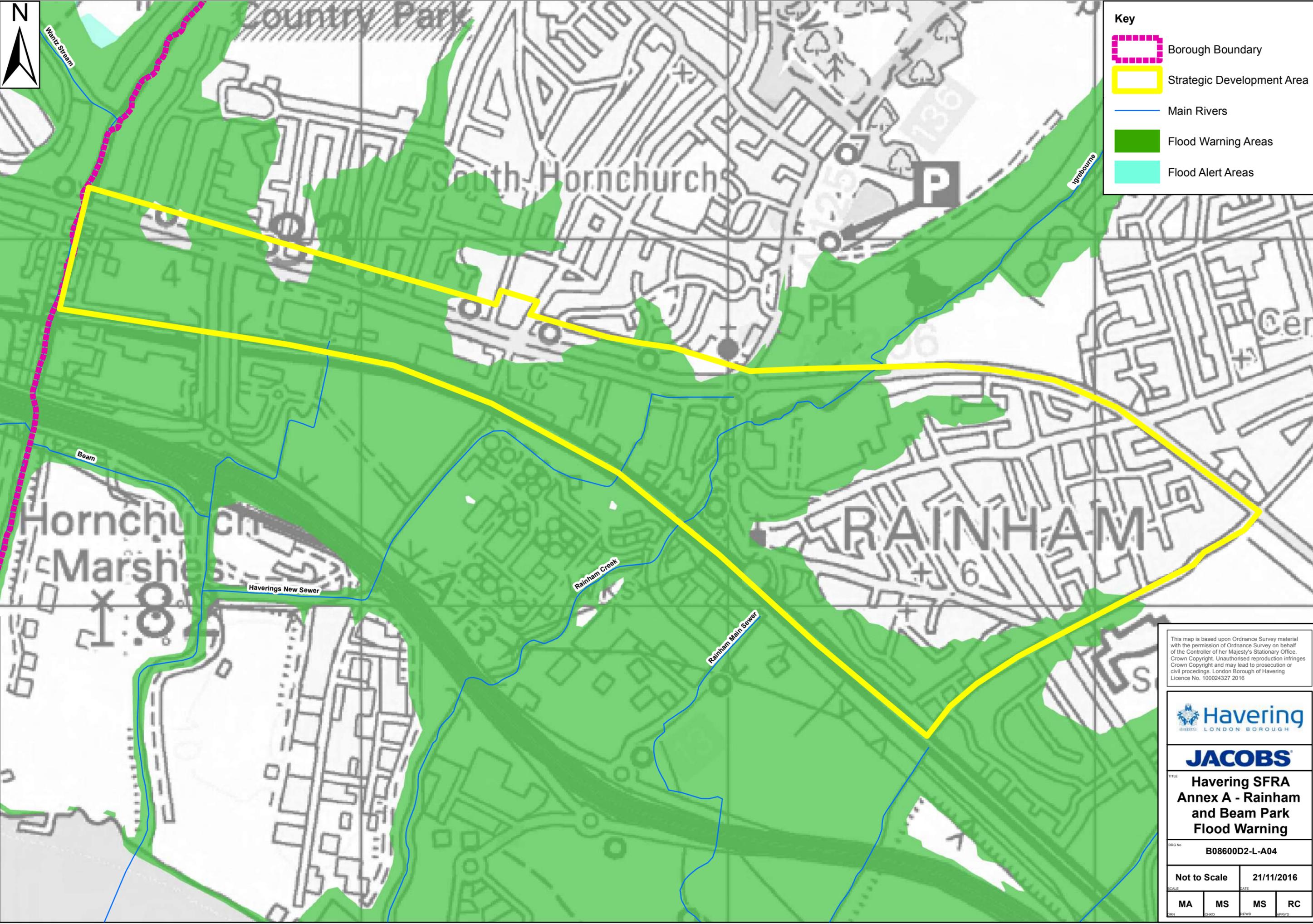


TITLE
 Havering SFRA
 Annex A - Rainham
 and Beam Park
 Flood Velocity

DRG No
 B08600D2-L-A03d

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

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



Key

-  Borough Boundary
-  Strategic Development Area
-  Main Rivers
-  Flood Warning Areas
-  Flood Alert Areas

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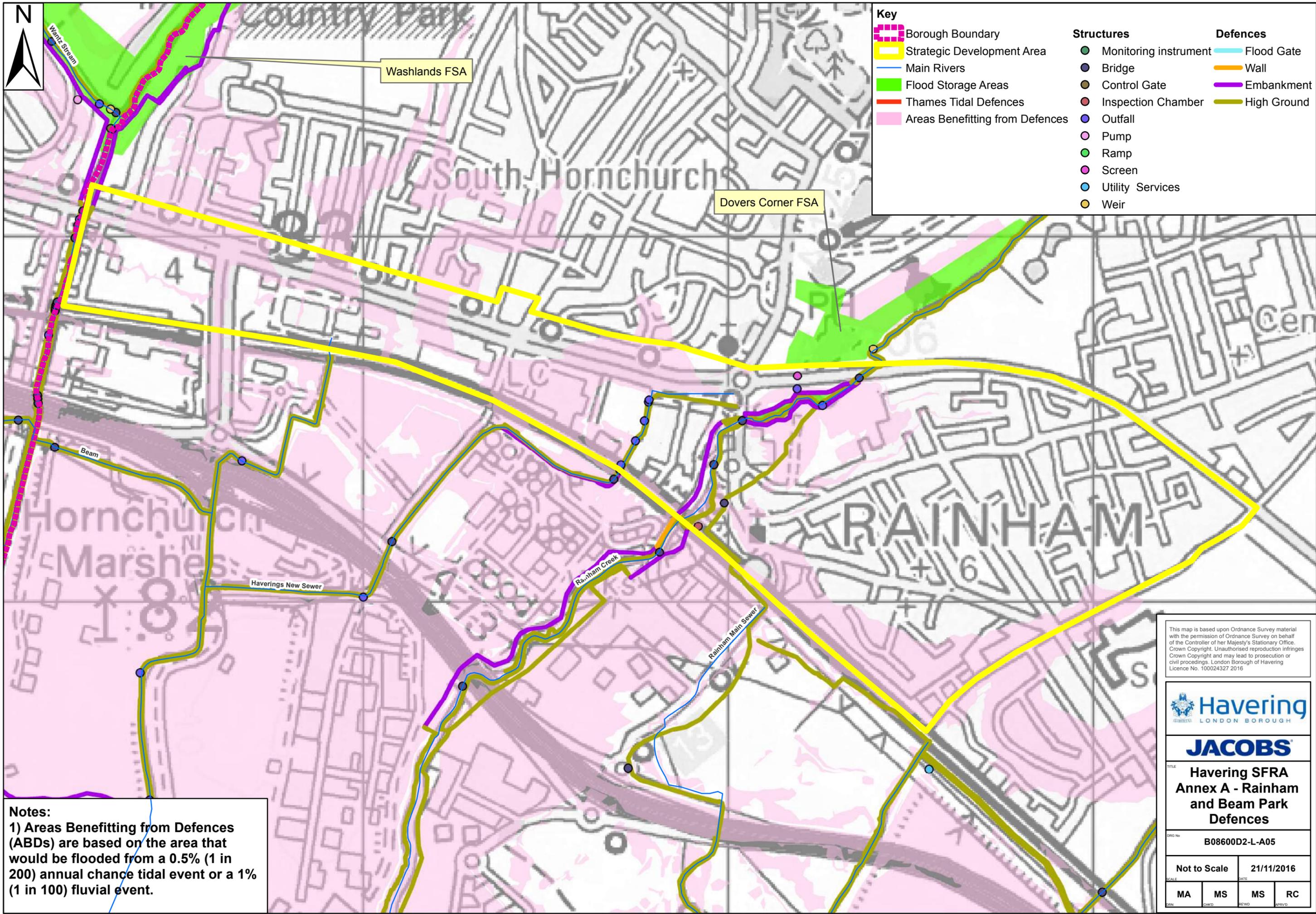


**Havering SFRA
Annex A - Rainham
and Beam Park
Flood Warning**

DRG No: **B08600D2-L-A04**

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

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



Notes:
 1) Areas Benefitting from Defences (ABDs) are based on the area that would be flooded from a 0.5% (1 in 200) annual chance tidal event or a 1% (1 in 100) fluvial event.

Key

- Borough Boundary
- Strategic Development Area
- Main Rivers
- Flood Storage Areas
- Thames Tidal Defences
- Areas Benefitting from Defences

Structures

- Monitoring instrument
- Bridge
- Control Gate
- Inspection Chamber
- Outfall
- Pump
- Ramp
- Screen
- Utility Services
- Weir

Defences

- Flood Gate
- Wall
- Embankment
- High Ground

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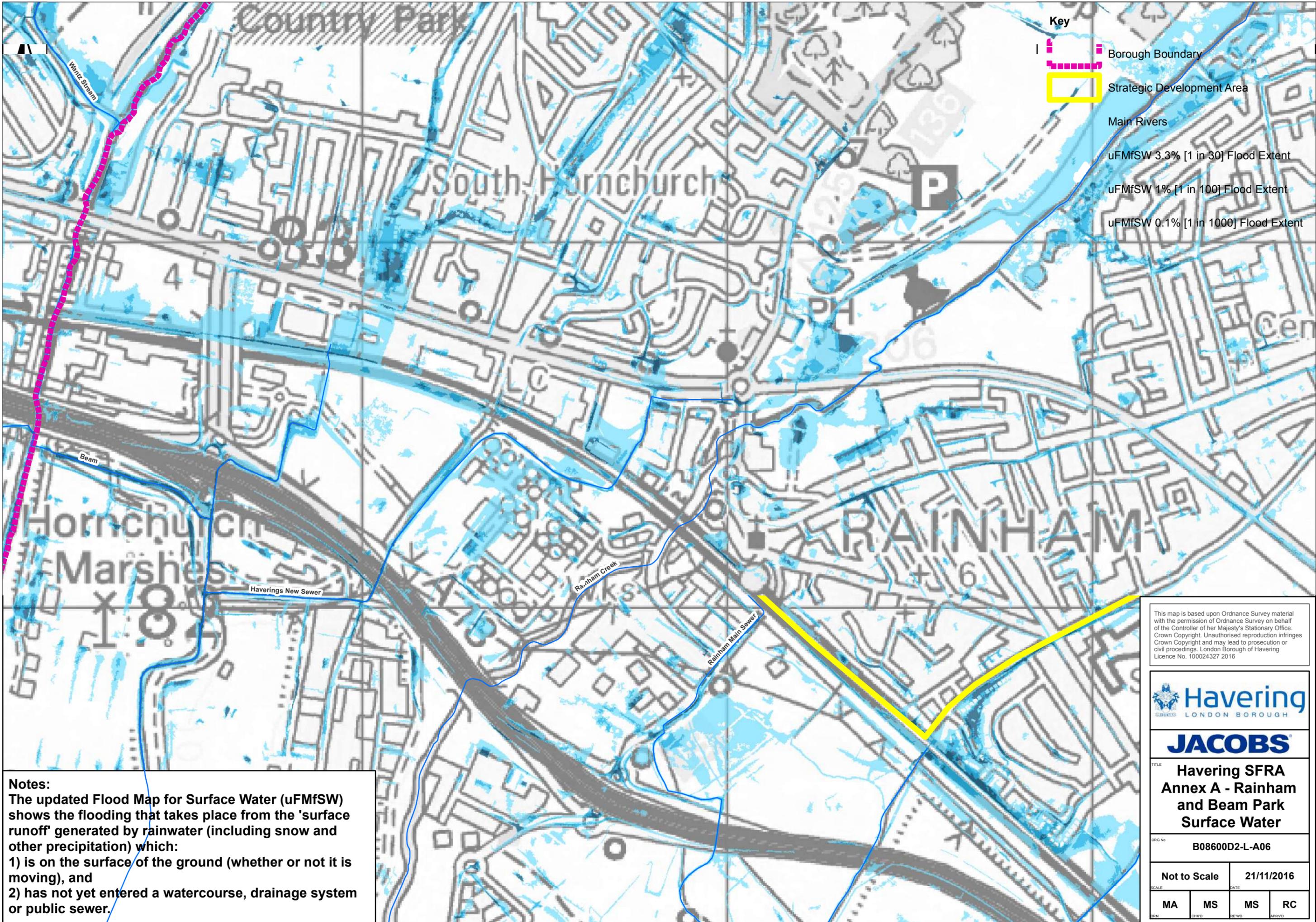


TITLE
 Havering SFRA
 Annex A - Rainham
 and Beam Park
 Defences

ORG No
 B08600D2-L-A05

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

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



Key

-  Borough Boundary
-  Strategic Development Area
-  Main Rivers
-  uFMfSW 3.3% [1 in 30] Flood Extent
-  uFMfSW 1% [1 in 100] Flood Extent
-  uFMfSW 0.1% [1 in 1000] Flood Extent

Notes:
 The updated Flood Map for Surface Water (uFMfSW) shows the flooding that takes place from the 'surface runoff' generated by rainwater (including snow and other precipitation) which:
 1) is on the surface of the ground (whether or not it is moving), and
 2) has not yet entered a watercourse, drainage system or public sewer.

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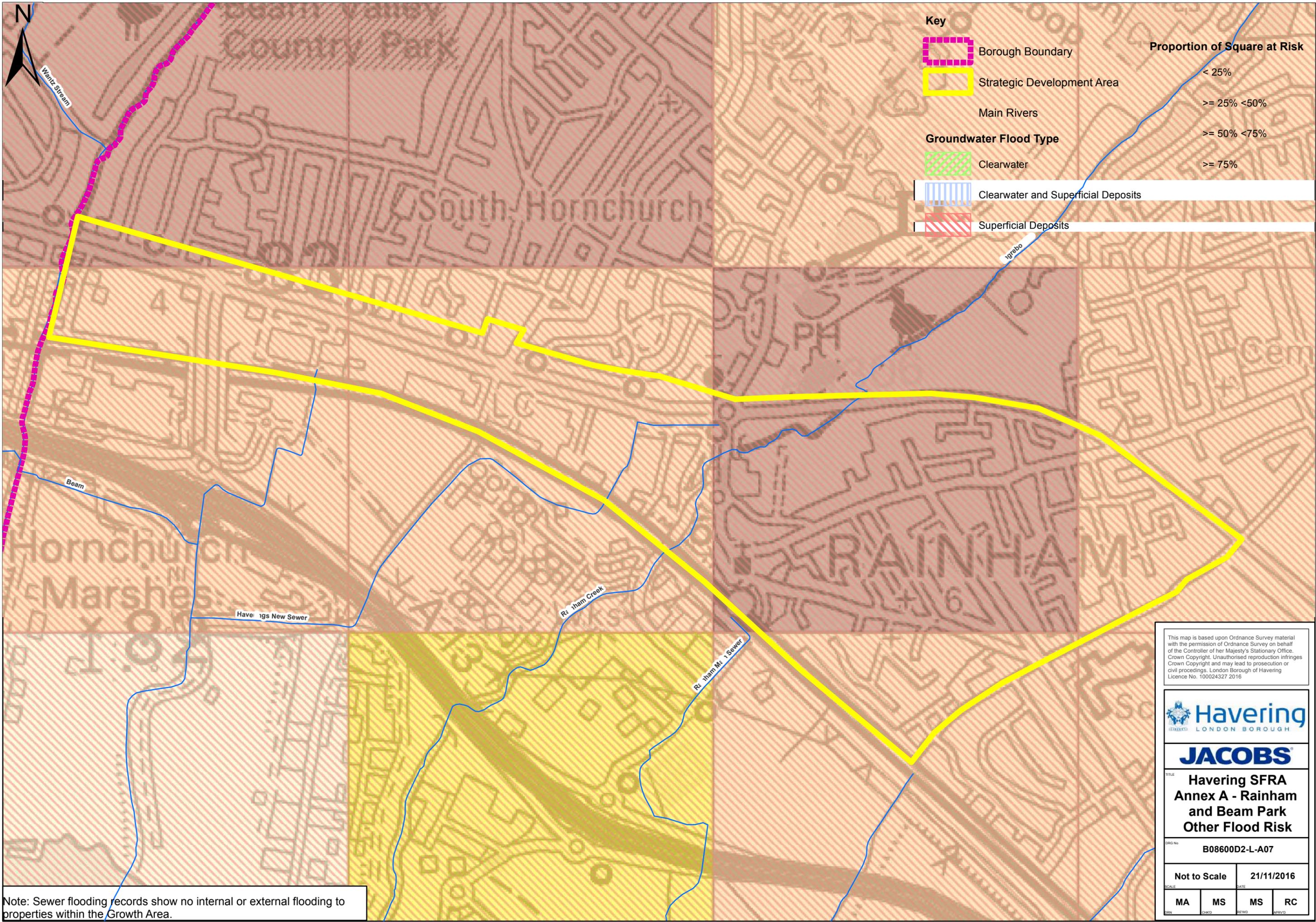


TITLE
 Havering SFRA
 Annex A - Rainham
 and Beam Park
 Surface Water

DRG NO
 B08600D2-L-A06

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
- Strategic Development Area
- Main Rivers

Groundwater Flood Type

- Clearwater
- Clearwater and Superficial Deposits
- Superficial Deposits

Proportion of Square at Risk

- < 25%
- >= 25% < 50%
- >= 50% < 75%
- >= 75%

Note: Sewer flooding records show no internal or external flooding to properties within the Growth Area.

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**Havering SFRA
Annex A - Rainham
and Beam Park
Other Flood Risk**

DRG No: **B08600D2-L-A07**

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

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<small>DRN</small>	<small>CHKD</small>	<small>REVD</small>	<small>APRVD</small>