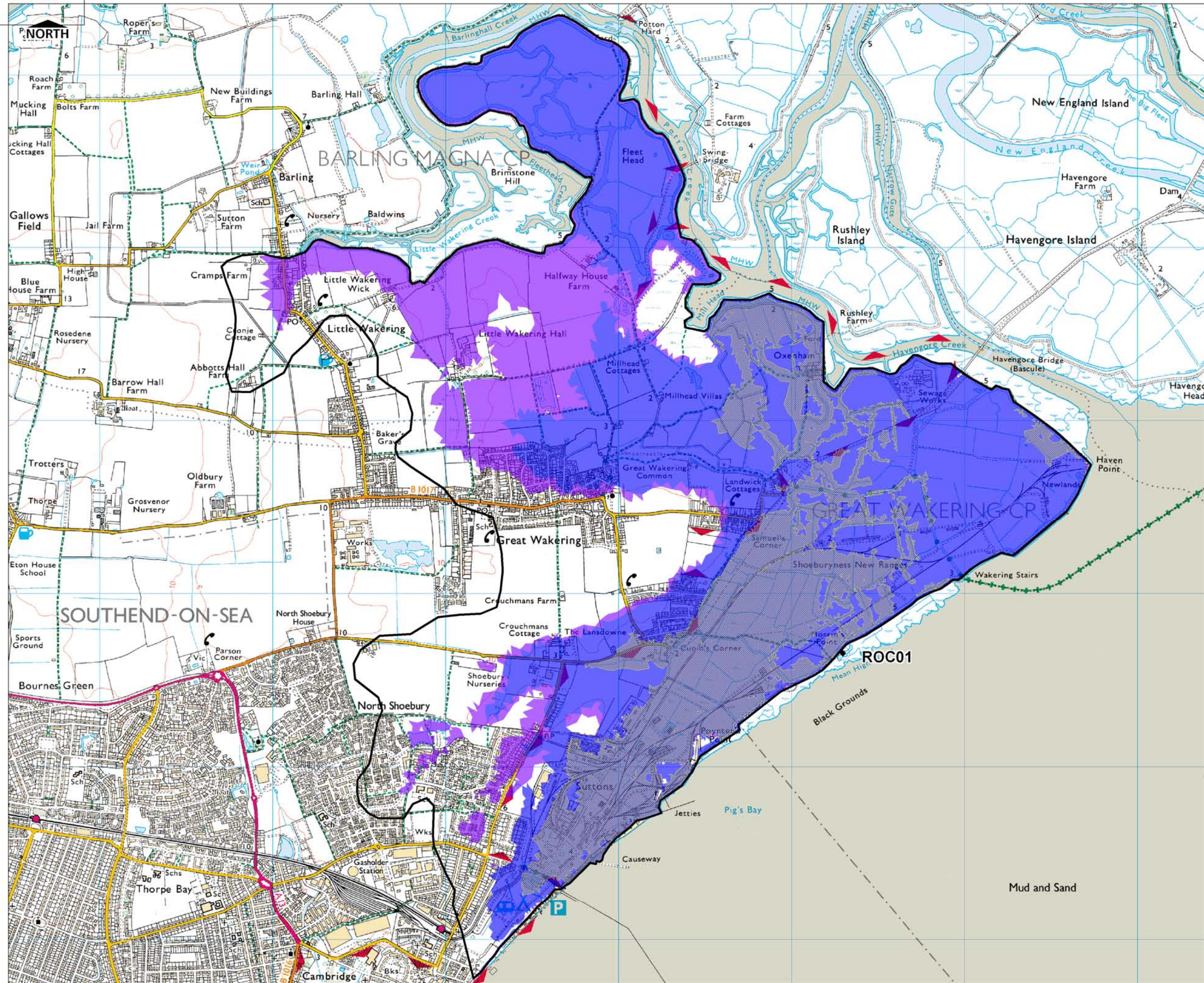


Appendix D: Time to Inundation Mapping

Potential Impact of Breach & Overtopping

D-1	Breach ROC01 Time to Inundation (1 in 1000yr event, 2110 incl. CC)
D-2	Breach ROC02 Time to Inundation (1 in 1000yr event, 2110 incl. CC)
D-3	Breach ROC03 Time to Inundation (1 in 1000yr event, 2110 incl. CC)
D-4	Breach ROC04 Time to Inundation (1 in 1000yr event, 2110 incl. CC)
D-5	Breach ROC05 Time to Inundation (1 in 1000yr event, 2110 incl. CC)
D-6	Breach ROC06 Time to Inundation (1 in 1000yr event, 2110 incl. CC)
D-7	Breach ROC07 Time to Inundation (1 in 1000yr event, 2110 incl. CC)
D-8	Breach ROC01 Time to Inundation (1 in 0200yr event, 2110 incl. CC)
D-9	Breach ROC02 Time to Inundation (1 in 0200yr event, 2110 incl. CC)
D-10	Breach ROC03 Time to Inundation (1 in 0200yr event, 2110 incl. CC)
D-11	Breach ROC04 Time to Inundation (1 in 0200yr event, 2110 incl. CC)
D-12	Breach ROC05 Time to Inundation (1 in 0200yr event, 2110 incl. CC)
D-13	Breach ROC06 Time to Inundation (1 in 0200yr event, 2110 incl. CC)
D-14	Breach ROC07 Time to Inundation (1 in 0200yr event, 2110 incl. CC)
D-15	Breach ROC01 Time to Inundation (1 in 1000yr event, 2010)
D-16	Breach ROC02 Time to Inundation (1 in 1000yr event, 2010)
D-17	Breach ROC03 Time to Inundation (1 in 1000yr event, 2010)
D-18	Breach ROC04 Time to Inundation (1 in 1000yr event, 2010)
D-19	Breach ROC05 Time to Inundation (1 in 1000yr event, 2010)
D-20	Breach ROC06 Time to Inundation (1 in 1000yr event, 2010)
D-21	Breach ROC07 Time to Inundation (1 in 1000yr event, 2010)
D-22	Breach ROC01 Time to Inundation (1 in 0200yr event, 2010)
D-23	Breach ROC02 Time to Inundation (1 in 0200yr event, 2010)
D-24	Breach ROC03 Time to Inundation (1 in 0200yr event, 2010)
D-25	Breach ROC04 Time to Inundation (1 in 0200yr event, 2010)
D-26	Breach ROC05 Time to Inundation (1 in 0200yr event, 2010)
D-27	Breach ROC06 Time to Inundation (1 in 0200yr event, 2010)
D-28	Breach ROC07 Time to Inundation (1 in 0200yr event, 2010)

No Window



KEY

- Flood Cell
 - Breach Location
- Time To Inundation [Hours]**
- < 1 Hour
 - 1 - 4 Hours
 - 4 - 8 Hours
 - 8 - 12 Hours
 - 12 - 16 Hours
 - 16 - 20 Hours
- Inundation from overtopping prior to breach

TECHNICAL NOTE
 Hydraulic modelling has been undertaken using 2-D hydraulic modelling software MIKE21-HDFM (ver. 2009), to assess the effect of breaches at specified points and/or overtopping of defences. The model simulates 3 tidal cycles with the peak level occurring on the second peak and two slightly smaller peaks either side. Breaches in the defence walls are modelled to occur immediately before the peak tidal level to assess the potential impact of rapid inundation of floodwater.
 In order to map Time to Inundation, time 0 (zero) is designated as the time when tidal water enters the breach. The <1 hour band encompasses all areas that are inundated within the first hour of water passing through the breach and into the flood cell. Subsequent bands have been produced to show inundated cells for each 4 hour interval up to 20 hours. Areas that experience flooding as a result of overtopping of the defences prior to the breach event, are shown as hatched areas.
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USER NOTE
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FLOODABLE AREAS NOT SHOWN
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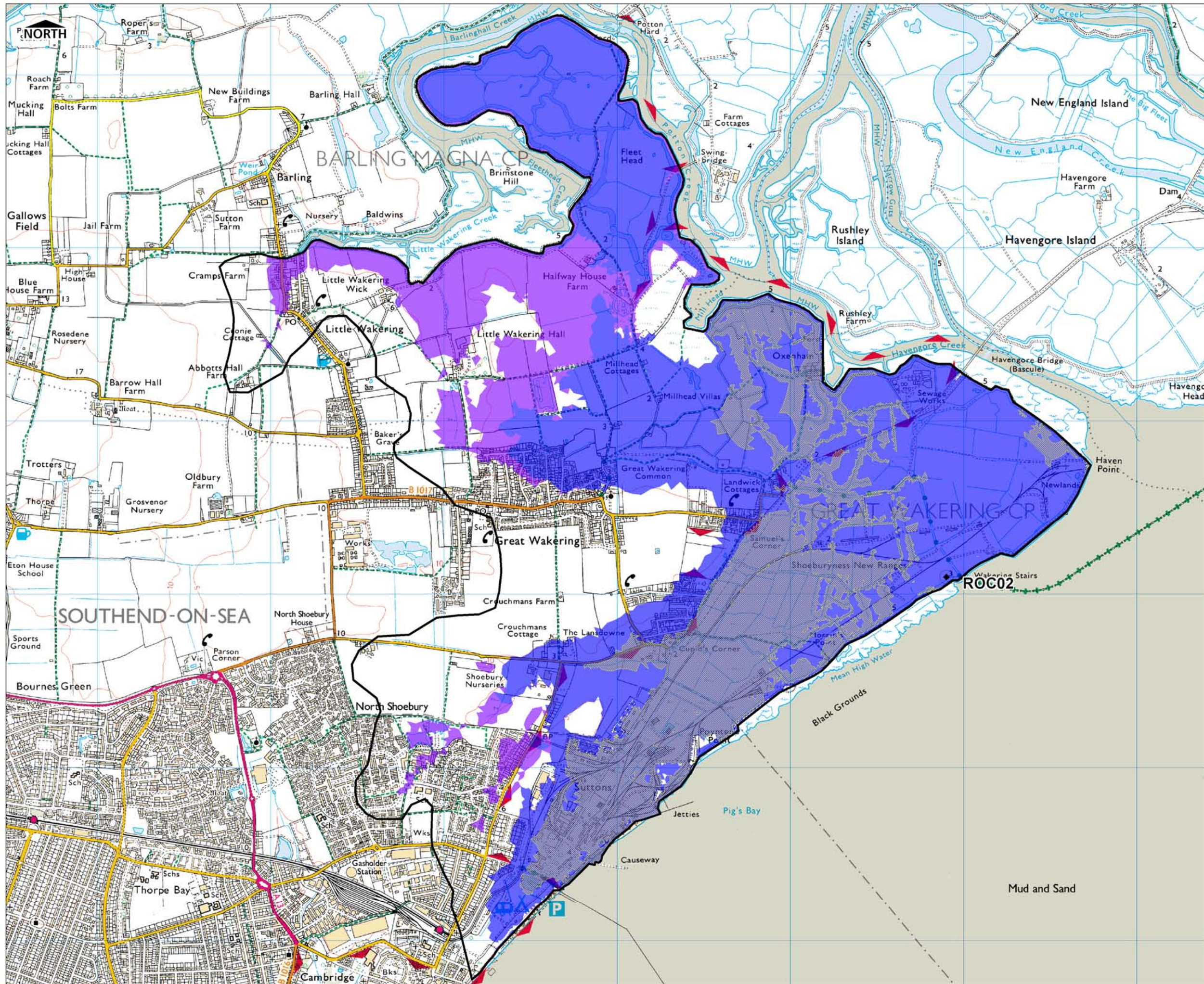
**THAMES GATEWAY SOUTH ESSEX
 STRATEGIC FLOOD RISK ASSESSMENT**

**TIME TO INUNDATION
 1000YR + CC (2110)
 BREACH ROC01**



Scott Wilson
 6-8 Greencoat Place
 London, SW1P 1PL
 Tel: (020) 7798 5000

DRAWING NUMBER
FIGURE D-1



KEY

- Flood Cell
- ◆ Breach Location

Time To Inundation [Hours]

- < 1 Hour
- 1 - 4 Hours
- 4 - 8 Hours
- 8 - 12 Hours
- 12 - 16 Hours
- 16 - 20 Hours

Inundation from overtopping prior to breach

TECHNICAL NOTE

Hydraulic modelling has been undertaken using 2-D hydraulic modelling software MIKE21-HDFM (ver. 2009), to assess the effect of breaches at specified points and/or overtopping of defences. The model simulates 3 tidal cycles with the peak level occurring on the second peak and two slightly smaller peaks either side. Breaches in the defence walls are modelled to occur immediately before the peak tidal level to assess the potential impact of rapid inundation of floodwater.

In order to map Time to Inundation, time 0 (zero) is designated as the time when tidal water enters the breach. The <1 hour band encompasses all areas that are inundated within the first hour of water passing through the breach and into the flood cell. Subsequent bands have been produced to show inundated cells for each 4 hour interval up to 20 hours. Areas that experience flooding as a result of overtopping of the defences prior to the breach event, are shown as hatched areas.

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FLOODABLE AREAS NOT SHOWN

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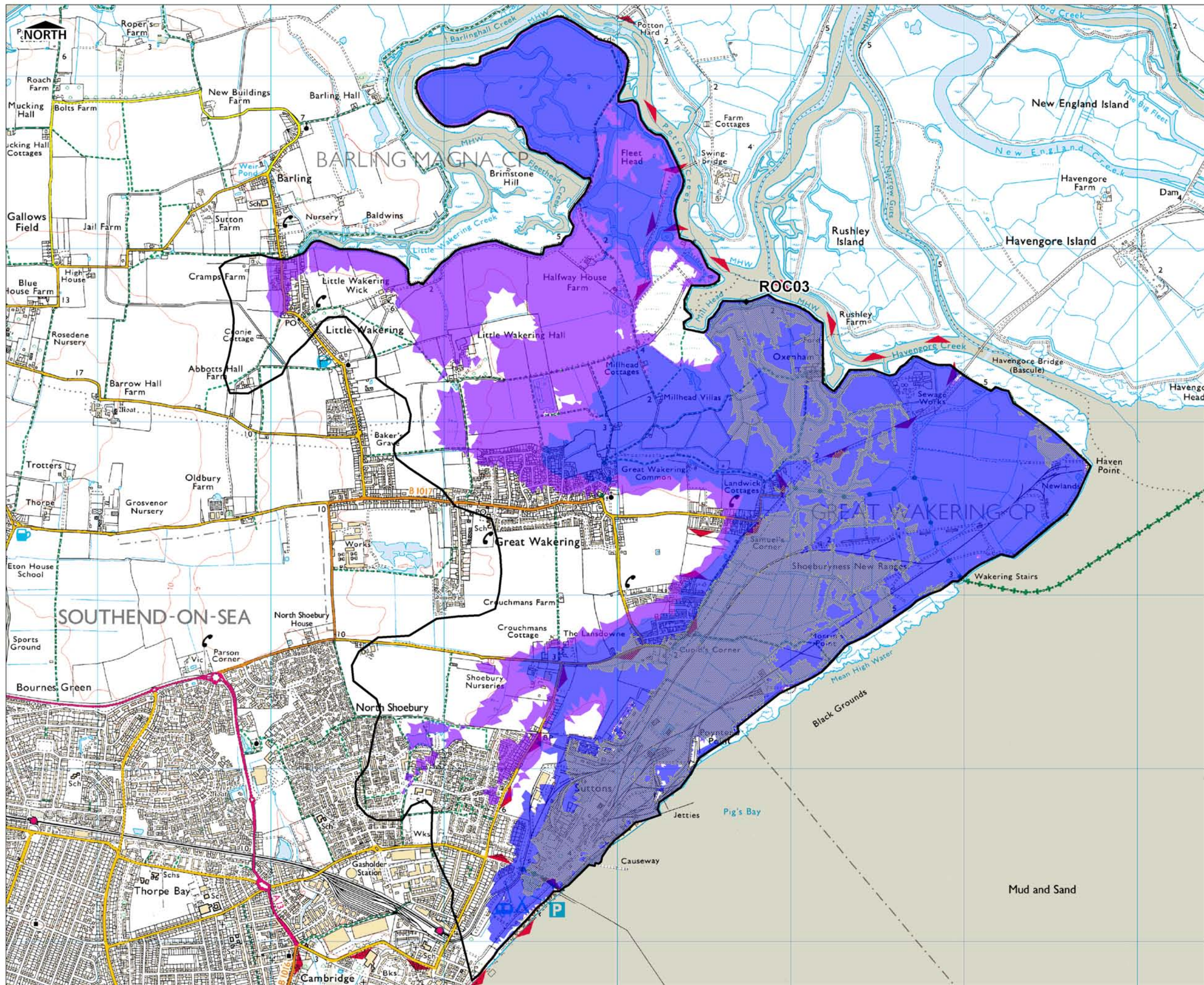
THAMES GATEWAY SOUTH ESSEX STRATEGIC FLOOD RISK ASSESSMENT

TIME TO INUNDATION 1000YR + CC (2110) BREACH ROC02



Scott Wilson
 6-8 Greencoat Place
 London, SW1P 1PL
 Tel: (020) 7798 5000

FIGURE D-2



KEY

- Flood Cell
- ◆ Breach Location

Time To Inundation [Hours]

- < 1 Hour
- 1 - 4 Hours
- 4 - 8 Hours
- 8 - 12 Hours
- 12 - 16 Hours
- 16 - 20 Hours

Inundation from overtopping prior to breach

TECHNICAL NOTE

Hydraulic modelling has been undertaken using 2-D hydraulic modelling software MIKE21-HDFM (ver. 2009), to assess the effect of breaches at specified points and/or overtopping of defences. The model simulates 3 tidal cycles with the peak level occurring on the second peak and two slightly smaller peaks either side. Breaches in the defence walls are modelled to occur immediately before the peak tidal level to assess the potential impact of rapid inundation of floodwater.

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USER NOTE

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FLOODABLE AREAS NOT SHOWN

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THAMES GATEWAY SOUTH ESSEX STRATEGIC FLOOD RISK ASSESSMENT

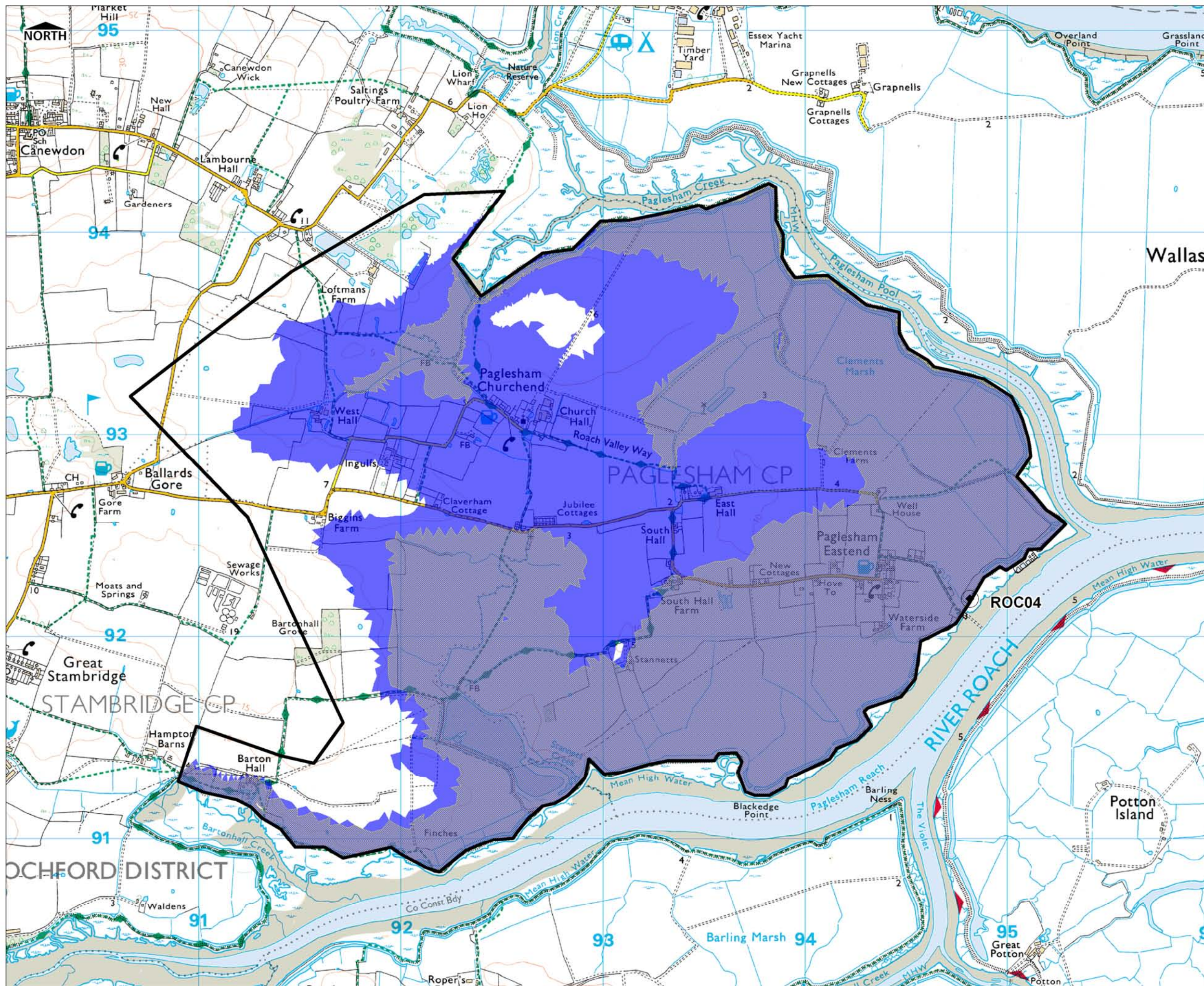
TIME TO INUNDATION 1000YR + CC (2110) BREACH ROC03



Scott Wilson
6-8 Greencoat Place
London, SW1P 1PL
Tel: (020) 7798 5000



DRAWING NUMBER
FIGURE D-3



KEY

- Flood Cell
- ◆ Breach Location

Time To Inundation [Hours]

- < 1 Hour
- 1 - 4 Hours
- 4 - 8 Hours
- 8 - 12 Hours
- 12 - 16 Hours
- 16 - 20 Hours

Inundation from overtopping prior to breach

TECHNICAL NOTE

Hydraulic modelling has been undertaken using 2-D hydraulic modelling software MIKE21-HDFM (ver. 2009), to assess the effect of breaches at specified points and/or overtopping of defences. The model simulates 3 tidal cycles with the peak level occurring on the second peak and two slightly smaller peaks either side. Breaches in the defence walls are modelled to occur immediately before the peak tidal level to assess the potential impact of rapid inundation of floodwater.

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Time to inundation maps represent the onset of flooding from 1 specified breach. The rate will vary spatially if the breach locations are in different local areas. Changes in inundation extent or rate of onset of flooding are non-linear to changes in breach location. It should be noted that the breach width and depth, though based on EA guidance, are arbitrary and do not necessarily represent the actual dimensions of a potential breach at a given location.

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FLOODABLE AREAS NOT SHOWN

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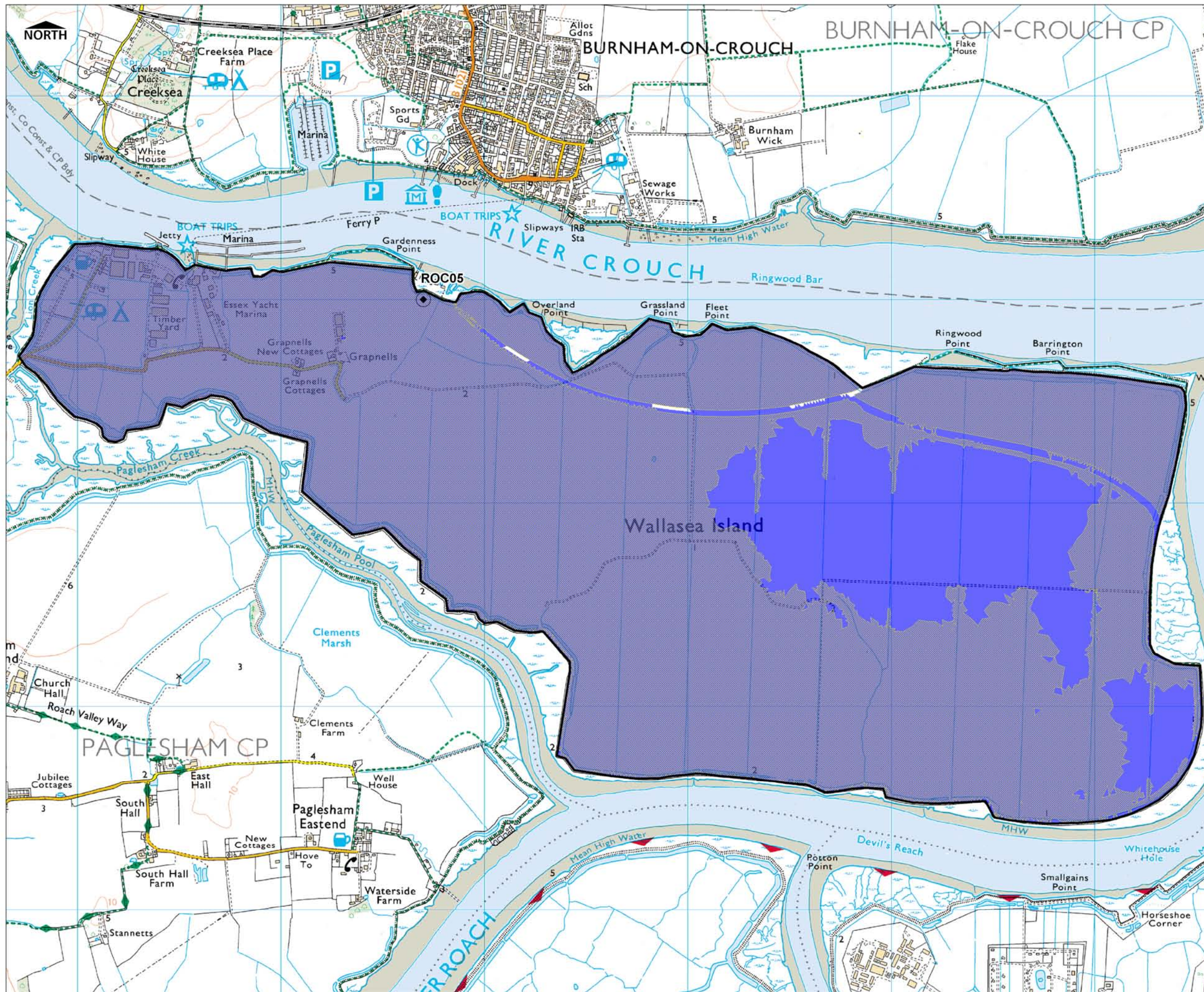
**THAMES GATEWAY SOUTH ESSEX
STRATEGIC FLOOD RISK ASSESSMENT**

**TIME TO INUNDATION
1000YR + CC (2110)
BREACH ROC04**



Scott Wilson
6-8 Greencoat Place
London, SW1P 1PL
Tel: (020) 7798 5000

DRAWING NUMBER
FIGURE D-4



KEY

- Flood Cell
- ◆ Breach Location

Time To Inundation [Hours]

- < 1 Hour
- 1 - 4 Hours
- 4 - 8 Hours
- 8 - 12 Hours
- 12 - 16 Hours
- 16 - 20 Hours

Inundation from overtopping prior to breach

TECHNICAL NOTE

Hydraulic modelling has been undertaken using 2-D hydraulic modelling software MIKE21-HDFM (ver. 2009), to assess the effect of breaches at specified points and/or overtopping of defences. The model simulates 3 tidal cycles with the peak level occurring on the second peak and two slightly smaller peaks either side. Breaches in the defence walls are modelled to occur immediately before the peak tidal level to assess the potential impact of rapid inundation of floodwater.

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Time to inundation maps represent the onset of flooding from 1 specified breach. The rate will vary spatially if the breach locations are in different local areas. Changes in inundation extent or rate of onset of flooding are non-linear to changes in breach location. It should be noted that the breach width and depth, though based on EA guidance, are arbitrary and do not necessarily represent the actual dimensions of a potential breach at a given location.

USER NOTE

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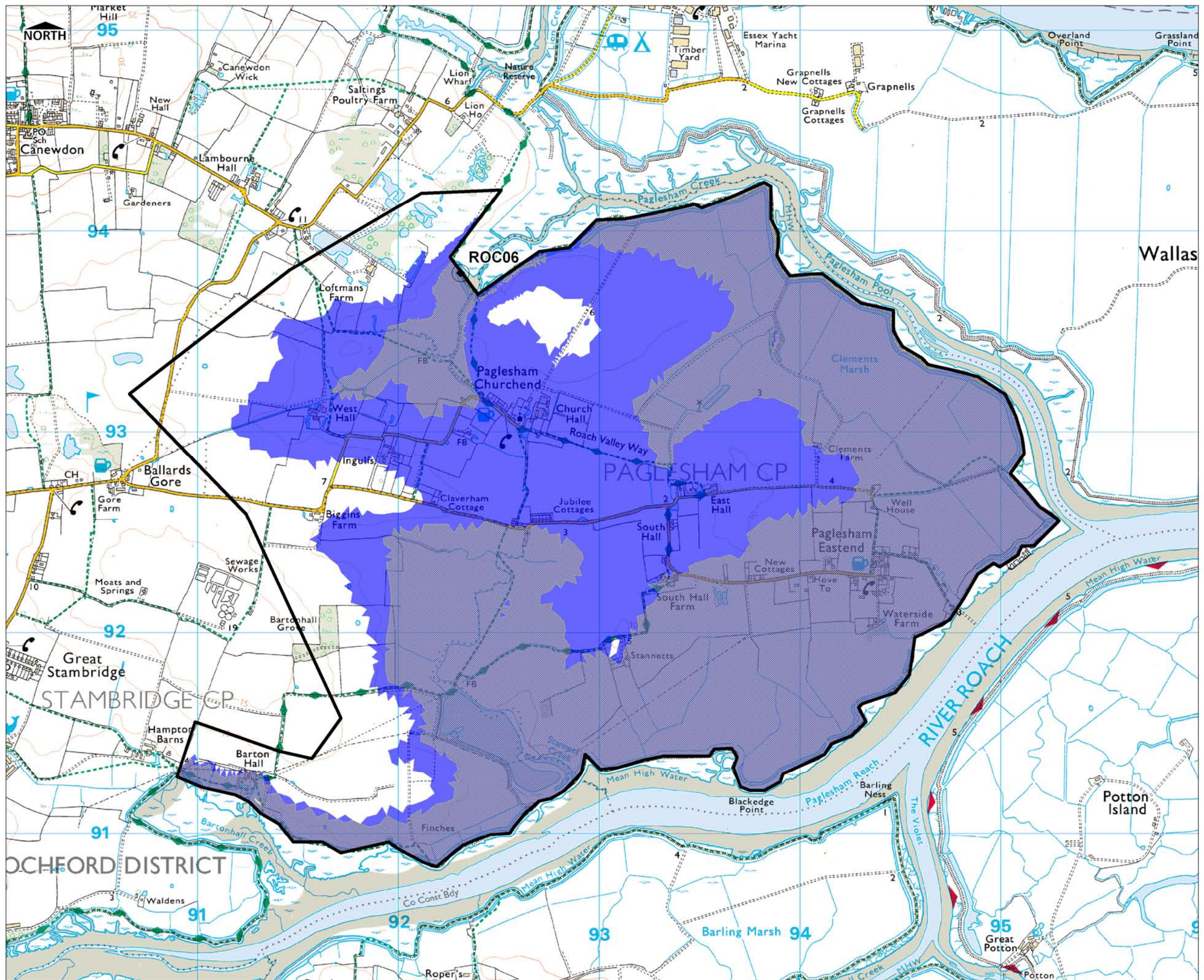
**THAMES GATEWAY SOUTH ESSEX
STRATEGIC FLOOD RISK ASSESSMENT**

**TIME TO INUNDATION
1000YR + CC (2110)
BREACH ROC05**



Scott Wilson
6-8 Greencoat Place
London, SW1P 1PL
Tel: (020) 7798 5000

DRAWING NUMBER
FIGURE D-5



KEY

- Flood Cell
- ◆ Breach Location

Time To Inundation [Hours]

- < 1 Hour
- 1 - 4 Hours
- 4 - 8 Hours
- 8 - 12 Hours
- 12 - 16 Hours
- 16 - 20 Hours

Inundation from overtopping prior to breach

TECHNICAL NOTE

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Time to inundation maps represent the onset of flooding from 1 specified breach. The rate will vary spatially if the breach locations are in different local areas. Changes in inundation extent or rate of onset of flooding are non-linear to changes in breach location. It should be noted that the breach width and depth, though based on EA guidance, are arbitrary and do not necessarily represent the actual dimensions of a potential breach at a given location.

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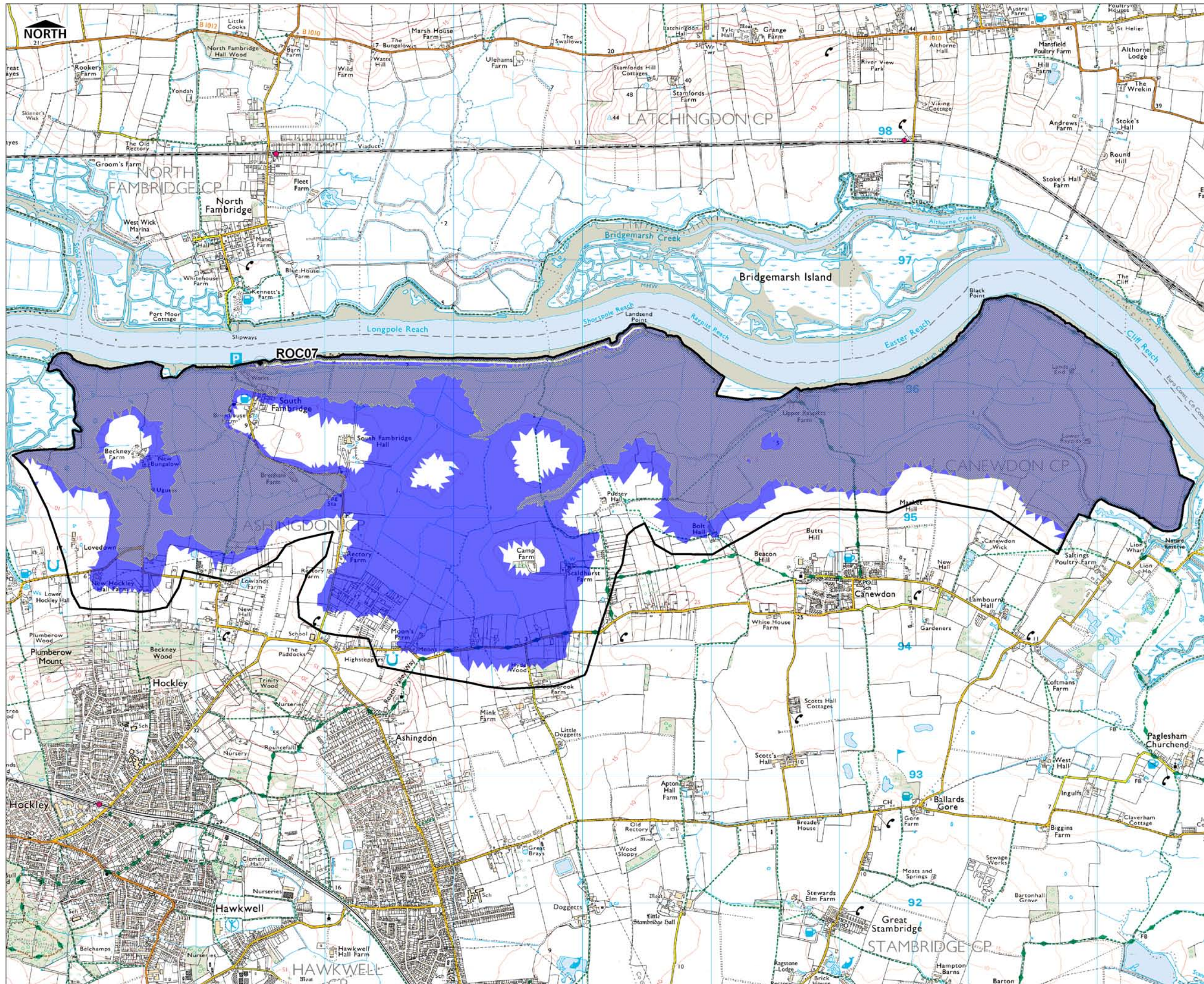
**THAMES GATEWAY SOUTH ESSEX
STRATEGIC FLOOD RISK ASSESSMENT**

**TIME TO INUNDATION
1000YR + CC (2110)
BREACH ROC06**



Scott Wilson
6-8 Greencoat Place
London, SW1P 1PL
Tel: (020) 7798 5000

DRAWING NUMBER
FIGURE D-6



KEY

- Flood Cell
- ◆ Breach Location

Time To Inundation [Hours]

- < 1 Hour
- 1 - 4 Hours
- 4 - 8 Hours
- 8 - 12 Hours
- 12 - 16 Hours
- 16 - 20 Hours

Inundation from overtopping prior to breach

TECHNICAL NOTE

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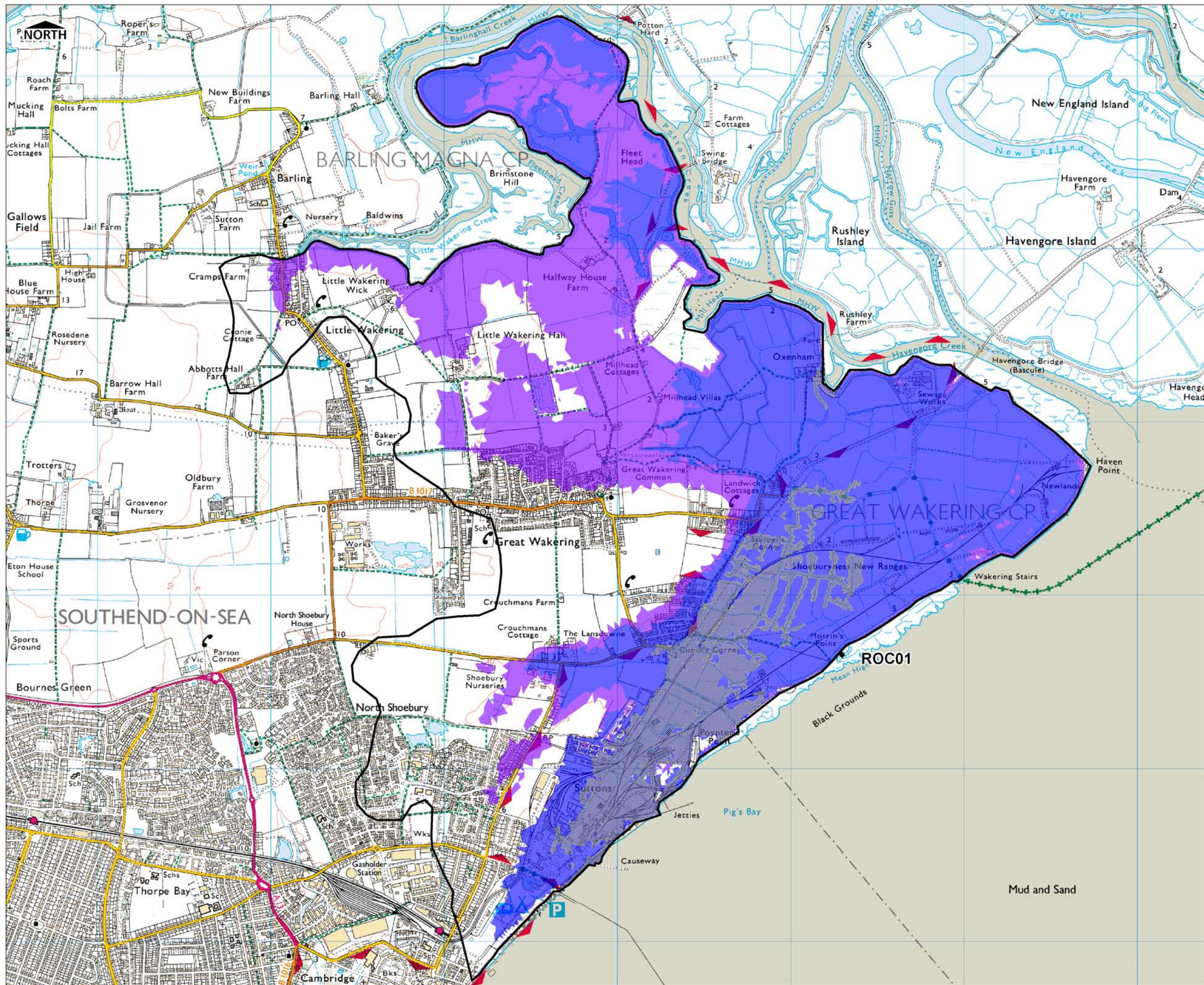
THAMES GATEWAY SOUTH ESSEX STRATEGIC FLOOD RISK ASSESSMENT

TIME TO INUNDATION 1000YR + CC (2110) BREACH ROC07

Basildon Council castlepoint Rochford District Council

Scott Wilson
6-8 Greencoat Place
London, SW1P 1PL
Tel: (020) 7798 5000

DRAWING NUMBER **FIGURE D-7**



KEY

- Flood Cell
- ◆ Breach Location

Time To Inundation [Hours]

- < 1 Hour
- 1 - 4 Hours
- 4 - 8 Hours
- 8 - 12 Hours
- 12 - 16 Hours
- 16 - 20 Hours

Inundation from overtopping prior to breach

TECHNICAL NOTE

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FLOODABLE AREAS NOT SHOWN

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THAMES GATEWAY SOUTH ESSEX STRATEGIC FLOOD RISK ASSESSMENT

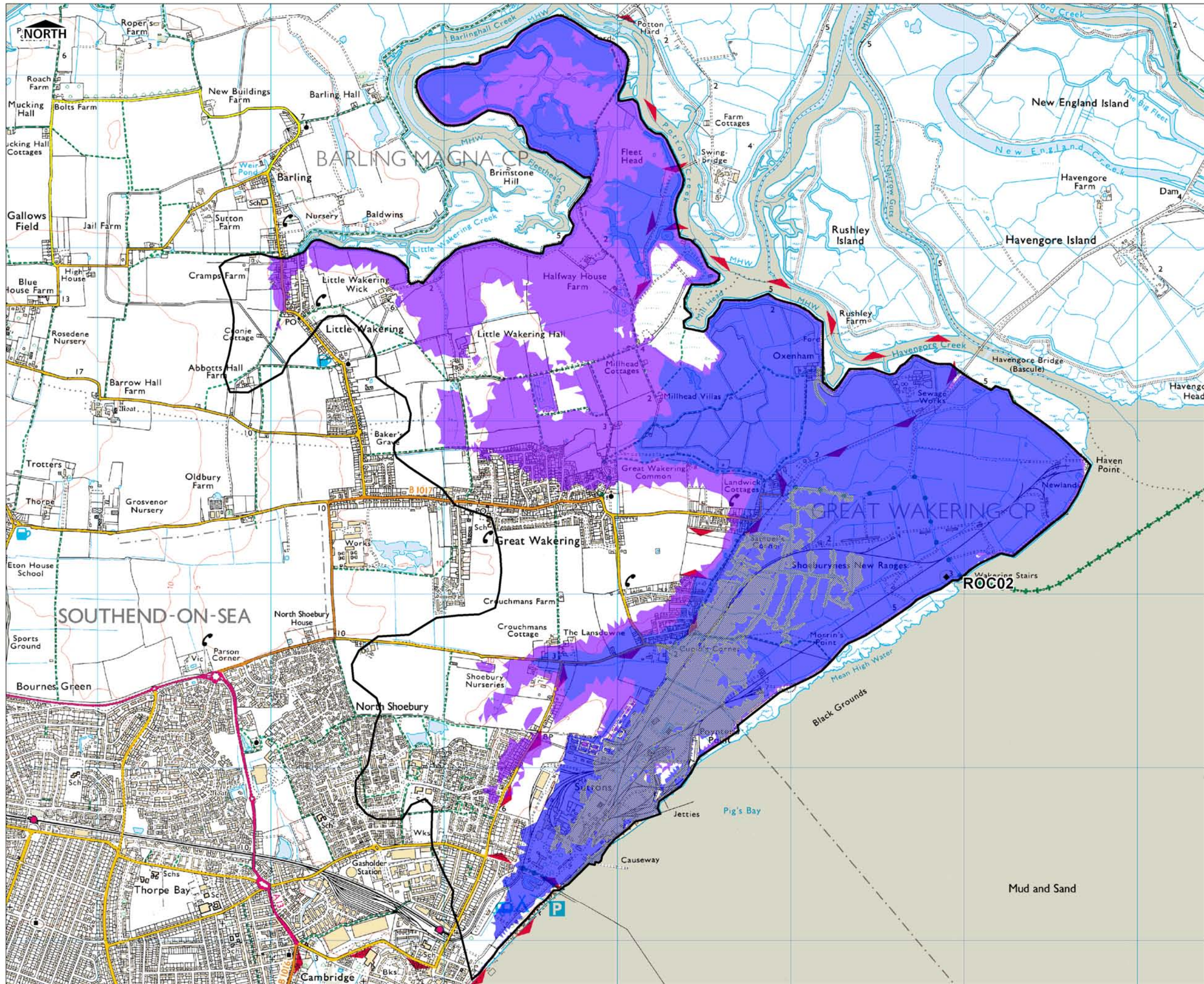
**TIME TO INUNDATION
0200YR + CC (2110)
BREACH ROC01**



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DRAWING NUMBER
FIGURE D-8



KEY

- Flood Cell
- ◆ Breach Location

Time To Inundation [Hours]

- < 1 Hour
- 1 - 4 Hours
- 4 - 8 Hours
- 8 - 12 Hours
- 12 - 16 Hours
- 16 - 20 Hours

Inundation from overtopping prior to breach

TECHNICAL NOTE

Hydraulic modelling has been undertaken using 2-D hydraulic modelling software MIKE21-HDFM (ver. 2009), to assess the effect of breaches at specified points and/or overtopping of defences. The model simulates 3 tidal cycles with the peak level occurring on the second peak and two slightly smaller peaks either side. Breaches in the defence walls are modelled to occur immediately before the peak tidal level to assess the potential impact of rapid inundation of floodwater.

In order to map Time to Inundation, time 0 (zero) is designated as the time when tidal water enters the breach. The <1 hour band encompasses all areas that are inundated within the first hour of water passing through the breach and into the flood cell. Subsequent bands have been produced to show inundated cells for each 4 hour interval up to 20 hours. Areas that experience flooding as a result of overtopping of the defences prior to the breach event, are shown as hatched areas.

Time to inundation maps represent the onset of flooding from 1 specified breach. The rate will vary spatially if the breach locations are in different local areas. Changes in inundation extent or rate of onset of flooding are non-linear to changes in breach location. It should be noted that the breach width and depth, though based on EA guidance, are arbitrary and do not necessarily represent the actual dimensions of a potential breach at a given location.

USER NOTE

This plan has been produced in accordance with Planning Policy Statement 25 - Development and Flood Risk. Because the information is indicative rather than specific, local planning authorities will nevertheless need to consult the Environment Agency on individual applications.

FLOODABLE AREAS NOT SHOWN

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THAMES GATEWAY SOUTH ESSEX STRATEGIC FLOOD RISK ASSESSMENT

TIME TO INUNDATION
 0200YR + CC (2110)
 BREACH ROC02



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FIGURE D-9