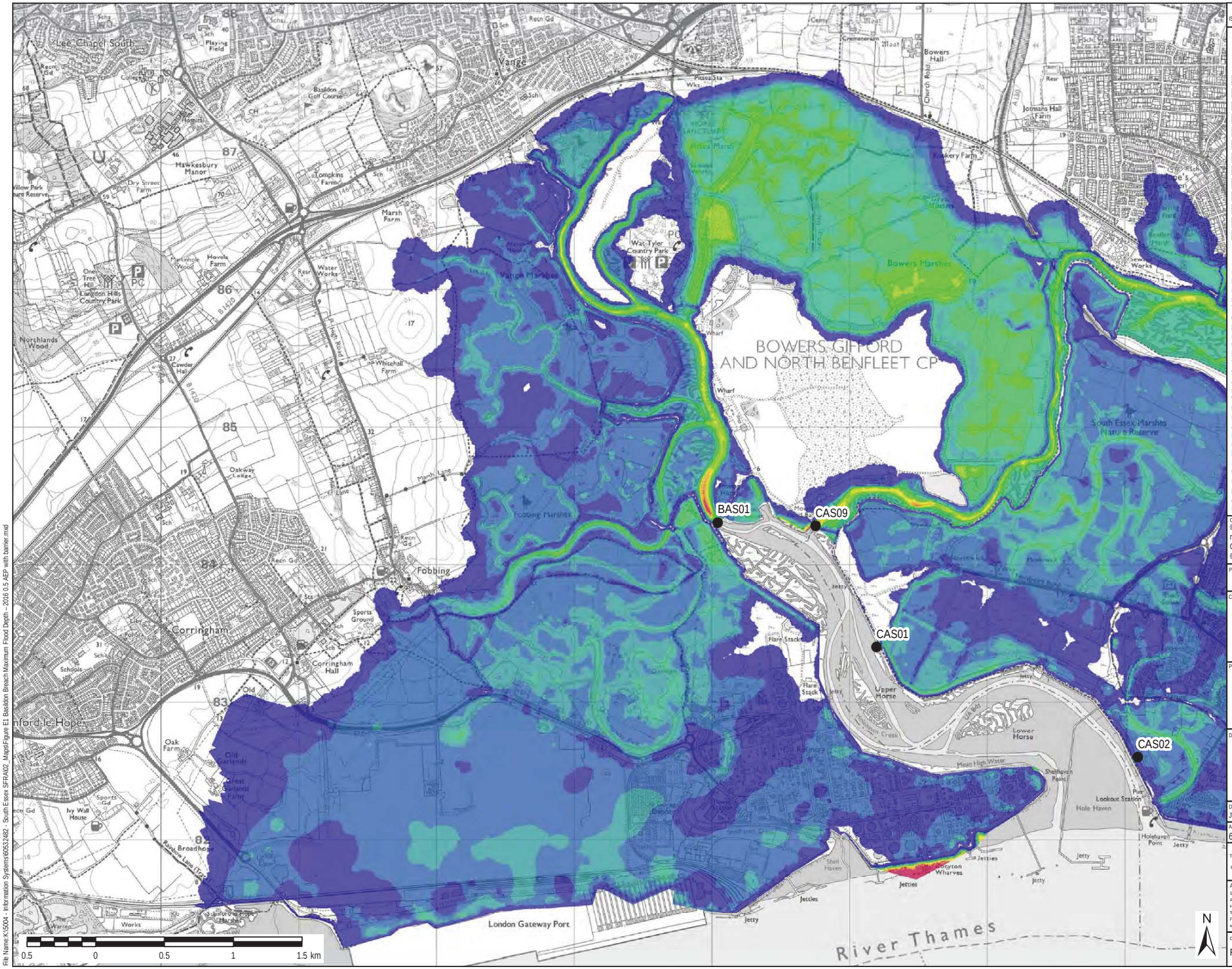

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LEGEND

- Breach Location

Maximum Flood Depth (m)

- > 0 to 0.5m
- > 0.5 to 1m
- > 1 to 1.5m
- > 1.5 to 2m
- > 2 to 2.5m
- > 2.5 to 3m
- > 3 to 3.5m
- > 3.5 to 4m
- > 4 to 4.5m
- > 4.5 to 5m
- > 5 to 5.5m
- > 5.5 to 6m
- > 6m

NOTES

Hydraulic modelling has been undertaken using 2D 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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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.
A thorough description of methodology and assumptions is included within the SFRA Main Report.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

BASILDON BREACH
MAXIMUM FLOOD DEPTH
2016, 0.5% AEP, WITH BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:25,000

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Scott House
Alencon Link, Basingstoke
Hampshire, RG21 7PP
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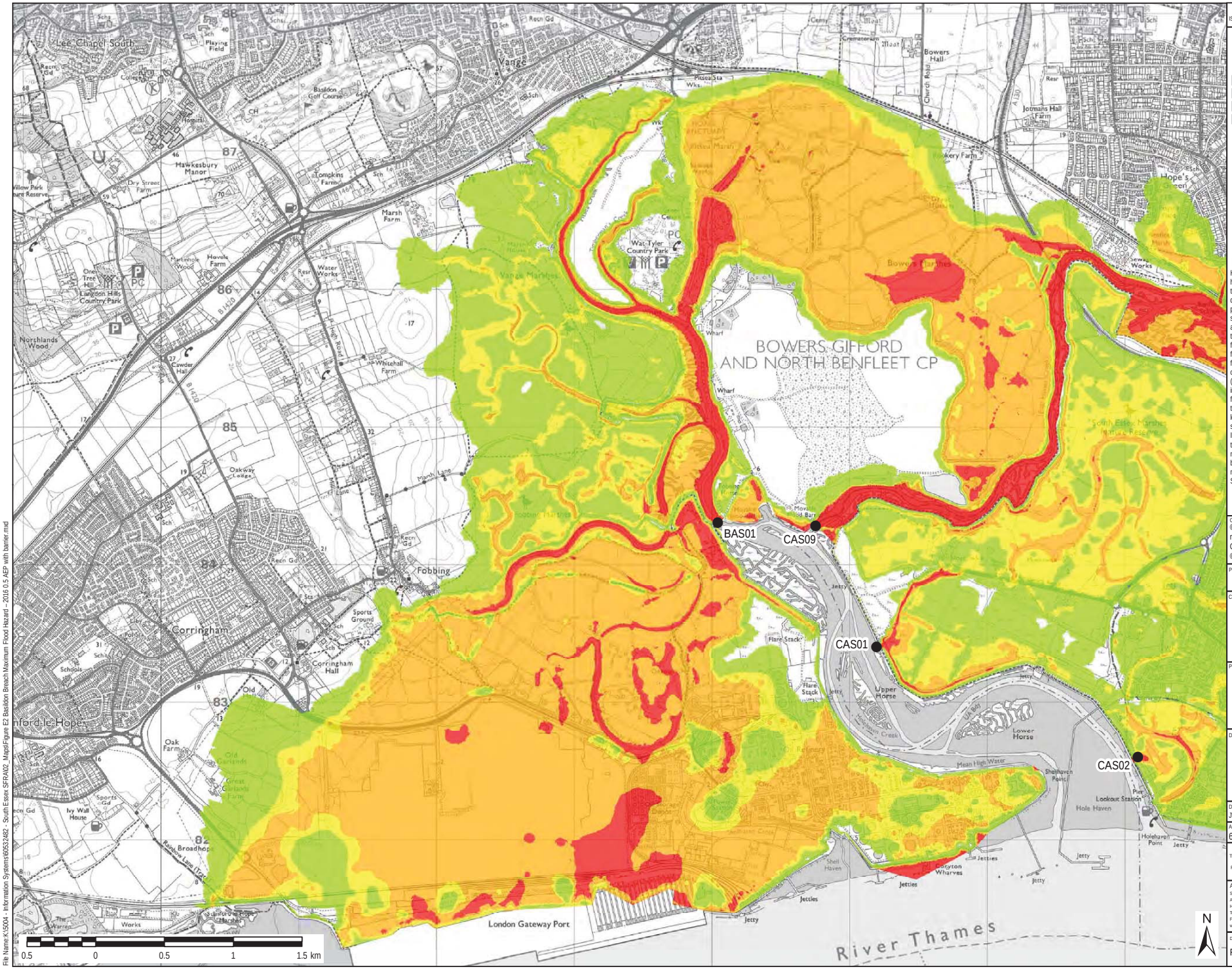
Drawing Number	Rev
FIGURE E1	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E1 Basildon Breach Maximum Flood Depth – 2016 0.5 AEP with barrier.mxd



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LEGEND

- Breach Location

Maximum Flood Hazard

- Low Hazard
- Moderate Hazard (Danger to Some)
- Significant Hazard (Danger to Most)
- Extreme Hazard (Danger to All)

NOTES

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Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

BASILDON BREACH
MAXIMUM FLOOD HAZARD
2016, 0.5% AEP, WITH BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
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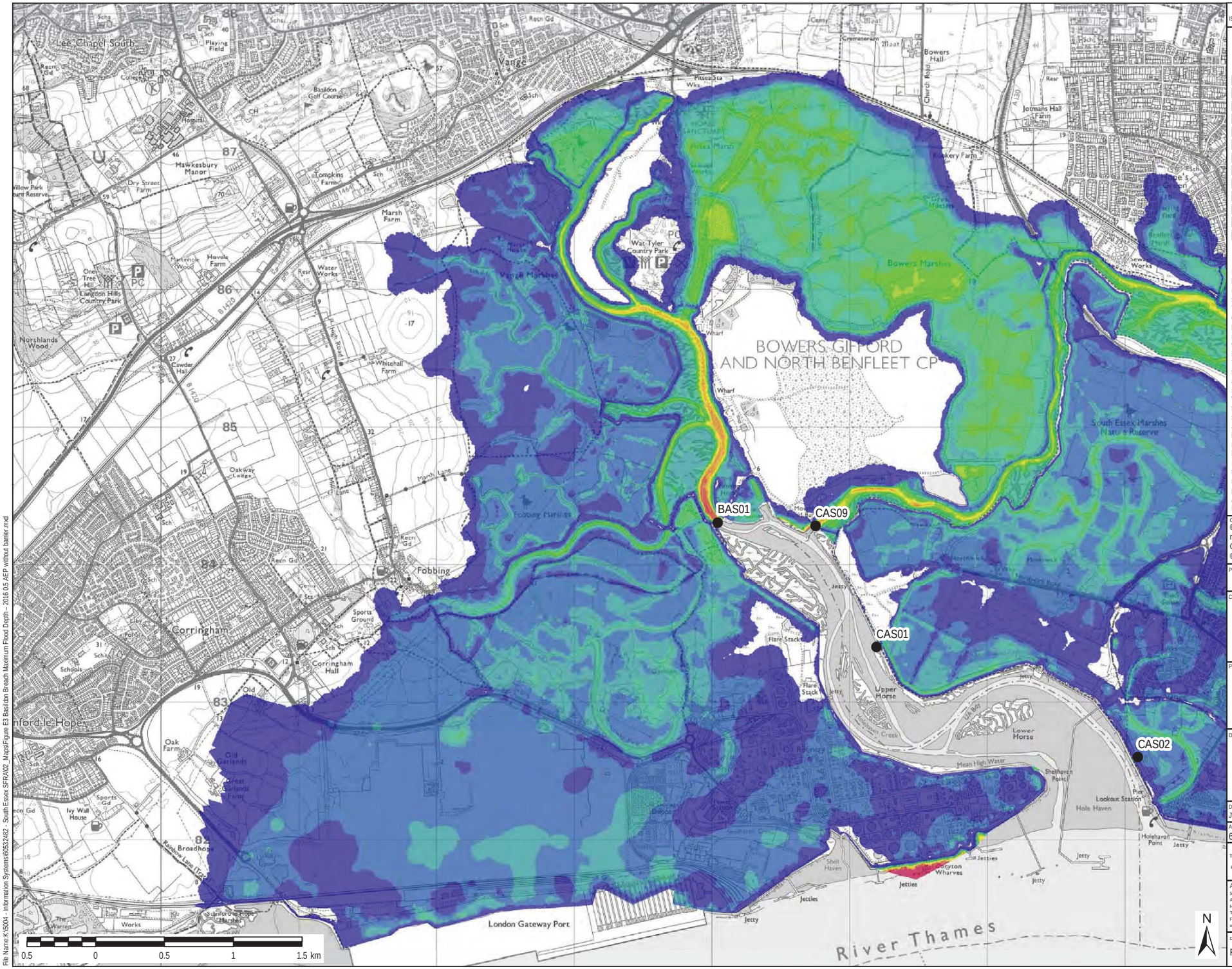
FIGURE E2	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E2 Basildon Breach Maximum Flood Hazard – 2016 0.5 AEP with barrier.mxd



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LEGEND

- Breach Location

Maximum Flood Depth (m)

- > 0 to 0.5m
- > 0.5 to 1m
- > 1 to 1.5m
- > 1.5 to 2m
- > 2 to 2.5m
- > 2.5 to 3m
- > 3 to 3.5m
- > 3.5 to 4m
- > 4 to 4.5m
- > 4.5 to 5m
- > 5 to 5.5m
- > 5.5 to 6m
- > 6m

NOTES

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Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

BASILDON BREACH
MAXIMUM FLOOD DEPTH
2016, 0.5% AEP, WITHOUT BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:25,000

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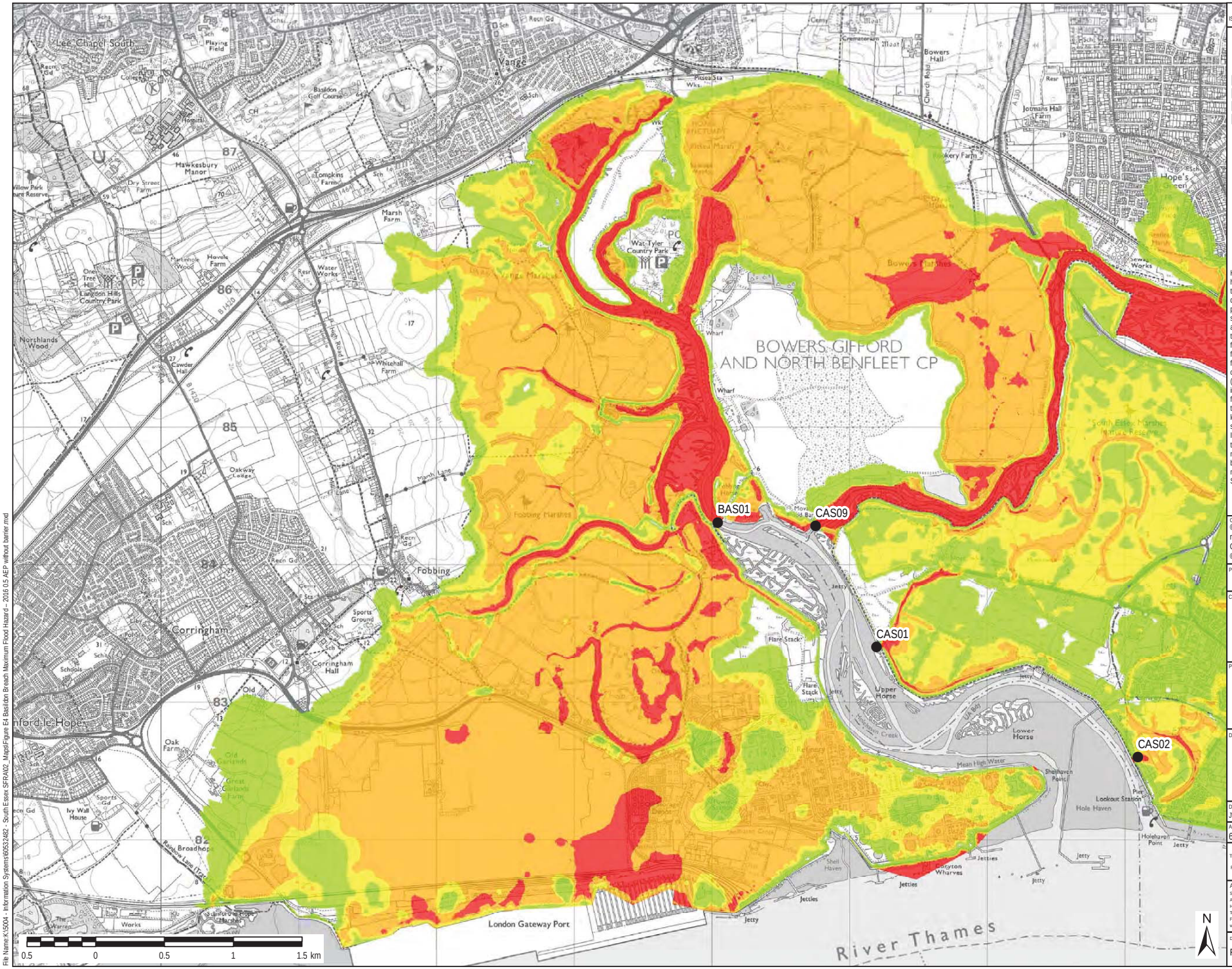
Drawing Number	Rev
FIGURE E3	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E3 Basildon Breach Maximum Flood Depth – 2016 0.5 AEP without barrier.mxd



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LEGEND

- Breach Location

Maximum Flood Hazard

- Low Hazard
- Moderate Hazard (Danger to Some)
- Significant Hazard (Danger to Most)
- Extreme Hazard (Danger to All)

NOTES

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Purpose of Issue

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Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

BASILDON BREACH
MAXIMUM FLOOD HAZARD
2016, 0.5% AEP, WITHOUT BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
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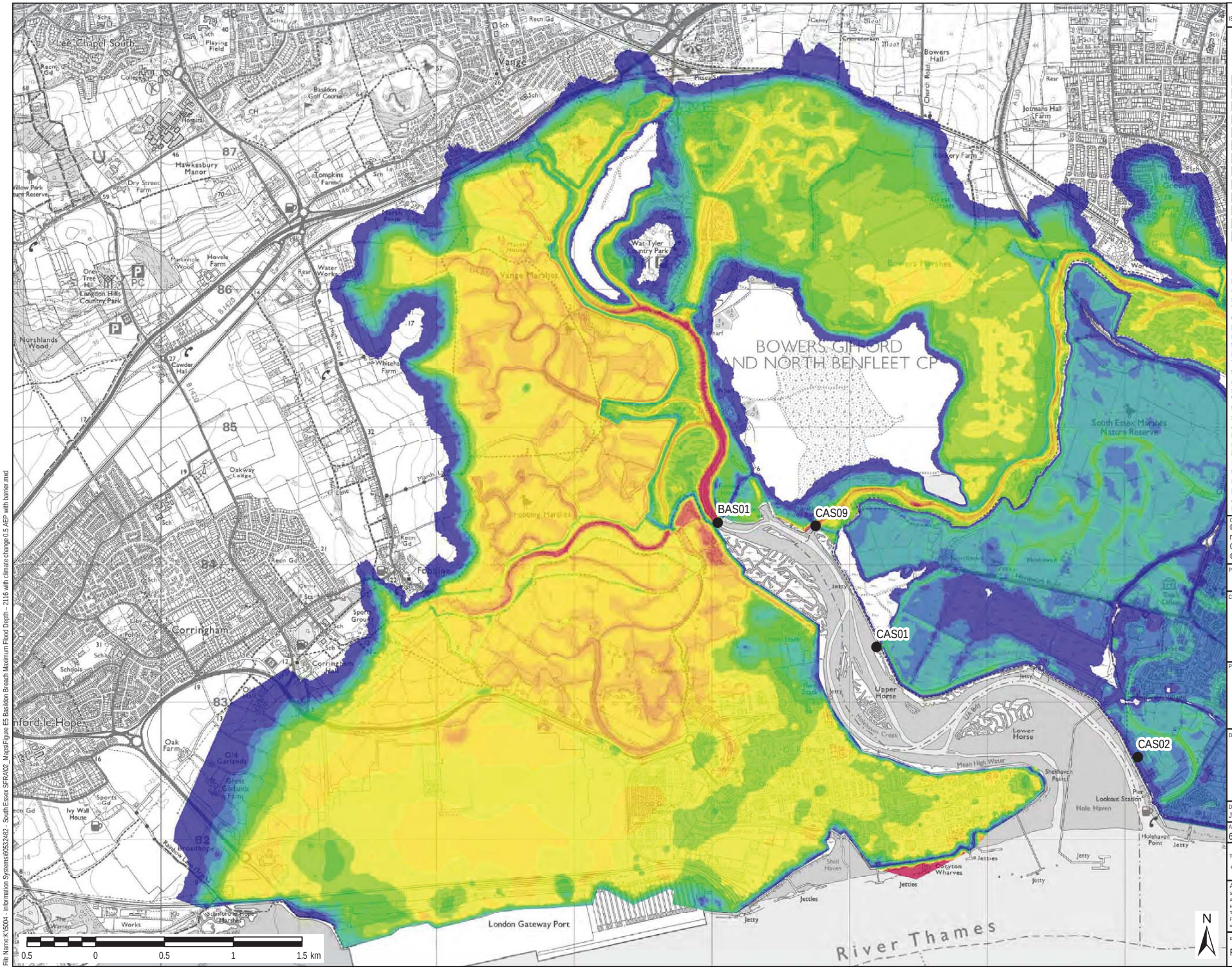
FIGURE E4	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E4 Basildon Breach Maximum Flood Hazard – 2016 0.5 AEP without barrier.mxd



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LEGEND

- Breach Location

Maximum Flood Depth (m)

- > 0 to 0.5m
- > 0.5 to 1m
- > 1 to 1.5m
- > 1.5 to 2m
- > 2 to 2.5m
- > 2.5 to 3m
- > 3 to 3.5m
- > 3.5 to 4m
- > 4 to 4.5m
- > 4.5 to 5m
- > 5 to 5.5m
- > 5.5 to 6m
- > 6m

NOTES

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Purpose of Issue

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Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1SFRA

Drawing Title

BASILDON BREACH
MAXIMUM FLOOD DEPTH
2116 WITH CLIMATE CHANGE
0.5% AEP, WITH BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
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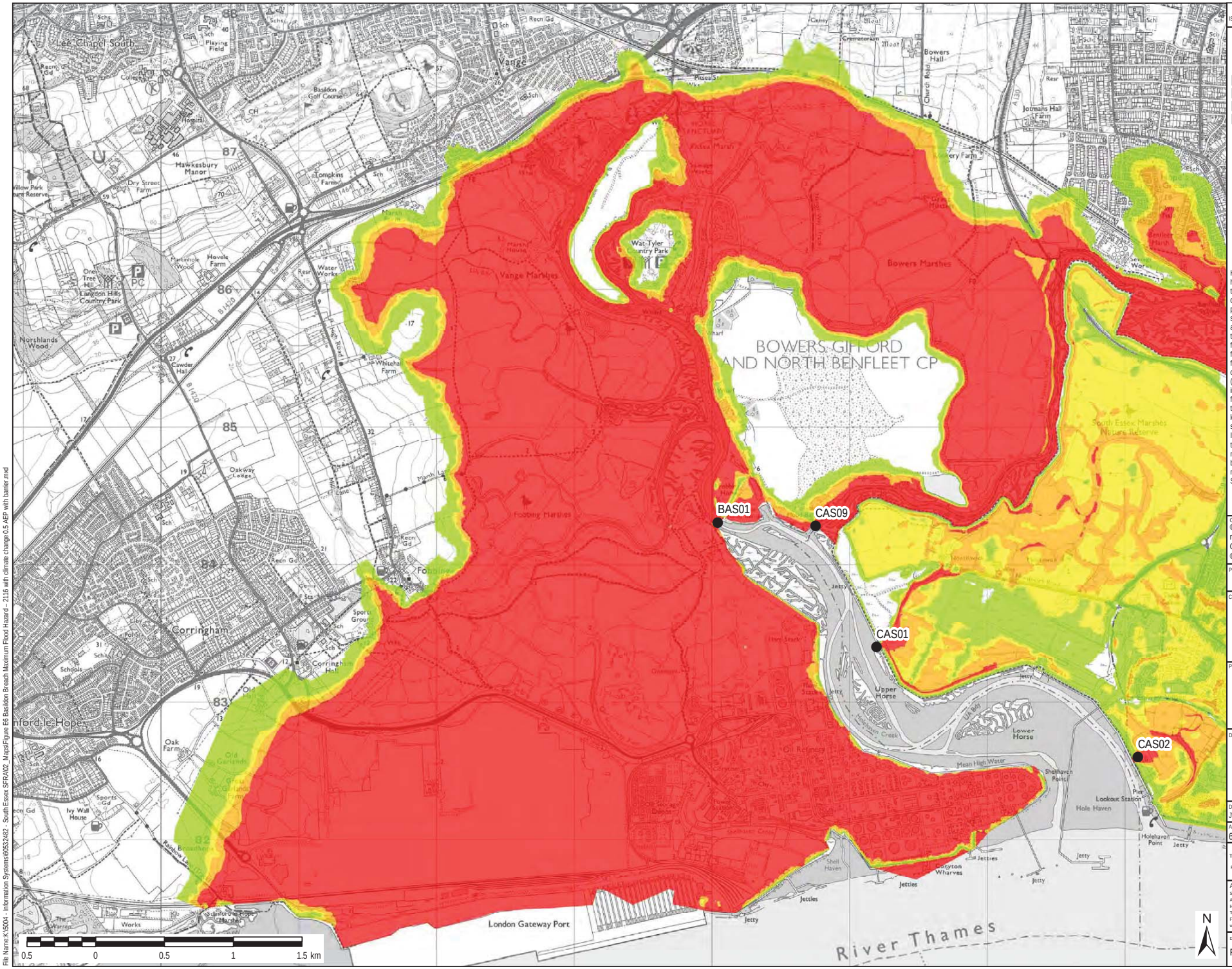
FIGURE E5	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E5 Basildon Breach Maximum Flood Depth - 2116 with climate change 0.5 AEP with barrier.mxd



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LEGEND

- Breach Location

Maximum Flood Hazard

- Low Hazard
- Moderate Hazard (Danger to Some)
- Significant Hazard (Danger to Most)
- Extreme Hazard (Danger to All)

NOTES

Hydraulic modelling has been undertaken using 2-D hydraulic modelling software MIKE21-HDFM (ver.2011), to assess the effect of a breach at a specific point in the 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 in advance of the peak tide level to assess the maximum potential volume of inflow into the flood cell. Flood hazard is calculated as a function of flood depth and flow velocity at a particular point in the floodplain, along with a suitable debris factor and is based on the methodology from Flood Risk to People FD2320 (Defra &EA, 2005). These hazard classifications do not indicate a change in the flood probability. When using flood hazard maps it should be noted that they represent the hazard arising from one or more specified breach locations, and that the rating will almost certainly vary spatially if the breach locations are in different local areas. 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. A thorough description of methodology and assumptions is included within the SFRA Main Report.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

BASILDON BREACH
MAXIMUM FLOOD HAZARD
2116 WITH CLIMATE CHANGE
0.5% AEP, WITH BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

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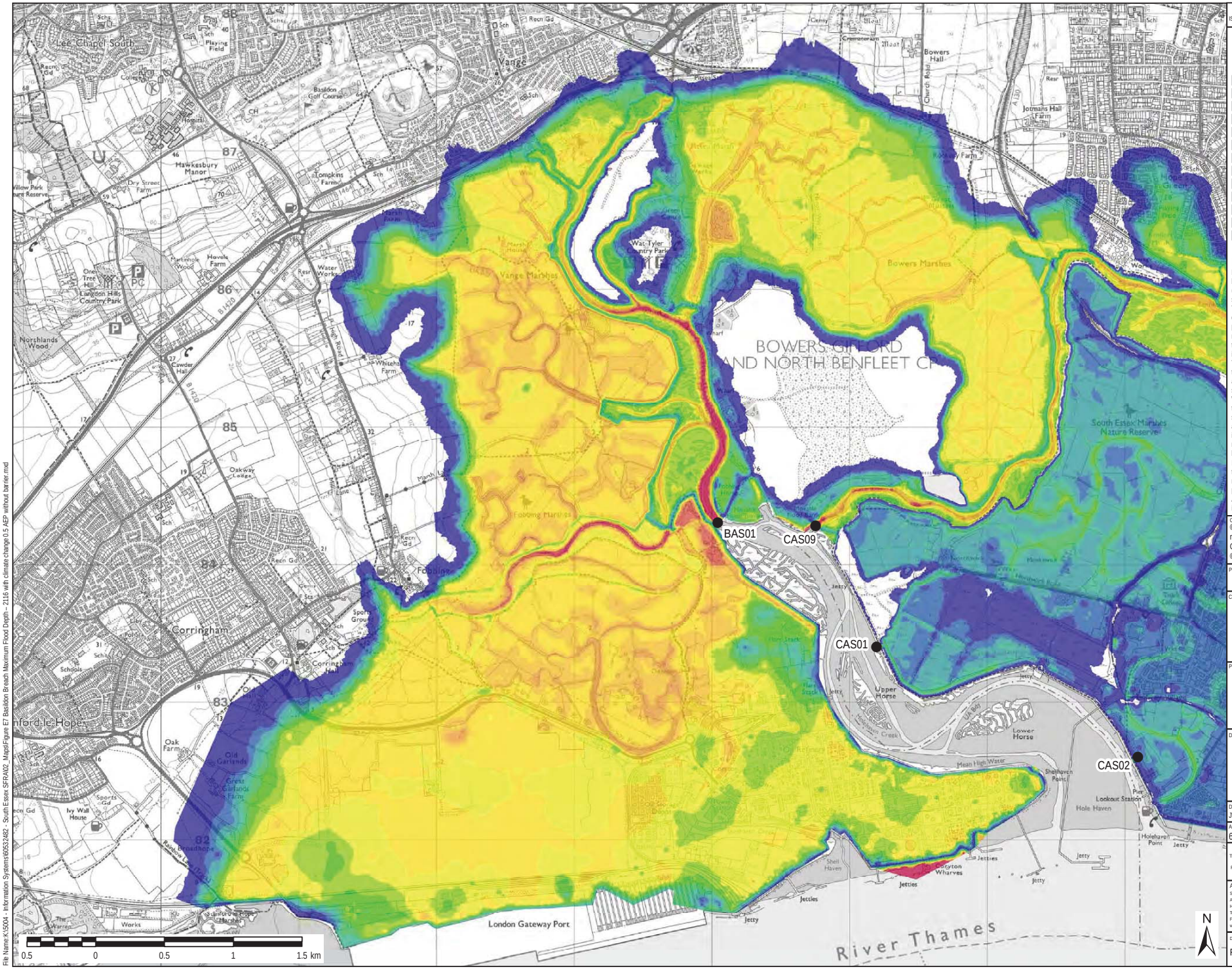
Drawing Number	Rev
FIGURE E6	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E6 Basildon Breach Maximum Flood Hazard – 2116 with climate change 0.5 AEP with barrier.mxd



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LEGEND

- Breach Location

Maximum Flood Depth (m)

- > 0 to 0.5m
- > 0.5 to 1m
- > 1 to 1.5m
- > 1.5 to 2m
- > 2 to 2.5m
- > 2.5 to 3m
- > 3 to 3.5m
- > 3.5 to 4m
- > 4 to 4.5m
- > 4.5 to 5m
- > 5 to 5.5m
- > 5.5 to 6m
- > 6m

NOTES

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Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

BASILDON BREACH
MAXIMUM FLOOD DEPTH
2116 WITH CLIMATE CHANGE
0.5% AEP, WITHOUT BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:25,000

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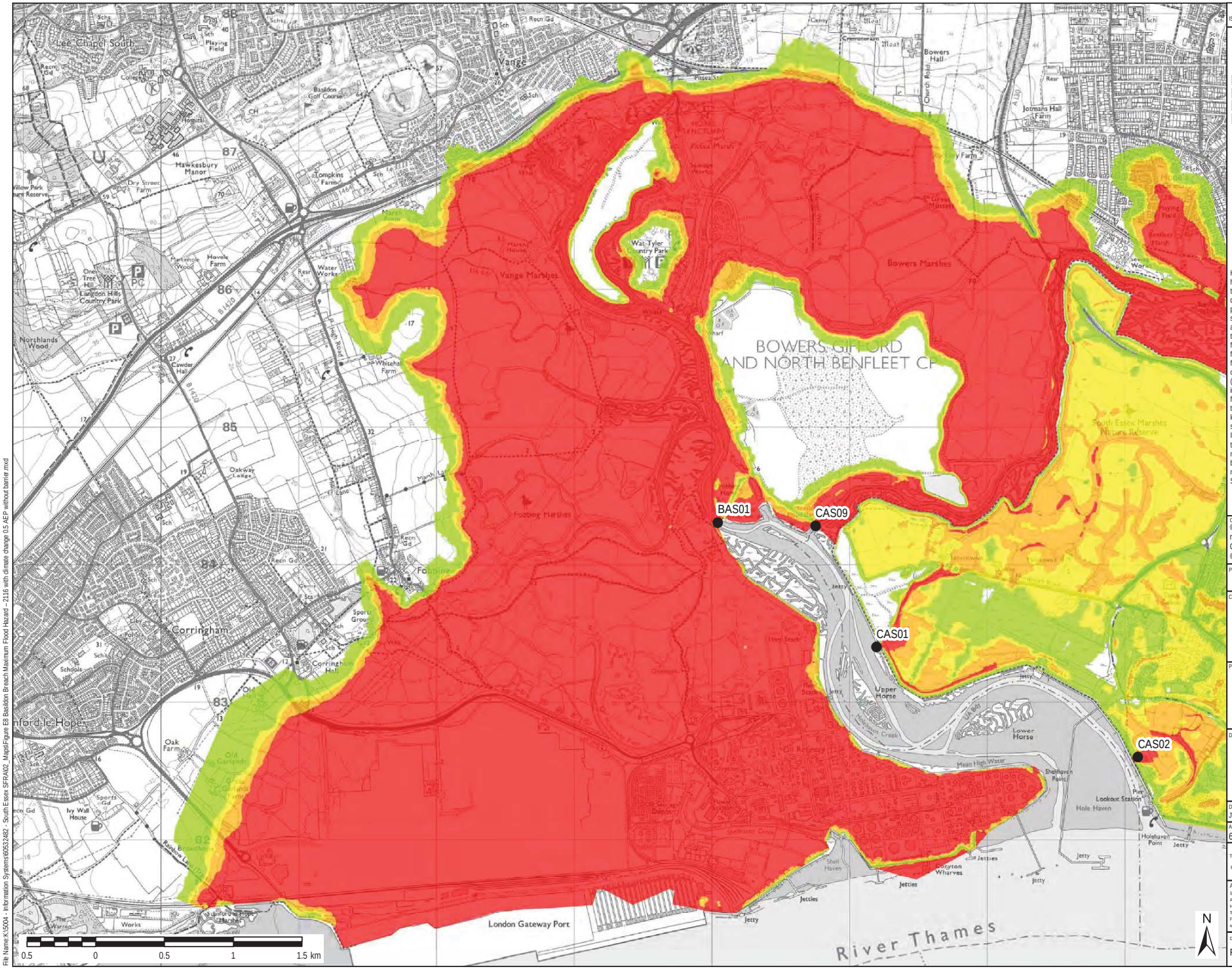
Drawing Number	Rev
FIGURE E7	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E7 Basildon Breach Maximum Flood Depth - 2116 with climate change 0.5 AEP without barrier.mxd



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LEGEND

- Breach Location

Maximum Flood Hazard

- Low Hazard
- Moderate Hazard (Danger to Some)
- Significant Hazard (Danger to Most)
- Extreme Hazard (Danger to All)

NOTES

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Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

BASILDON BREACH
MAXIMUM FLOOD HAZARD
2116 WITH CLIMATE CHANGE
0.5% AEP, WITHOUT BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:25,000

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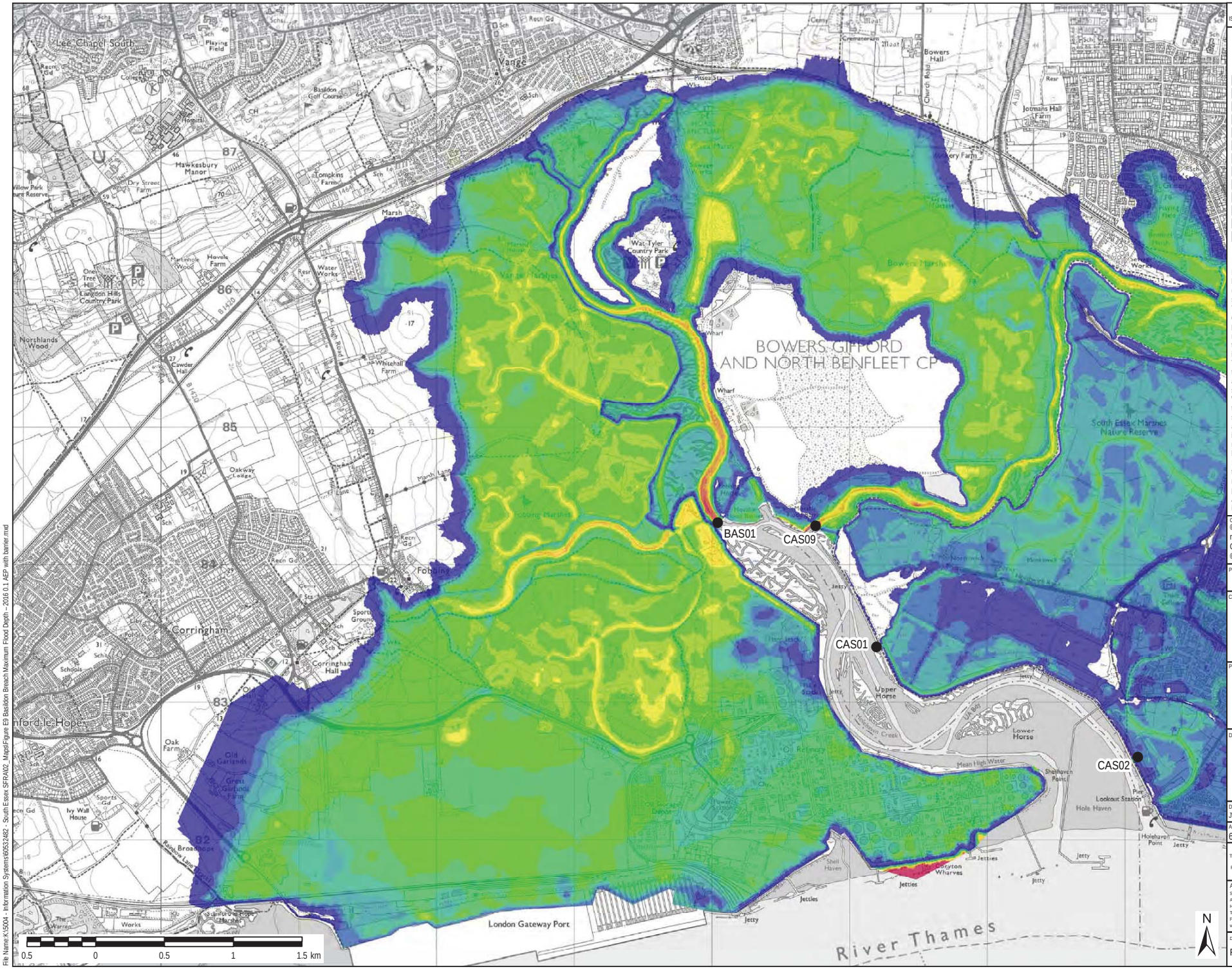
Drawing Number	Rev
FIGURE E8	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E8 Basildon Breach Maximum Flood Hazard – 2116 with climate change 0.5 AEP without barrier.mxd



File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E9 Basildon Breach Maximum Flood Depth – 2016 0.1 AEP with barrier.mxd

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LEGEND

- Breach Location

Maximum Flood Depth (m)

- > 0 to 0.5m
- > 0.5 to 1m
- > 1 to 1.5m
- > 1.5 to 2m
- > 2 to 2.5m
- > 2.5 to 3m
- > 3 to 3.5m
- > 3.5 to 4m
- > 4 to 4.5m
- > 4.5 to 5m
- > 5 to 5.5m
- > 5.5 to 6m
- > 6m

NOTES

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A thorough description of methodology and assumptions is included within the SFRA Main Report.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

BASILDON BREACH
MAXIMUM FLOOD DEPTH
2016, 0.1% AEP, WITH BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
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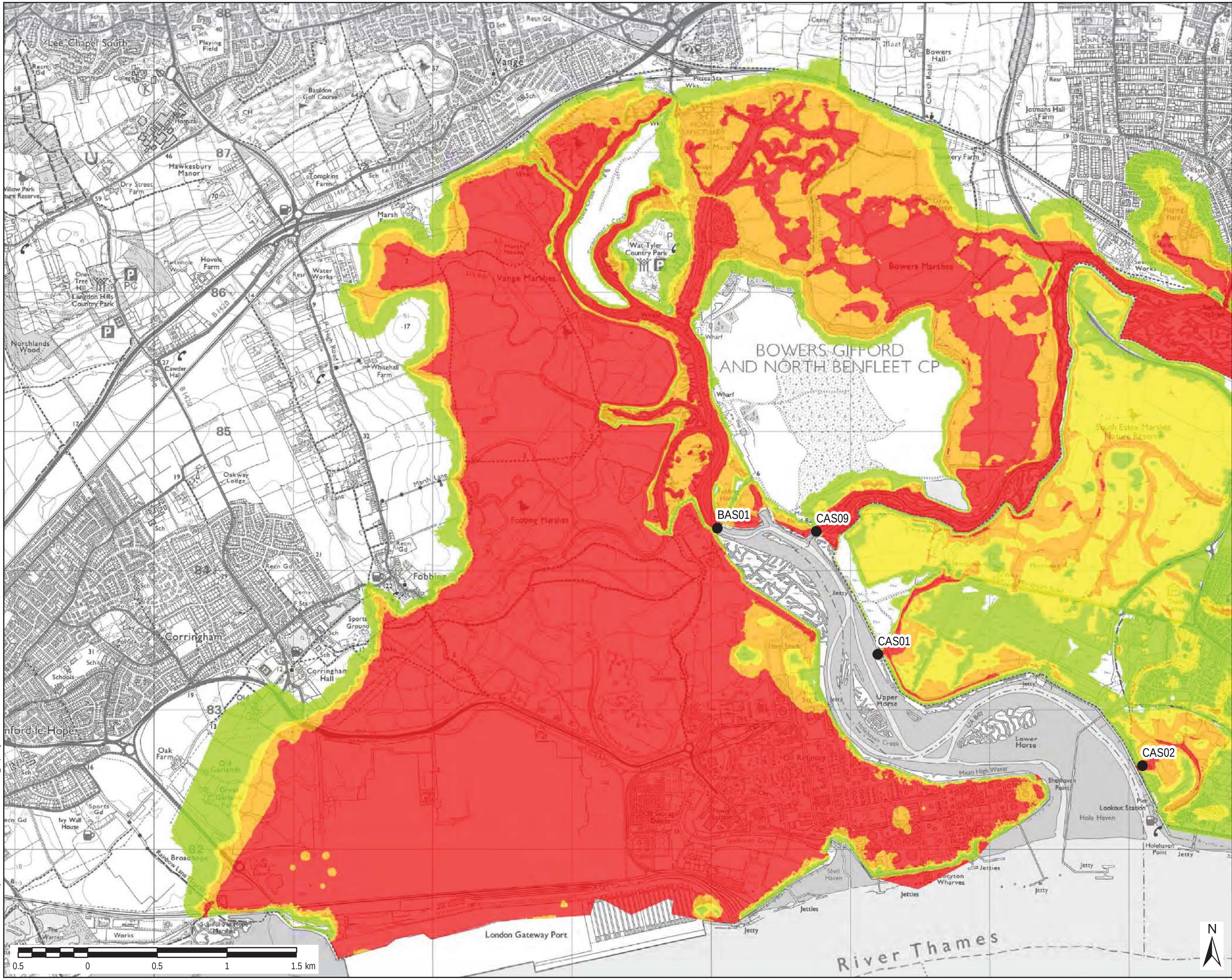
Drawing Number	Rev
FIGURE E9	1



LEGEND

- ● Breach Location

Maximum Flood Hazard

- Low Hazard
- Moderate Hazard (Danger to Some)
- Significant Hazard (Danger to Most)
- Extreme Hazard (Danger to All)

NOTES

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Purpose of Issue
FINAL

Client
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Project Title
SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title
BASILDON BREACH
MAXIMUM FLOOD HAZARD
2016, 0.1% AEP, WITH BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:25,000

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Hampshire, RG21 7PP
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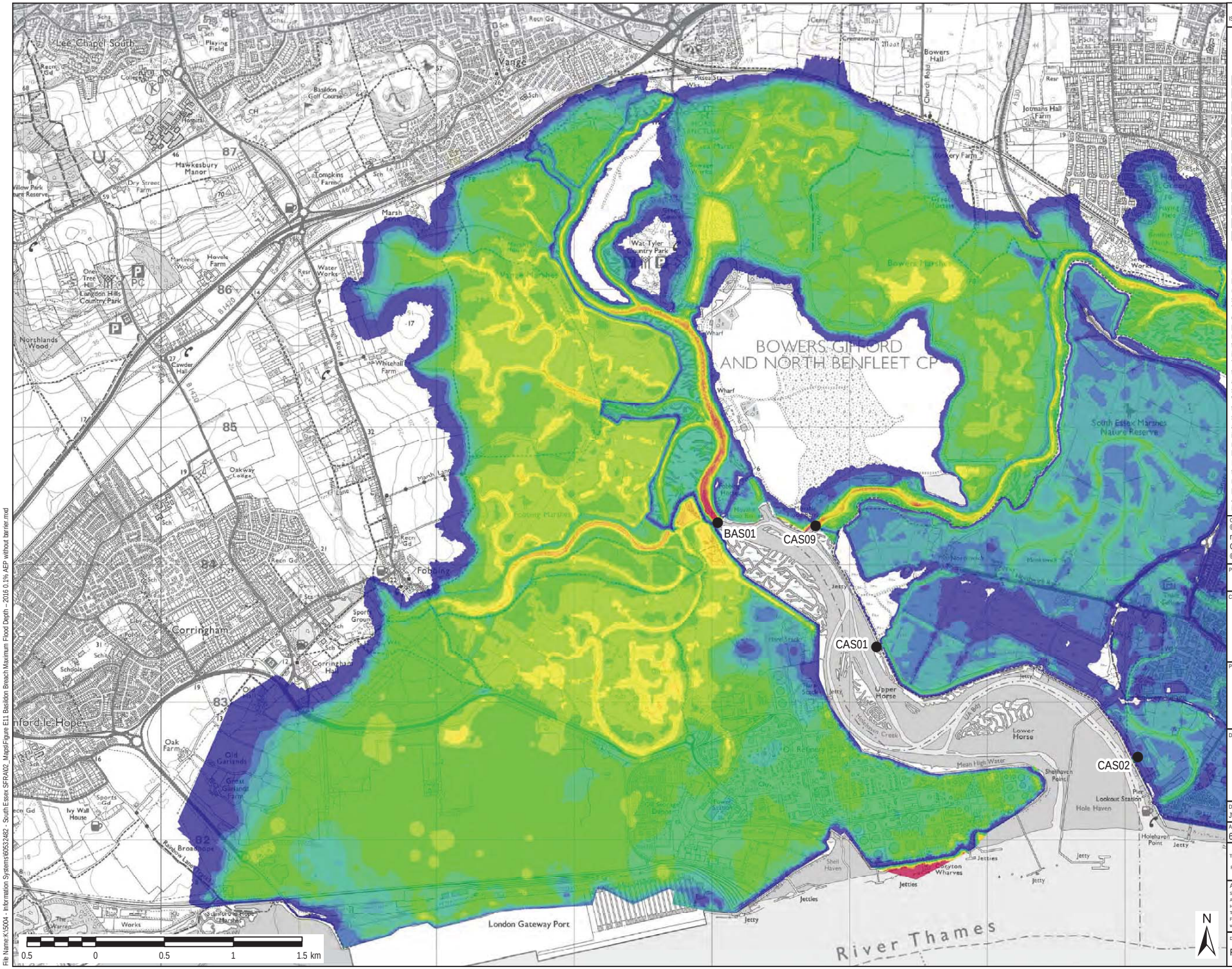
Drawing Number	Rev
FIGURE E10	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E10 Basildon Breach Maximum Flood Hazard – 2016 0.1 AEP with barrier.mxd



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LEGEND

- Breach Location

Maximum Flood Depth (m)

- > 0 to 0.5m
- > 0.5 to 1m
- > 1 to 1.5m
- > 1.5 to 2m
- > 2 to 2.5m
- > 2.5 to 3m
- > 3 to 3.5m
- > 3.5 to 4m
- > 4 to 4.5m
- > 4.5 to 5m
- > 5 to 5.5m
- > 5.5 to 6m
- > 6m

NOTES

Hydraulic modelling has been undertaken using 2D 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.
The maximum flood depth is calculated by subtracting the LIDAR topographic data from the peak water level achieved at each element in the model throughout the simulation.
When using flood depth maps, it should be noted that they represent the flood depth arising from one or more specified breach locations, and that the depth will almost certainly vary spatially if the breach locations are in different local areas. Changes in inundation extent or maximum depth 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.
A thorough description of methodology and assumptions is included within the SFRA Main Report.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

BASILDON BREACH
MAXIMUM FLOOD DEPTH
2016, 0.1% AEP, WITHOUT BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:25,000

AECOM
Scott House
Alencon Link, Basingstoke
Hampshire, RG21 7PP
Telephone (01256) 310200
Fax (01256) 310201
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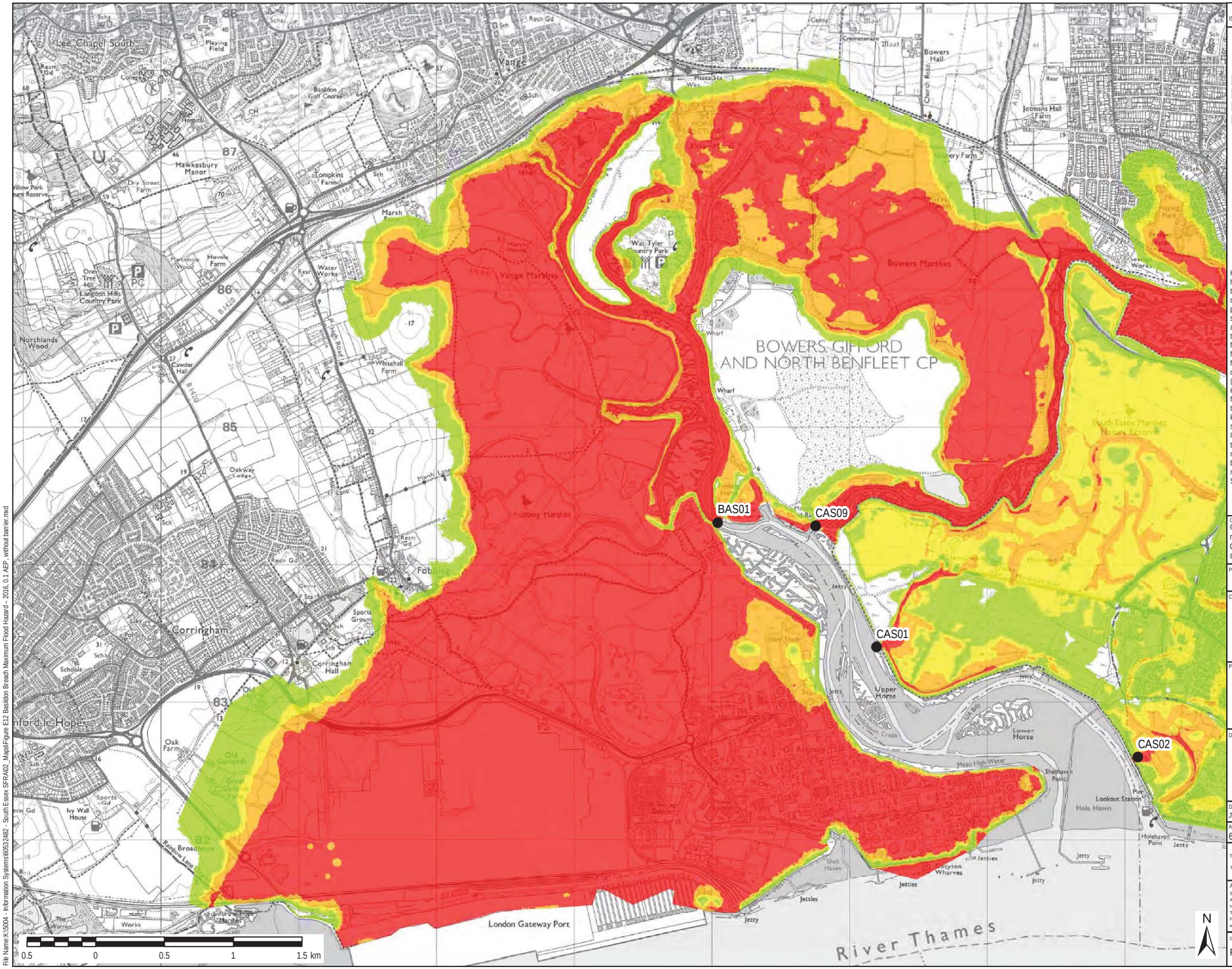
Drawing Number	Rev
FIGURE E11	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E11 Basildon Breach Maximum Flood Depth – 2016 0.1% AEP without barrier.mxd



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LEGEND

- Breach Location

Maximum Flood Hazard

- Low Hazard
- Moderate Hazard (Danger to Some)
- Significant Hazard (Danger to Most)
- Extreme Hazard (Danger to All)

NOTES

Hydraulic modelling has been undertaken using 2-D hydraulic modelling software MIKE21-HDFM (ver.2011), to assess the effect of a breach at a specific point in the 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 in advance of the peak tide level to assess the maximum potential volume of inflow into the flood cell. Flood hazard is calculated as a function of flood depth and flow velocity at a particular point in the floodplain, along with a suitable debris factor and is based on the methodology from Flood Risk to People FD2320 (Defra &EA, 2005). These hazard classifications do not indicate a change in the flood probability. When using flood hazard maps it should be noted that they represent the hazard arising from one or more specified breach locations, and that the rating will almost certainly vary spatially if the breach locations are in different local areas. 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. A thorough description of methodology and assumptions is included within the SFRA Main Report.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

BASILDON BREACH
MAXIMUM FLOOD HAZARD
2016, 0.1% AEP, WITHOUT BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:25,000

AECOM
Scott House
Alencon Link, Basingstoke
Hampshire, RG21 7PP
Telephone (01256) 310200
Fax (01256) 310201
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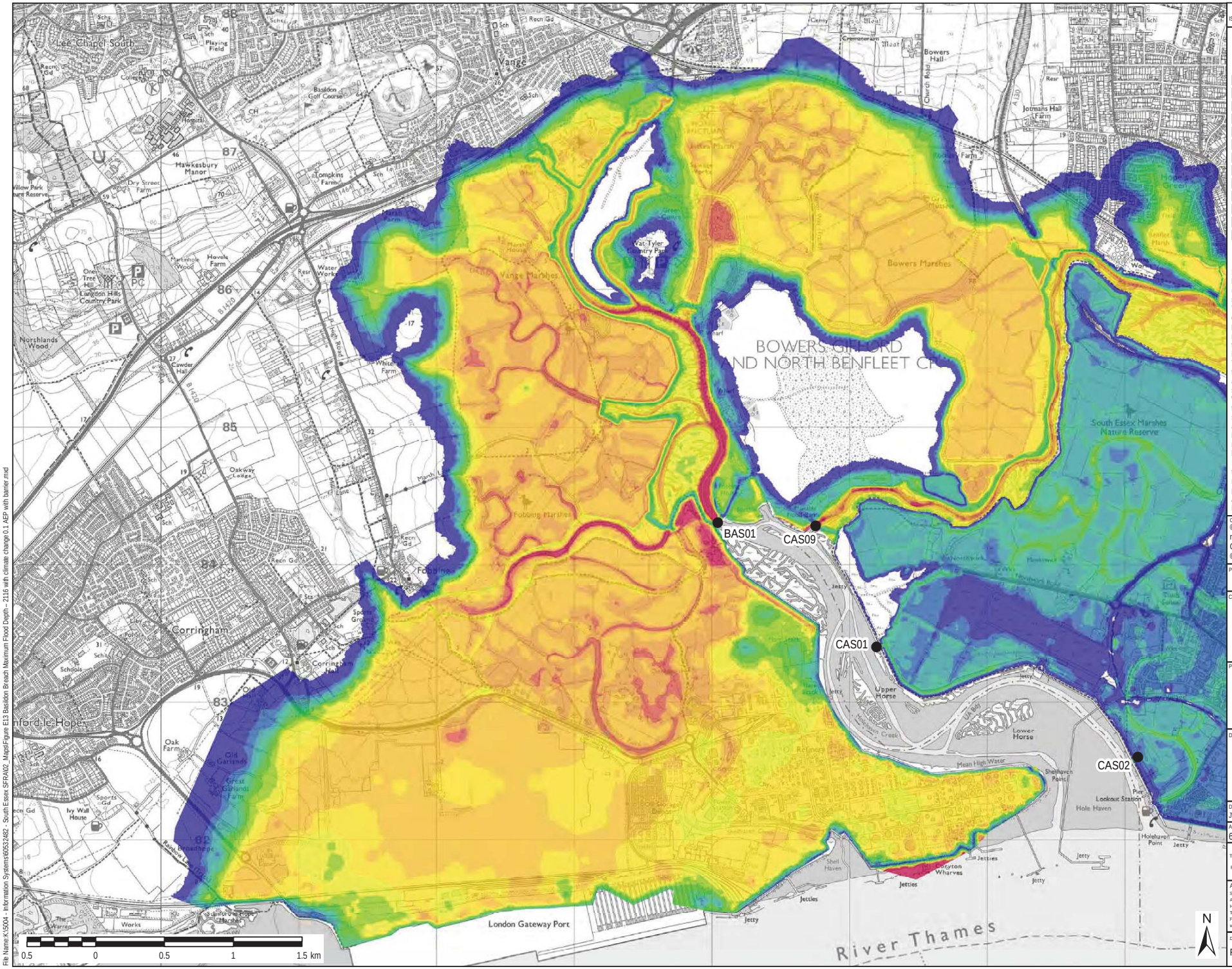
Drawing Number	Rev
FIGURE E12	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E12 Basildon Breach Maximum Flood Hazard – 2016, 0.1 AEP, without barrier.mxd



THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

LEGEND

- Breach Location

Maximum Flood Depth (m)

- > 0 to 0.5m
- > 0.5 to 1m
- > 1 to 1.5m
- > 1.5 to 2m
- > 2 to 2.5m
- > 2.5 to 3m
- > 3 to 3.5m
- > 3.5 to 4m
- > 4 to 4.5m
- > 4.5 to 5m
- > 5 to 5.5m
- > 5.5 to 6m
- > 6m

NOTES

Hydraulic modelling has been undertaken using 2D hydraulic modelling software MIKE21-HDFM (ver. 2009), to assess the effect of breaches at specified points and/or overtopping of defences.
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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.
A thorough description of methodology and assumptions is included within the SFRA Main Report.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

BASILDON BREACH
MAXIMUM FLOOD DEPTH
2116 WITH CLIMATE CHANGE
0.1% AEP, WITH BARRIER

Drawn	Checked	Approved	Date
JW	BB	HJ	08/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:25,000

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Scott House
Alencon Link, Basingstoke
Hampshire, RG21 7PP
Telephone (01256) 310200
Fax (01256) 310201
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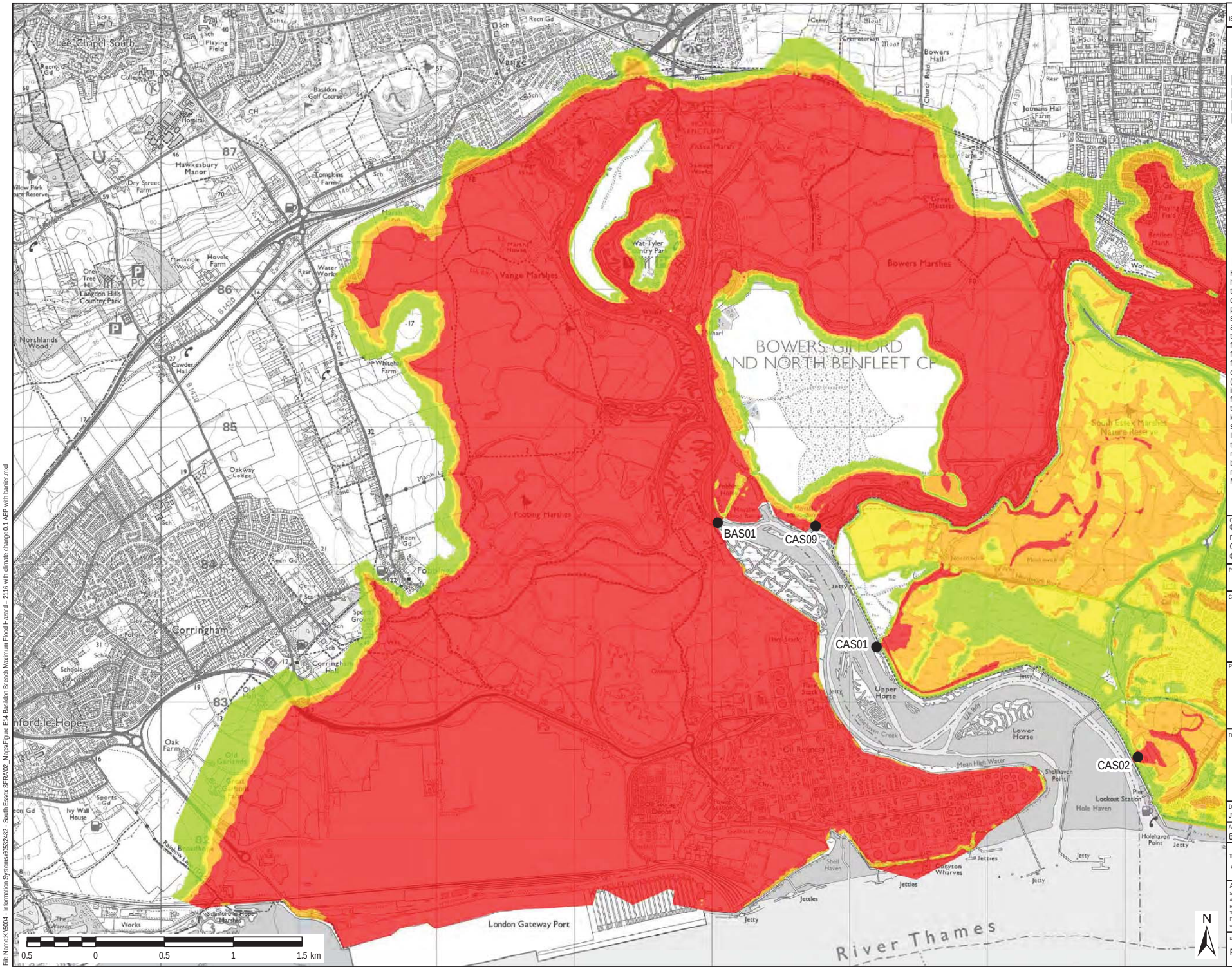
Drawing Number	Rev
FIGURE E13	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E13 Basildon Breach Maximum Flood Depth – 2116 with climate change 0.1 AEP with barrier.mxd



File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E14 Basildon Breach Maximum Flood Hazard – 2116 with climate change 0.1 AEP with barrier.mxd

LEGEND

- Breach Location

Maximum Flood Hazard

- Low Hazard
- Moderate Hazard (Danger to Some)
- Significant Hazard (Danger to Most)
- Extreme Hazard (Danger to All)

NOTES

Hydraulic modelling has been undertaken using 2-D hydraulic modelling software MIKE21-HDFM (ver.2011), to assess the effect of a breach at a specific point in the 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 in advance of the peak tide level to assess the maximum potential volume of inflow into the flood cell. Flood hazard is calculated as a function of flood depth and flow velocity at a particular point in the floodplain, along with a suitable debris factor and is based on the methodology from Flood Risk to People FD2320 (Defra &EA, 2005). These hazard classifications do not indicate a change in the flood probability. When using flood hazard maps it should be noted that they represent the hazard arising from one or more specified breach locations, and that the rating will almost certainly vary spatially if the breach locations are in different local areas. 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. A thorough description of methodology and assumptions is included within the SFRA Main Report.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

BASILDON BREACH
MAXIMUM FLOOD HAZARD
2116 WITH CLIMATE CHANGE
0.1% AEP, WITH BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:25,000

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Scott House
Alencon Link, Basingstoke
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Telephone (01256) 310200
Fax (01256) 310201
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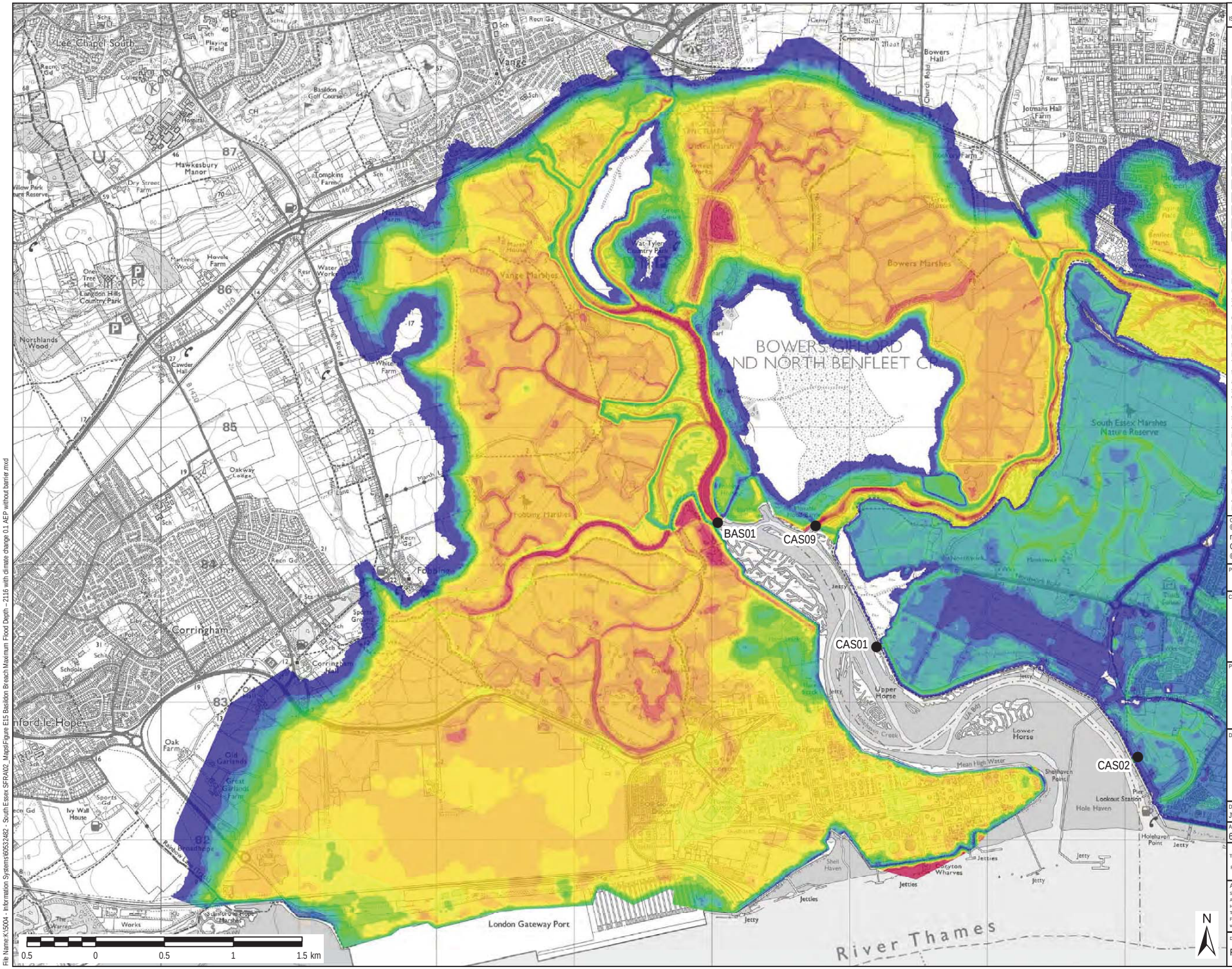
Drawing Number	Rev
FIGURE E14	1



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LEGEND

- Breach Location

Maximum Flood Depth (m)

- > 0 to 0.5m
- > 0.5 to 1m
- > 1 to 1.5m
- > 1.5 to 2m
- > 2 to 2.5m
- > 2.5 to 3m
- > 3 to 3.5m
- > 3.5 to 4m
- > 4 to 4.5m
- > 4.5 to 5m
- > 5 to 5.5m
- > 5.5 to 6m
- > 6m

NOTES

Hydraulic modelling has been undertaken using 2D hydraulic modelling software MIKE21-HDFM (ver. 2009), to assess the effect of breaches at specified points and/or overtopping of defences.
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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.
A thorough description of methodology and assumptions is included within the SFRA Main Report.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

BASILDON BREACH
MAXIMUM FLOOD DEPTH
2116 WITH CLIMATE CHANGE
0.1% AEP, WITHOUT BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:25,000

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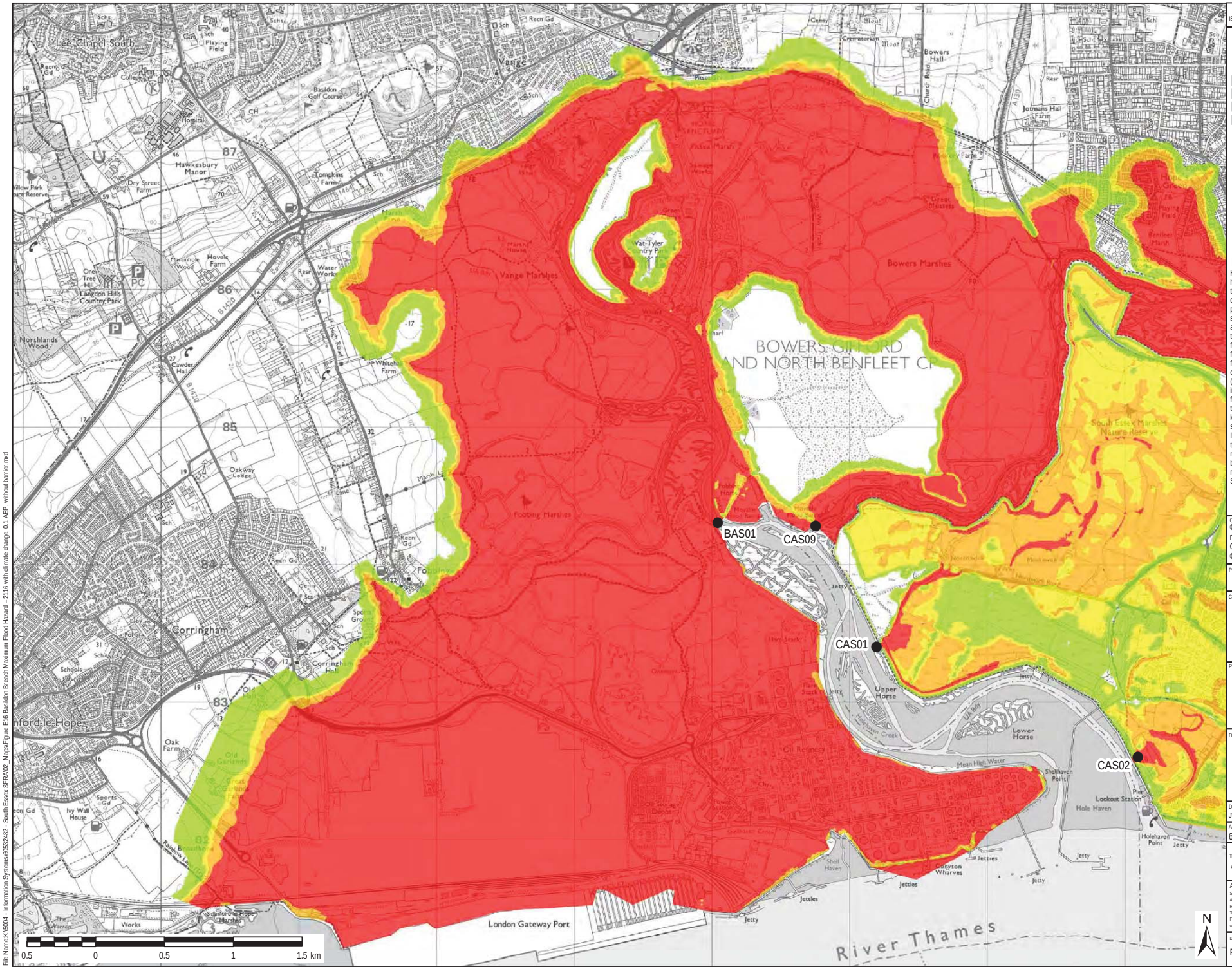
Drawing Number	Rev
FIGURE E15	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E15 Basildon Breach Maximum Flood Depth – 2116 with climate change 0.1 AEP without barrier.mxd



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LEGEND

- Breach Location

Maximum Flood Hazard

- Low Hazard
- Moderate Hazard (Danger to Some)
- Significant Hazard (Danger to Most)
- Extreme Hazard (Danger to All)

NOTES

Hydraulic modelling has been undertaken using 2-D hydraulic modelling software MIKE21-HDFM (ver.2011), to assess the effect of a breach at a specific point in the 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 in advance of the peak tide level to assess the maximum potential volume of inflow into the flood cell. Flood hazard is calculated as a function of flood depth and flow velocity at a particular point in the floodplain, along with a suitable debris factor and is based on the methodology from Flood Risk to People FD2320 (Defra &EA, 2005). These hazard classifications do not indicate a change in the flood probability. When using flood hazard maps it should be noted that they represent the hazard arising from one or more specified breach locations, and that the rating will almost certainly vary spatially if the breach locations are in different local areas. 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. A thorough description of methodology and assumptions is included within the SFRA Main Report.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

BASILDON BREACH
MAXIMUM FLOOD HAZARD
2116 WITH CLIMATE CHANGE
0.1% AEP, WITHOUT BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:25,000

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Scott House
Alencon Link, Basingstoke
Hampshire, RG21 7PP
Telephone (01256) 310200
Fax (01256) 310201
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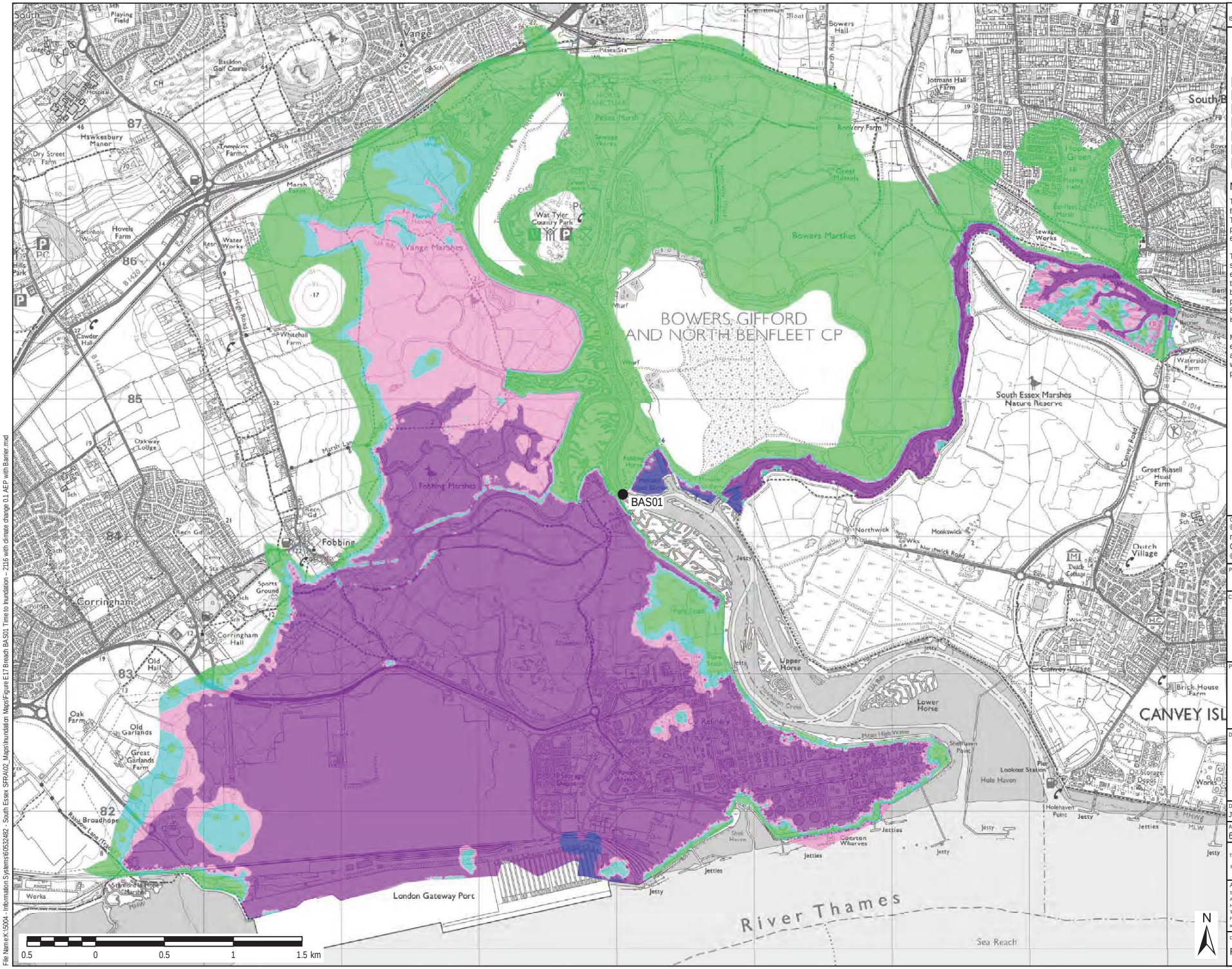
Drawing Number	Rev
FIGURE E16	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E16 Basildon Breach Maximum Flood Hazard – 2116 with climate change, 0.1 AEP, without barrier.mxd



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LEGEND

- Breach Location

Time to Inundation (Hours)

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

NOTES

Time to inundation mapping illustrates the length of time from a breach before floodwaters reach a particular site. This information is particularly useful for emergency planning as it provides details of the time available for evacuation to a place of safety.

Time zero is set to the time when tidal water enters the specific breach. This means that the <1 hour band encompasses all areas that are inundated (wet) within the first hour of water travelling through the specific breach and into the flood cell. Further bands have been produced to show wet cells at: 1-4 hours, 4-8 hours, 8-12 hours, 12 to 16 and 16-20 hours. Time to inundation is specific to each breach location.

Mapping has been provided for the 1 in 1000 year + CC event as it represents the most conservative scenario and should be used for emergency planning purposes when considering safe access/egress routes from any potential development site.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

BREACH BAS01
TIME TO INUNDATION
2116 WITH CLIMATE CHANGE
0.1% AEP WITH BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	09/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:25,000

AECOM
Scott House
Alencon Link, Basingstoke
Hampshire, RG21 7PP
Telephone (01256) 310200
Fax (01256) 310301
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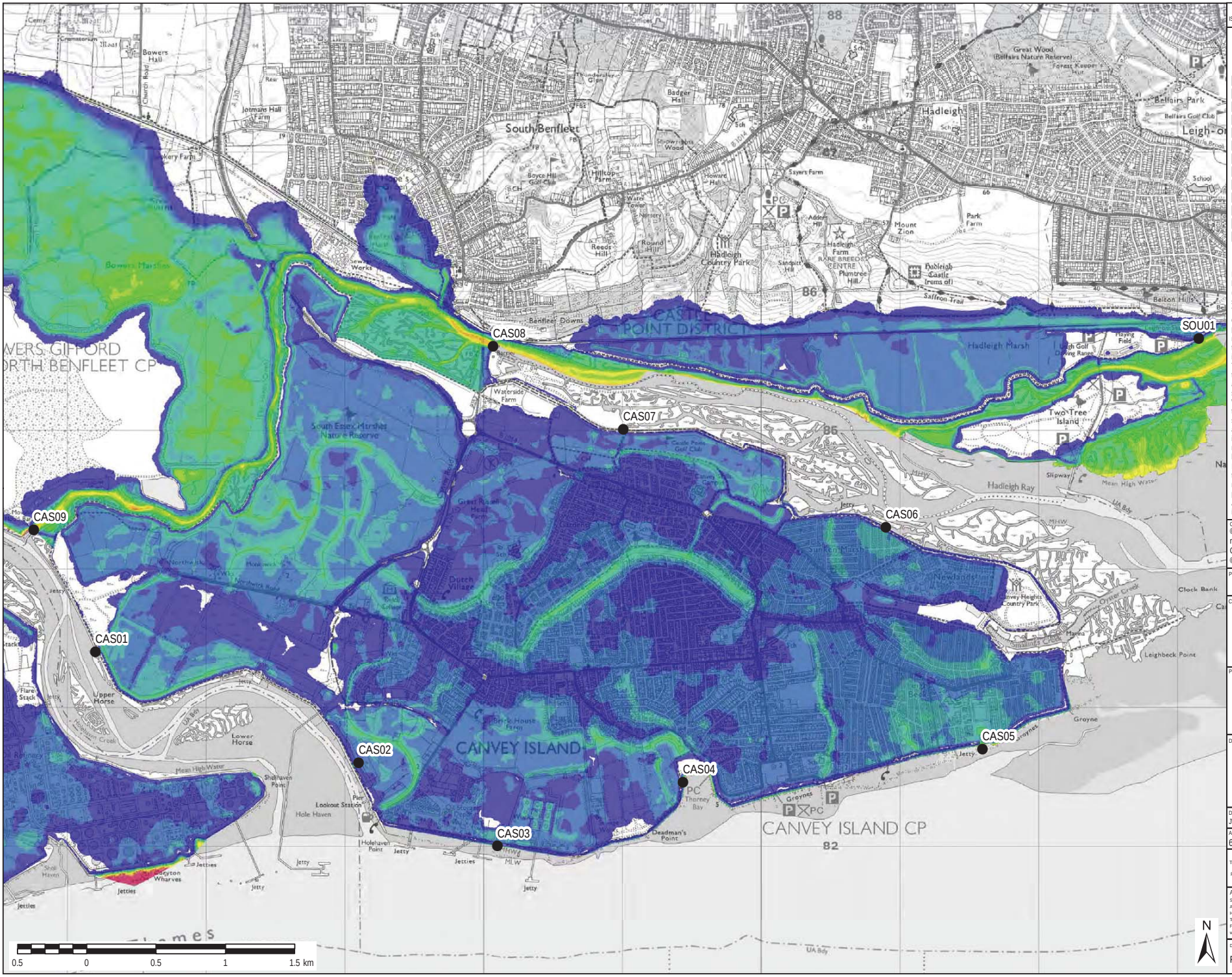
Drawing Number	Rev
FIGURE E17	1

File Name:K:\60004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Inundation Maps\Figure E17 Breach BAS01 Time to Inundation – 2116 with climate change 0.1 AEP with Barrier.mxd



THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

LEGEND

- Breach Location

Maximum Flood Depth (m)

- > 0 to 0.5m
- > 0.5 to 1m
- > 1 to 1.5m
- > 1.5 to 2m
- > 2 to 2.5m
- > 2.5 to 3m
- > 3 to 3.5m
- > 3.5 to 4m
- > 4 to 4.5m
- > 4.5 to 5m
- > 5 to 5.5m
- > 5.5 to 6m
- > 6m

NOTES

Hydraulic modelling has been undertaken using 2D hydraulic modelling software MIKE21-HDFM (ver. 2009), to assess the effect of breaches at specified points and/or overtopping of defences.
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A thorough description of methodology and assumptions is included within the SFRA Main Report.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

CASTLE POINT
BREACH MAXIMUM FLOOD DEPTH
2016, 0.5% AEP, WITH BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:25,000

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Scott House
Alencon Link, Basingstoke
Hampshire, RG21 7PP
Telephone (01256) 310200
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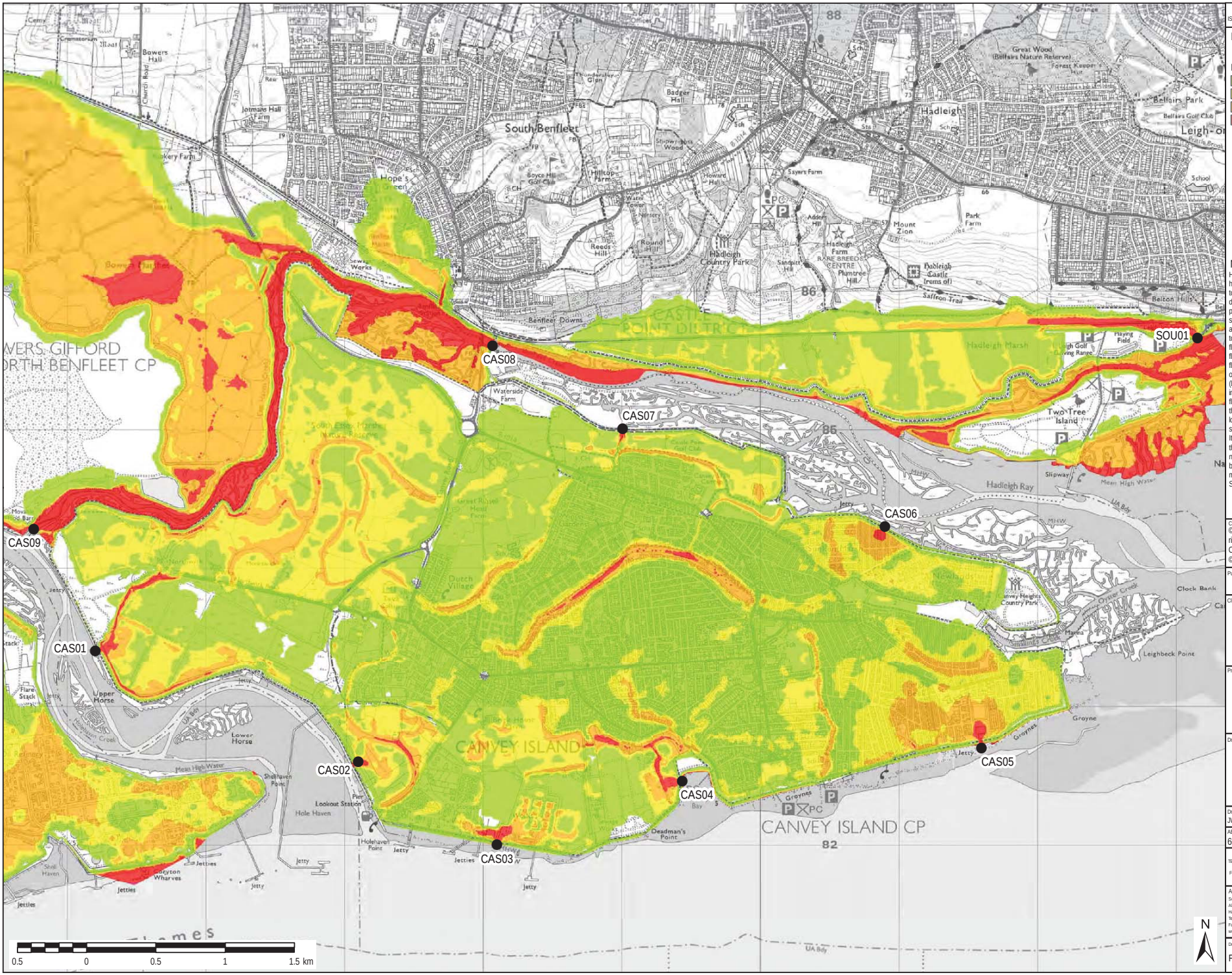
Drawing Number	Rev
FIGURE E18	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E18 Castle Point Breach Maximum Flood Depth – 2016 0.5 AEP with barrier.mxd



THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

LEGEND

- Breach Location

Maximum Flood Hazard

- Low Hazard
- Moderate Hazard (Danger to Some)
- Significant Hazard (Danger to Most)
- Extreme Hazard (Danger to All)

NOTES

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Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

CASTLE POINT BREACH
MAXIMUM FLOOD HAZARD
2016, 0.5% AEP, WITH BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:25,000

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Scott House
Alencon Link, Basingstoke
Hampshire, RG21 7PP
Telephone (01256) 310200
Fax (01256) 310201
www.aecom.com

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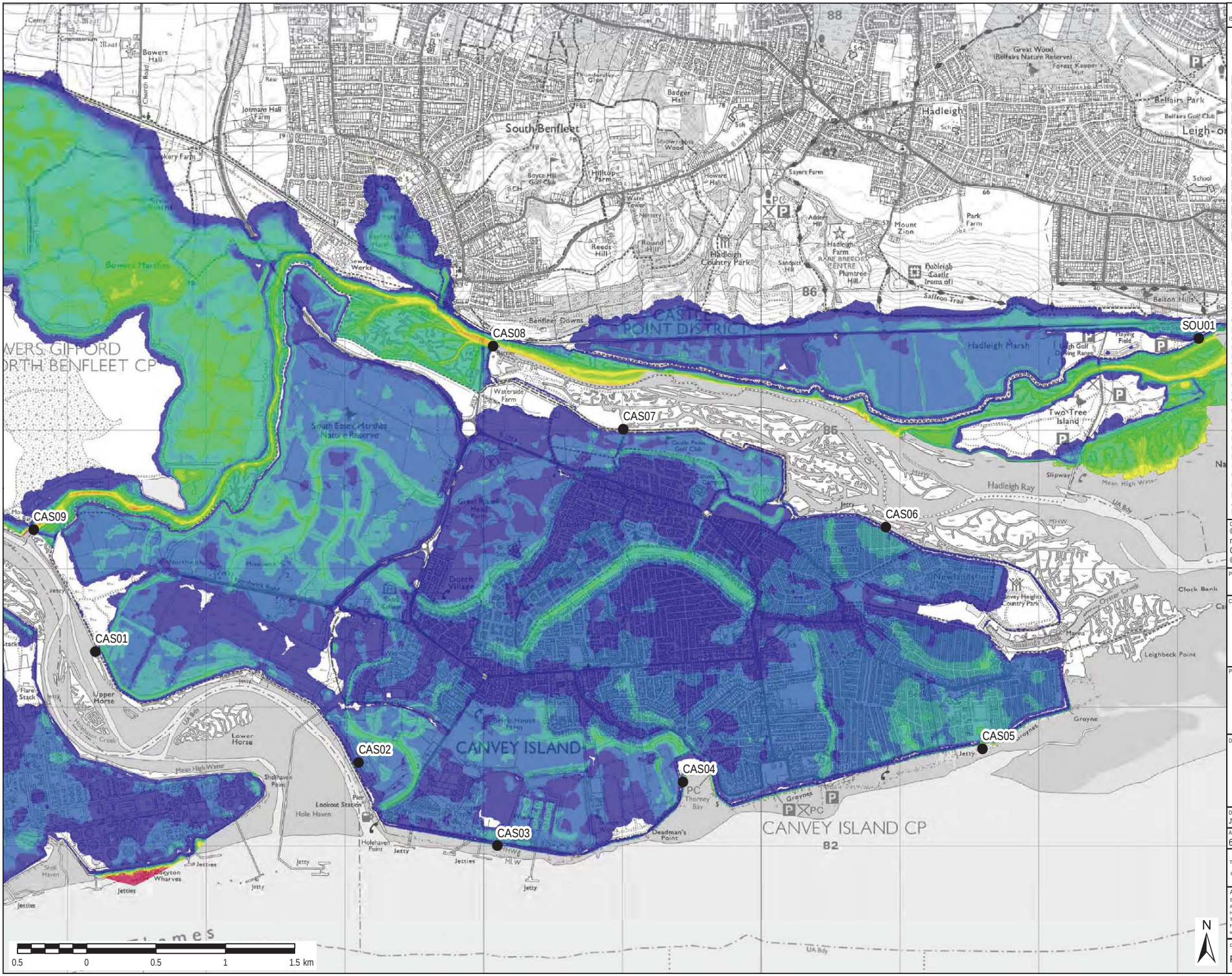
Drawing Number	Rev
FIGURE E19	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E19 Castle Point Breach Maximum Flood Hazard – 2016 0.5 AEP with barrier.mxd



THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

LEGEND

- Breach Location

Maximum Flood Depth (m)

- > 0 to 0.5m
- > 0.5 to 1m
- > 1 to 1.5m
- > 1.5 to 2m
- > 2 to 2.5m
- > 2.5 to 3m
- > 3 to 3.5m
- > 3.5 to 4m
- > 4 to 4.5m
- > 4.5 to 5m
- > 5 to 5.5m
- > 5.5 to 6m
- > 6m

NOTES

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Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea borough council

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

CASTLE POINT BREACH
MAXIMUM FLOOD DEPTH
2016, 0.5% AEP, WITHOUT BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:25,000

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Scott House
Alencon Link, Basingstoke
Hampshire, RG21 7PP
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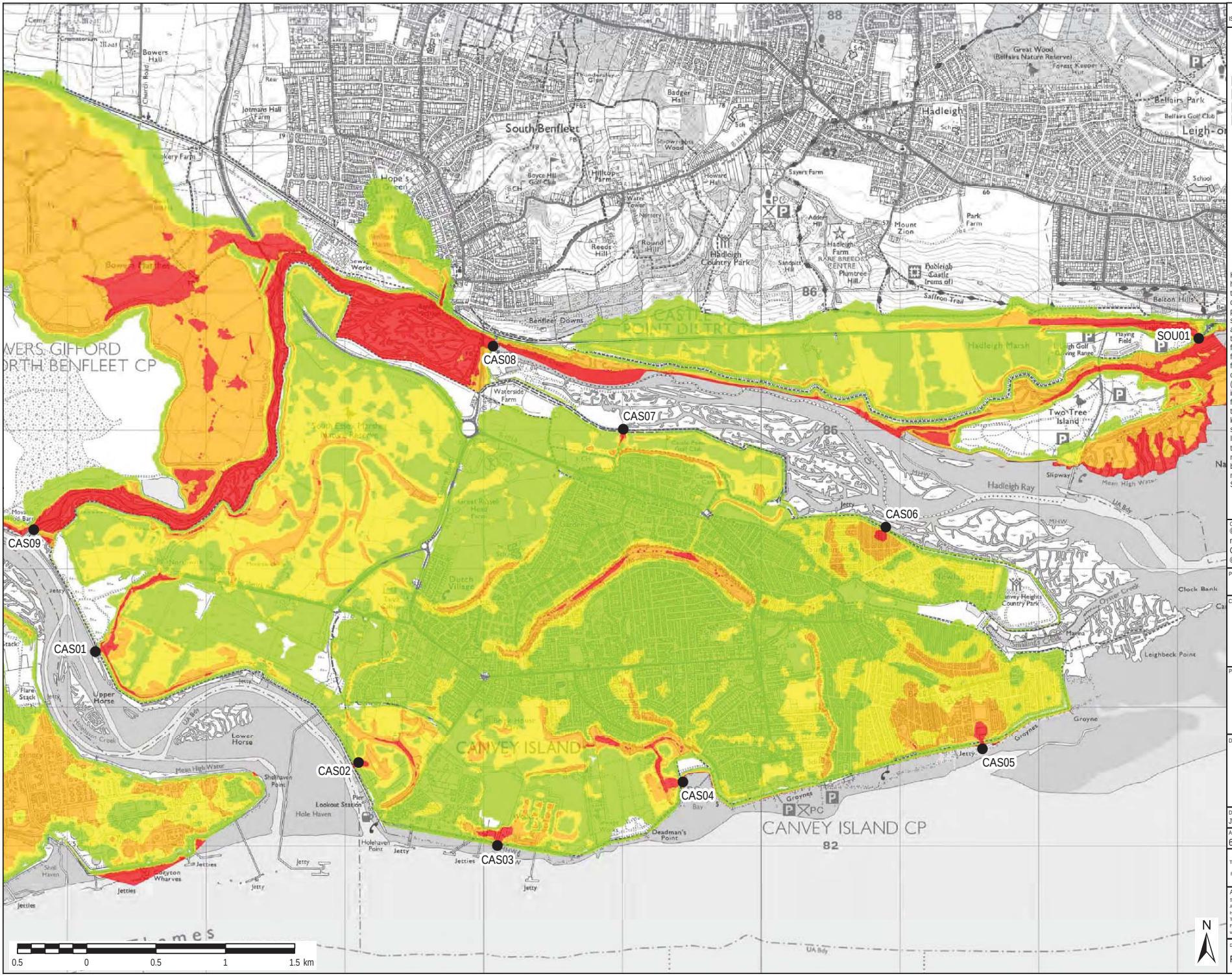
Drawing Number	Rev
FIGURE E20	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E20 Castle Point Breach Maximum Flood Depth – 2016 0.5 AEP without barrier.mxd



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LEGEND

- Breach Location

Maximum Flood Hazard

- Low Hazard
- Moderate Hazard (Danger to Some)
- Significant Hazard (Danger to Most)
- Extreme Hazard (Danger to All)

NOTES

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Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

CASTLE POINT BREACH
MAXIMUM FLOOD HAZARD
2016, 0.5% AEP, WITHOUT BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:25,000

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Scott House
Alencon Link, Basingstoke
Hampshire, RG21 7PP
Telephone (01256) 310200
Fax (01256) 310201
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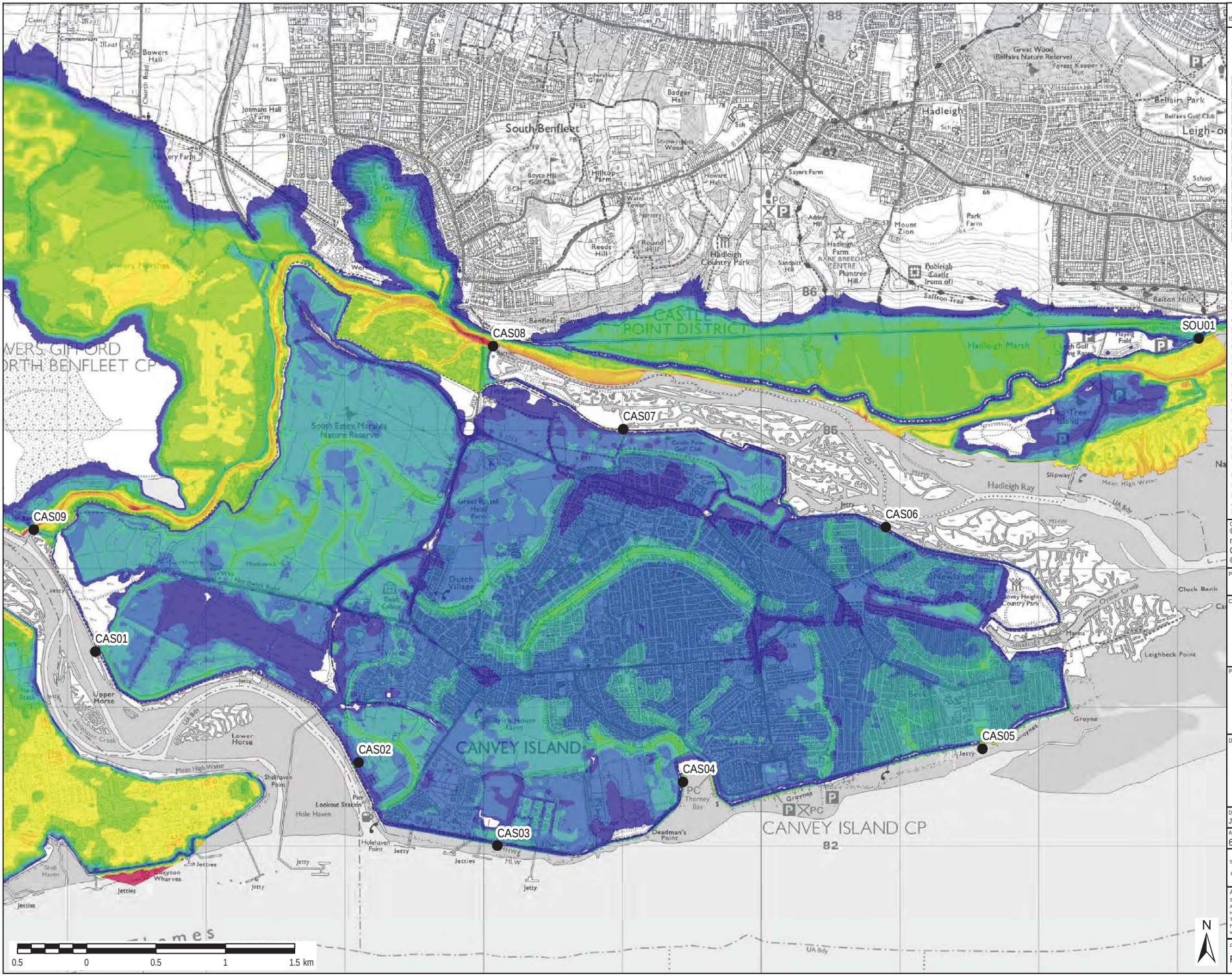
Drawing Number	Rev
FIGURE E21	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E21 Castle Point Breach Maximum Flood Hazard – 2016 0.5 AEP without barrier.mxd



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LEGEND

- Breach Location

Maximum Flood Depth (m)

- > 0 to 0.5m
- > 0.5 to 1m
- > 1 to 1.5m
- > 1.5 to 2m
- > 2 to 2.5m
- > 2.5 to 3m
- > 3 to 3.5m
- > 3.5 to 4m
- > 4 to 4.5m
- > 4.5 to 5m
- > 5 to 5.5m
- > 5.5 to 6m
- > 6m

NOTES

Hydraulic modelling has been undertaken using 2D 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.

The maximum flood depth is calculated by subtracting the LIDAR topographic data from the peak water level achieved at each element in the model throughout the simulation.

When using flood depth maps, it should be noted that they represent the flood depth arising from one or more specified breach locations, and that the depth will almost certainly vary spatially if the breach locations are in different local areas. Changes in inundation extent or maximum depth 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.

A thorough description of methodology and assumptions is included within the SFRA Main Report.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

CASTLE POINT BREACH
MAXIMUM FLOOD DEPTH
2116 WITH CLIMATE CHANGE
0.5% AEP, WITH BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:25,000

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Alencon Link, Basingstoke
Hampshire, RG21 7PP
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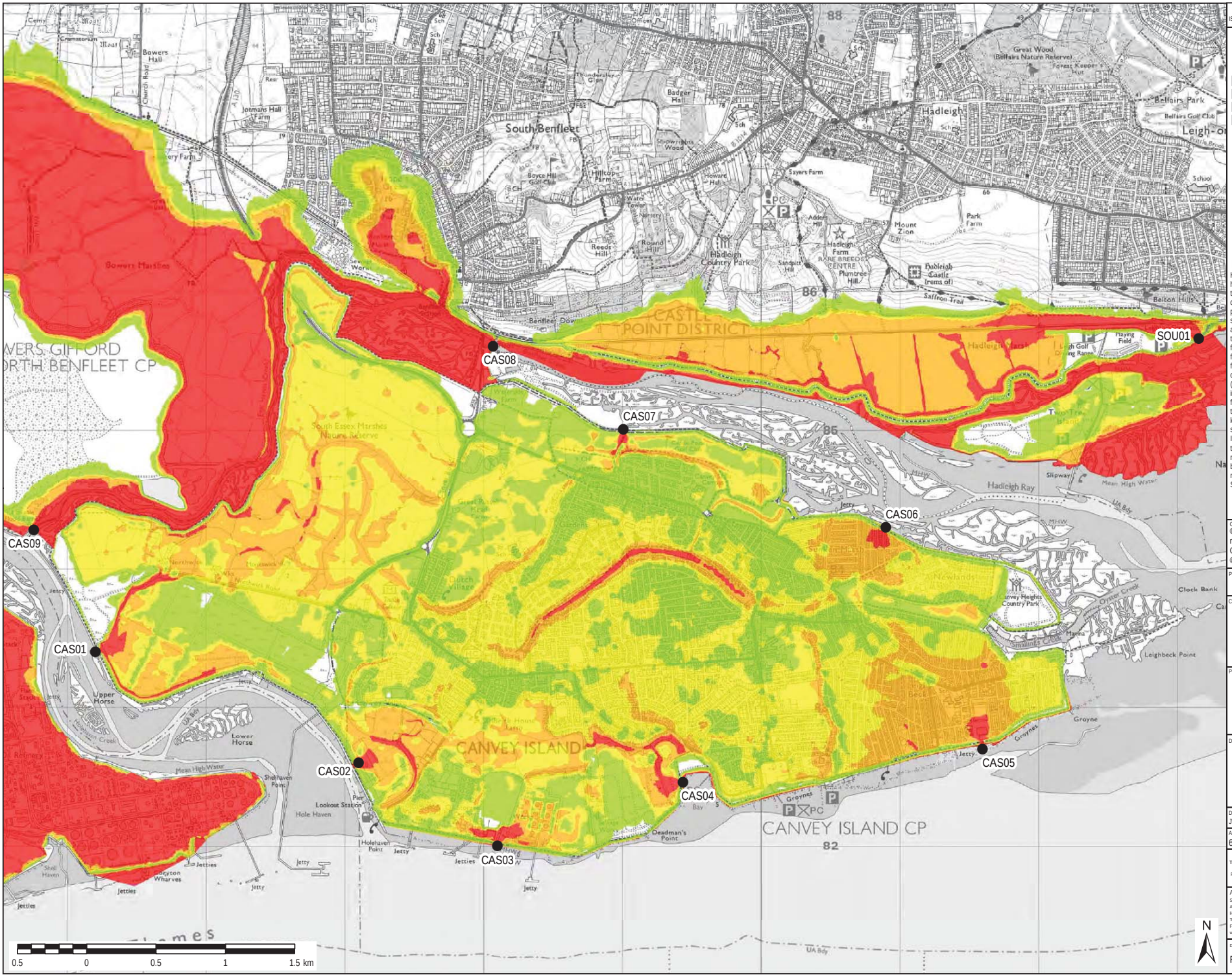
Drawing Number	Rev
FIGURE E22	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E22 Castle Point Breach Maximum Flood Depth – 2116 with climate change 0.5 AEP with barrier.mxd



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LEGEND

- Breach Location

Maximum Flood Hazard

- Low Hazard
- Moderate Hazard (Danger to Some)
- Significant Hazard (Danger to Most)
- Extreme Hazard (Danger to All)

NOTES

Hydraulic modelling has been undertaken using 2-D hydraulic modelling software MIKE21-HDFM (ver.2011), to assess the effect of a breach at a specific point in the 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 in advance of the peak tide level to assess the maximum potential volume of inflow into the flood cell. Flood hazard is calculated as a function of flood depth and flow velocity at a particular point in the floodplain, along with a suitable debris factor and is based on the methodology from Flood Risk to People FD2320 (Defra &EA, 2005). These hazard classifications do not indicate a change in the flood probability. When using flood hazard maps it should be noted that they represent the hazard arising from one or more specified breach locations, and that the rating will almost certainly vary spatially if the breach locations are in different local areas. 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. A thorough description of methodology and assumptions is included within the SFRA Main Report.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

CASTLE POINT BREACH
MAXIMUM FLOOD HAZARD
2116 WITH CLIMATE CHANGE
0.5% AEP, WITH BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:25,000

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Hampshire, RG21 7PP
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Fax (01256) 310201
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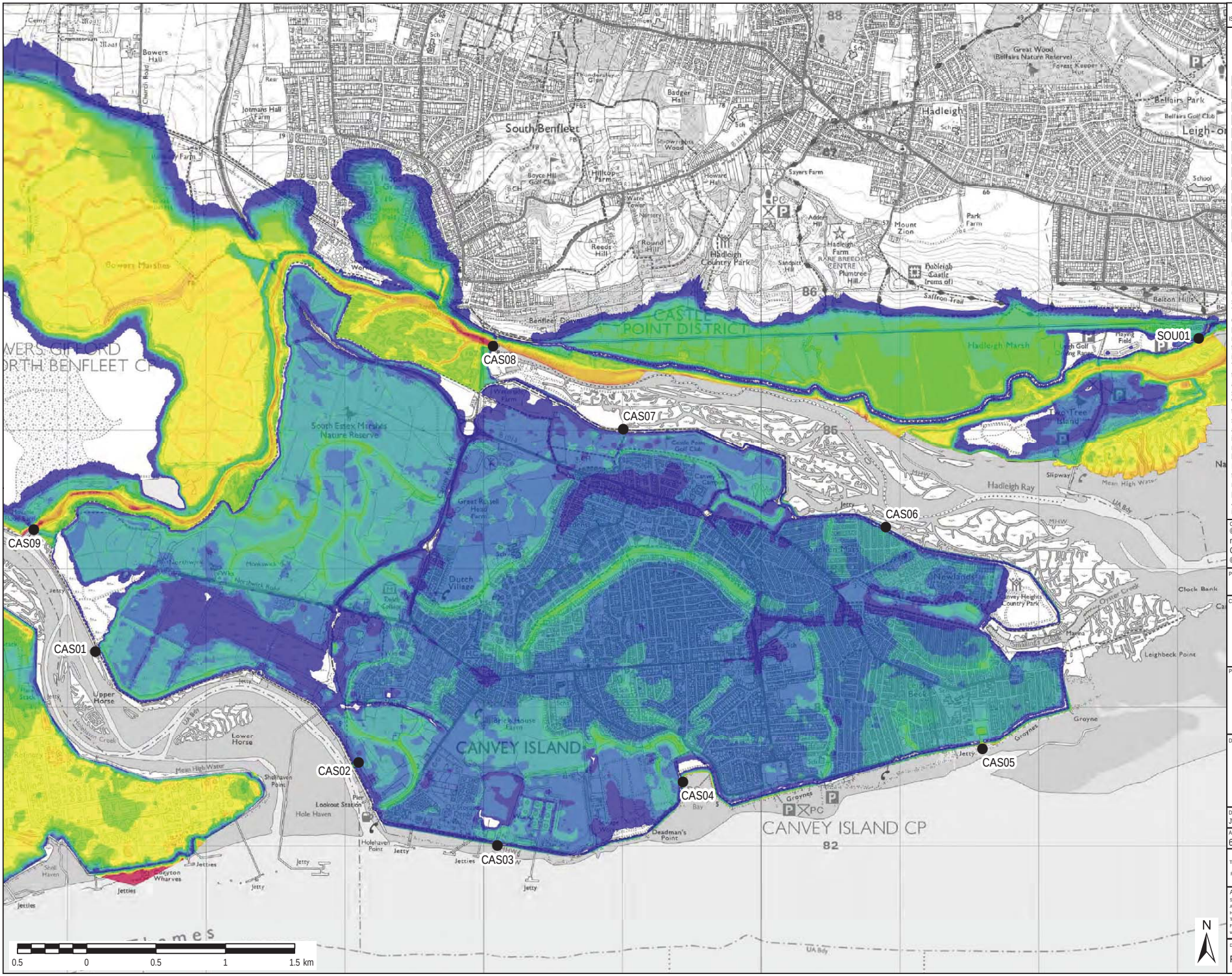
FIGURE E23	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E23 Castle Point Breach Maximum Flood Hazard – 2116 with climate change 0.5 AEP with barrier.mxd



File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E24 Castle Point Breach Maximum Flood Depth – 2116 with climate change 0.5 AEP without barrier.mxd

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LEGEND

- Breach Location

Maximum Flood Depth (m)

- > 0 to 0.5m
- > 0.5 to 1m
- > 1 to 1.5m
- > 1.5 to 2m
- > 2 to 2.5m
- > 2.5 to 3m
- > 3 to 3.5m
- > 3.5 to 4m
- > 4 to 4.5m
- > 4.5 to 5m
- > 5 to 5.5m
- > 5.5 to 6m
- > 6m

NOTES

Hydraulic modelling has been undertaken using 2D hydraulic modelling software MIKE21-HDFM (ver. 2009), to assess the effect of breaches at specified points and/or overtopping of defences.
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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.
A thorough description of methodology and assumptions is included within the SFRA Main Report.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

CASTLE POINT BREACH
MAXIMUM FLOOD DEPTH
2116 WITH CLIMATE CHANGE
0.5% AEP, WITHOUT BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:25,000

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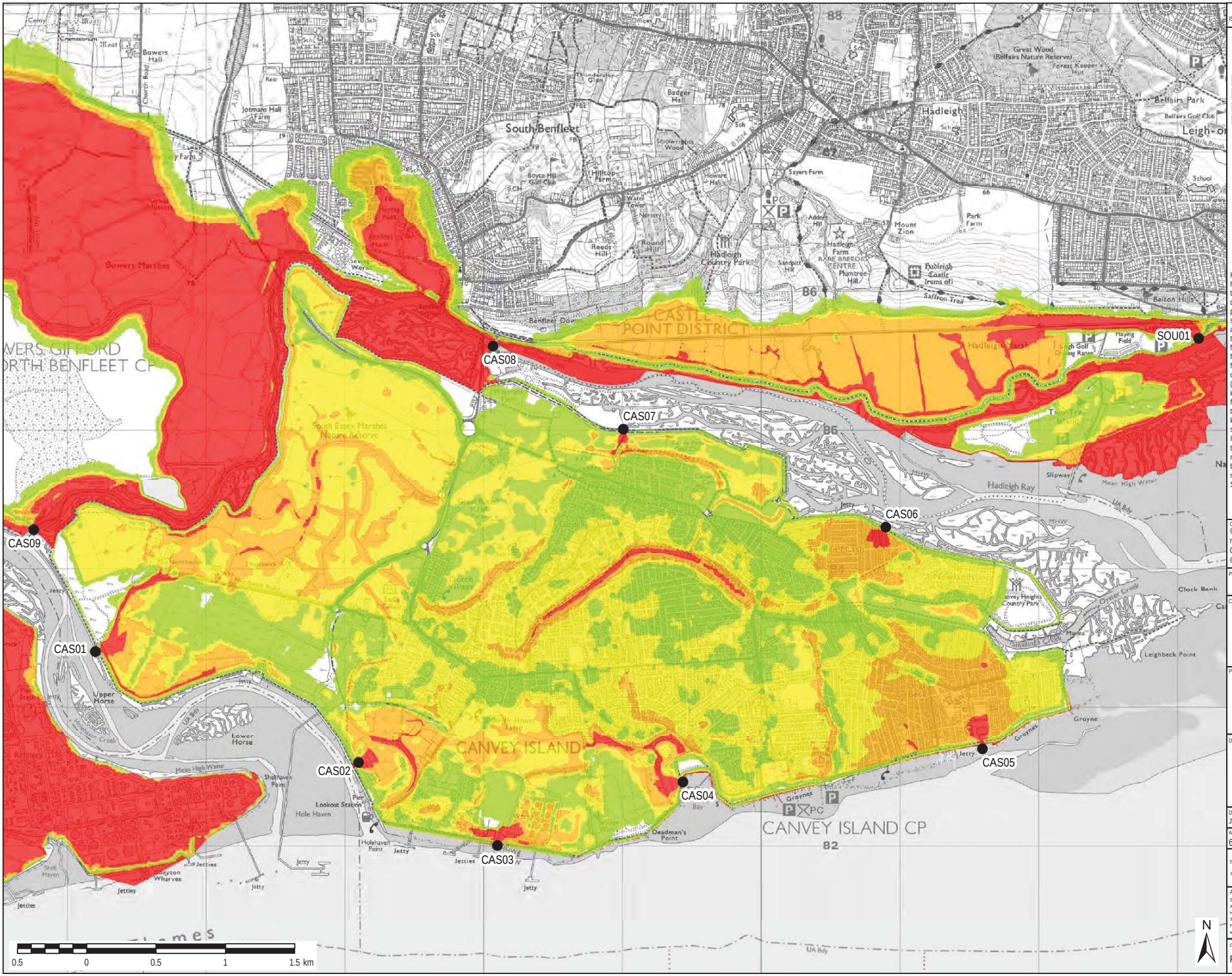
Drawing Number	Rev
FIGURE E24	1



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LEGEND

- Breach Location

Maximum Flood Hazard

- Low Hazard
- Moderate Hazard (Danger to Some)
- Significant Hazard (Danger to Most)
- Extreme Hazard (Danger to All)

NOTES

Hydraulic modelling has been undertaken using 2-D hydraulic modelling software MIKE21-HDFM (ver.2011), to assess the effect of a breach at a specific point in the 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 in advance of the peak tide level to assess the maximum potential volume of inflow into the flood cell. Flood hazard is calculated as a function of flood depth and flow velocity at a particular point in the floodplain, along with a suitable debris factor and is based on the methodology from Flood Risk to People FD2320 (Defra &EA, 2005). These hazard classifications do not indicate a change in the flood probability. When using flood hazard maps it should be noted that they represent the hazard arising from one or more specified breach locations, and that the rating will almost certainly vary spatially if the breach locations are in different local areas. 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. A thorough description of methodology and assumptions is included within the SFRA Main Report.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

CASTLE POINT
BREACH MAXIMUM FLOOD HAZARD
2116 WITH CLIMATE CHANGE
0.5% AEP, WITHOUT BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

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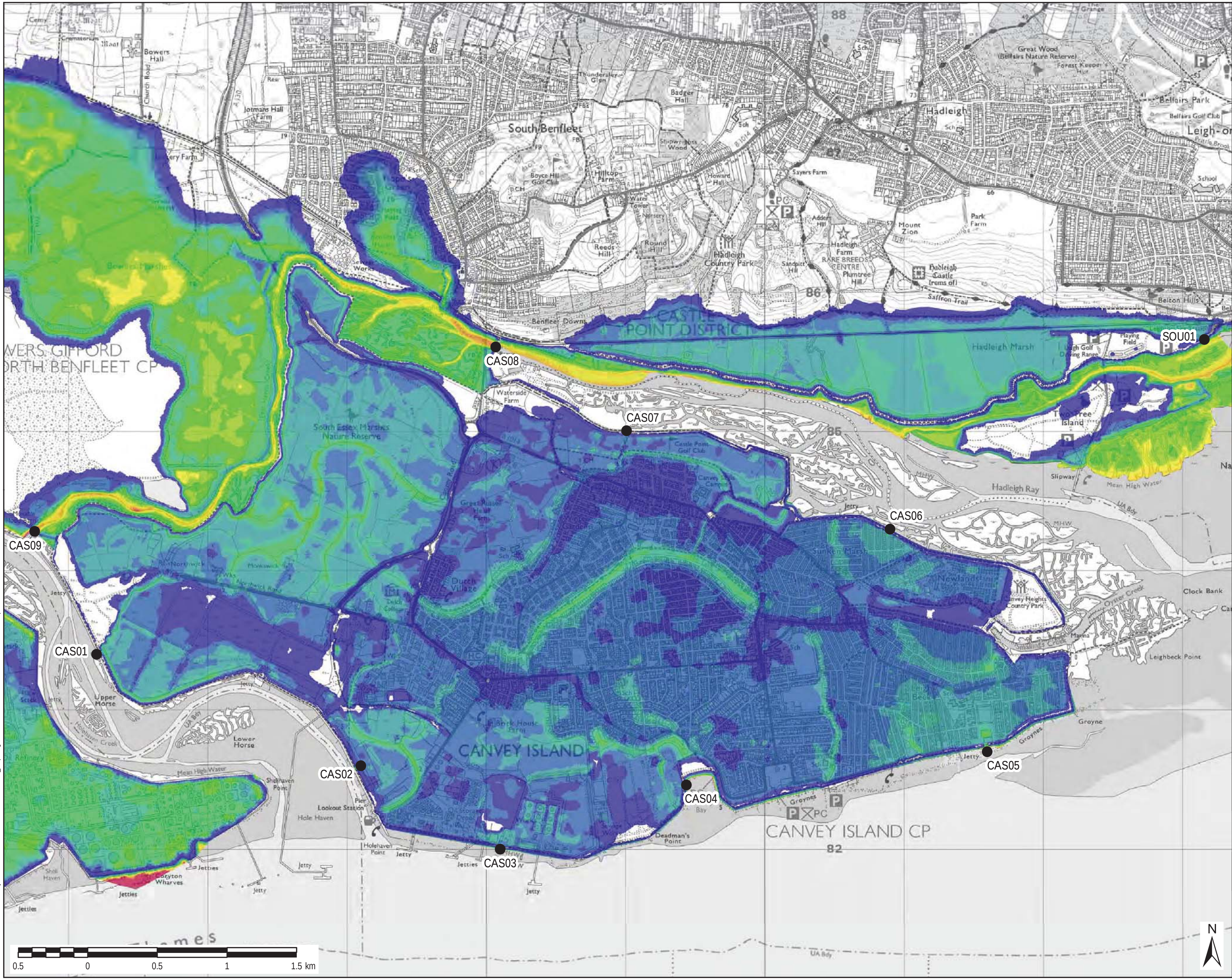
Drawing Number	Rev
FIGURE E25	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E25 Castle Point Breach Maximum Flood Hazard - 2116 with climate change 0.5 AEP without barrier.mxd



File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E26 Castle Point Breach Maximum Flood Depth - 2016 0.1 AEP with barrier.mxd

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LEGEND

- Breach Location

Maximum Flood Depth (m)

- > 0 to 0.5m
- > 0.5 to 1m
- > 1 to 1.5m
- > 1.5 to 2m
- > 2 to 2.5m
- > 2.5 to 3m
- > 3 to 3.5m
- > 3.5 to 4m
- > 4 to 4.5m
- > 4.5 to 5m
- > 5 to 5.5m
- > 5.5 to 6m
- > 6m

NOTES

Hydraulic modelling has been undertaken using 2D 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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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.

A thorough description of methodology and assumptions is included within the SFRA Main Report.

Purpose of Issue
FINAL

Client
Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title
SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title
CASTLE POINT BREACH
MAXIMUM FLOOD DEPTH
016, 0.1% AEP, WITH BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No. 60532482 | Scale @ A3 1:25,000

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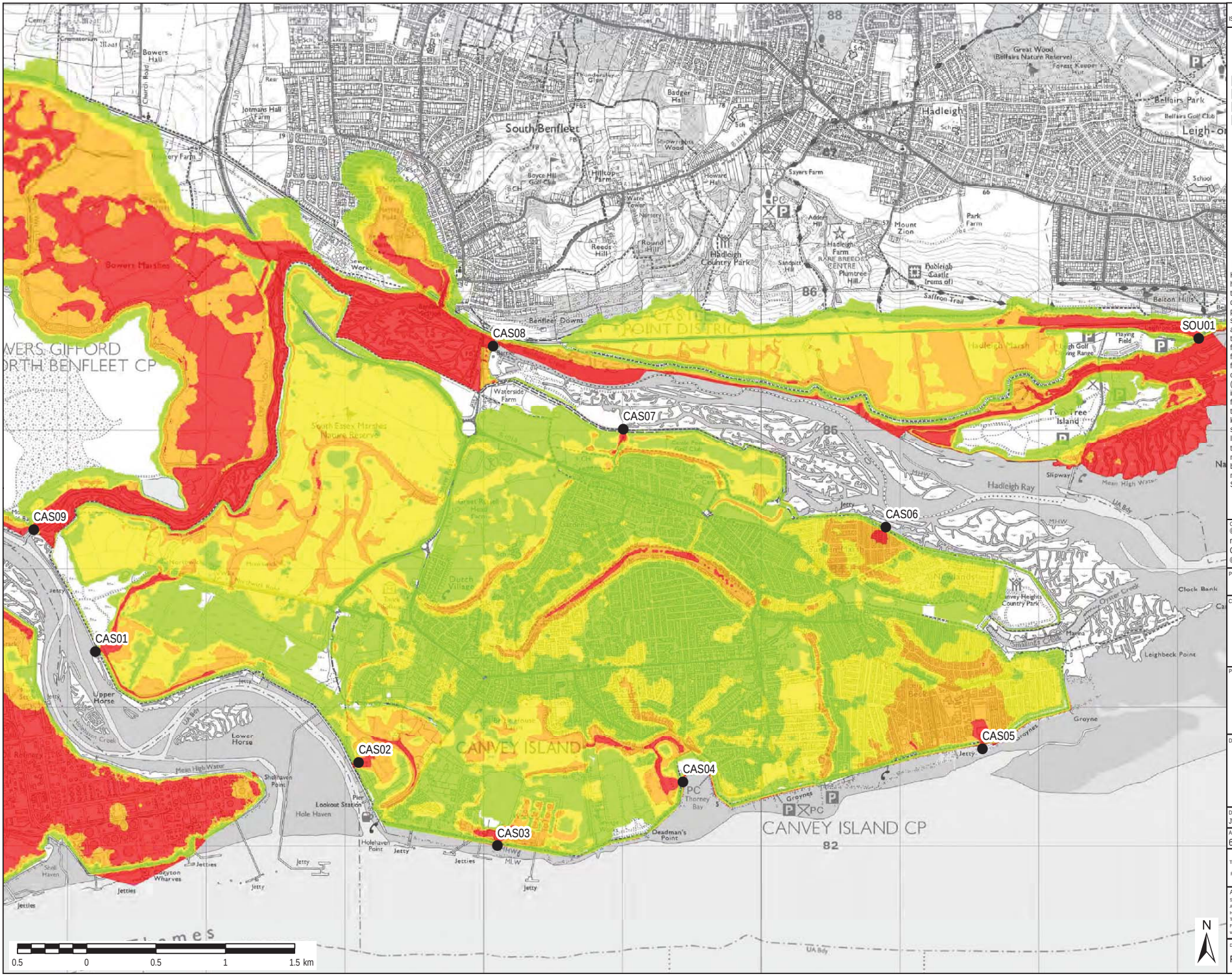
Drawing Number: FIGURE E26 | Rev: 1



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LEGEND

- Breach Location

Maximum Flood Hazard

- Low Hazard
- Moderate Hazard (Danger to Some)
- Significant Hazard (Danger to Most)
- Extreme Hazard (Danger to All)

NOTES

Hydraulic modelling has been undertaken using 2-D hydraulic modelling software MIKE21-HDFM (ver.2011), to assess the effect of a breach at a specific point in the 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 in advance of the peak tide level to assess the maximum potential volume of inflow into the flood cell. Flood hazard is calculated as a function of flood depth and flow velocity at a particular point in the floodplain, along with a suitable debris factor and is based on the methodology from Flood Risk to People FD2320 (Defra &EA, 2005). These hazard classifications do not indicate a change in the flood probability. When using flood hazard maps it should be noted that they represent the hazard arising from one or more specified breach locations, and that the rating will almost certainly vary spatially if the breach locations are in different local areas. 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. A thorough description of methodology and assumptions is included within the SFRA Main Report.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

CASTLE POINT BREACH
MAXIMUM FLOOD HAZARD
2016, 0.1% AEP, WITH BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
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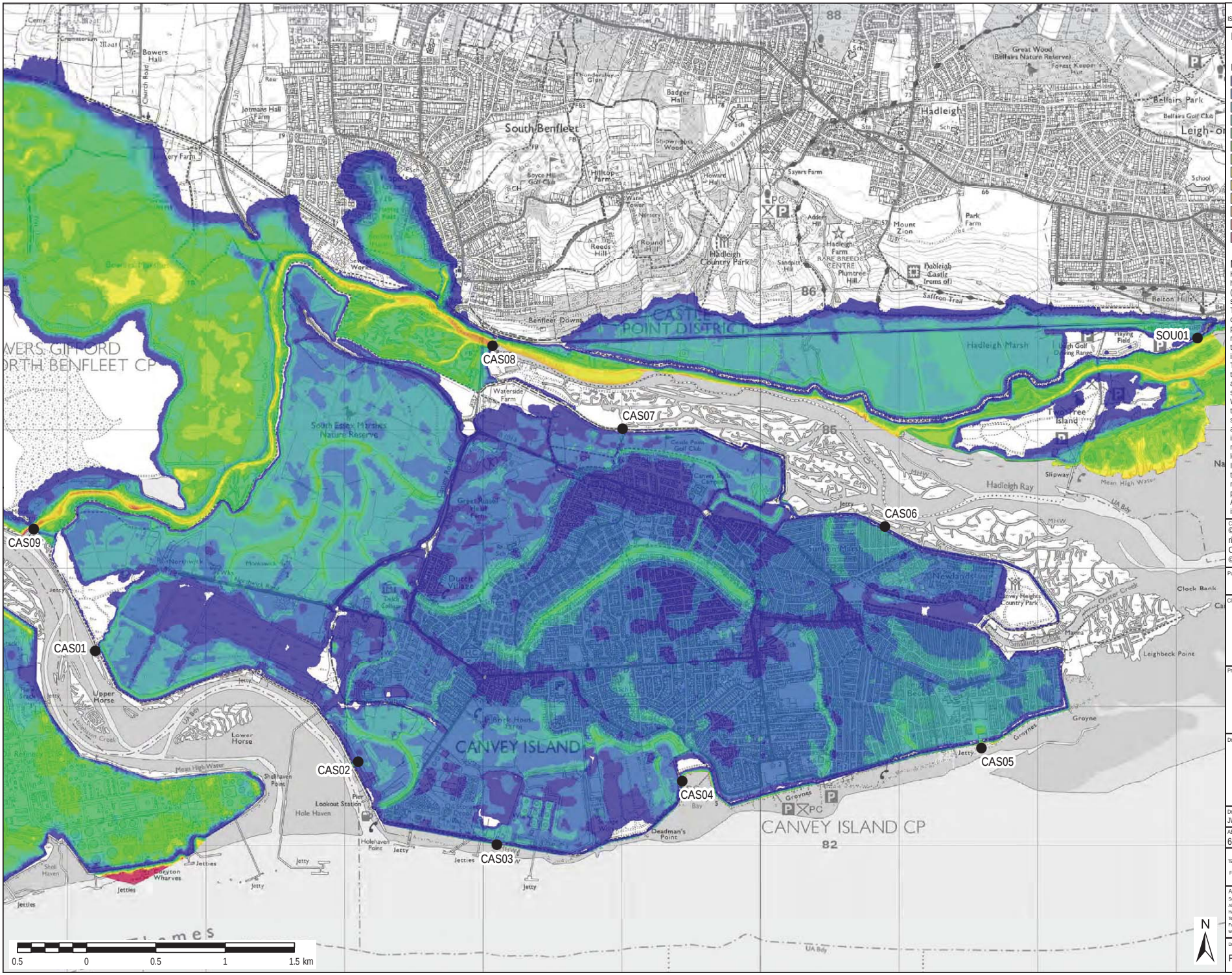
FIGURE E27	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E27 Castle Point Breach Maximum Flood Hazard – 2016 0.1 AEP with barrier.mxd



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LEGEND

- Breach Location

Maximum Flood Depth (m)

- > 0 to 0.5m
- > 0.5 to 1m
- > 1 to 1.5m
- > 1.5 to 2m
- > 2 to 2.5m
- > 2.5 to 3m
- > 3 to 3.5m
- > 3.5 to 4m
- > 4 to 4.5m
- > 4.5 to 5m
- > 5 to 5.5m
- > 5.5 to 6m
- > 6m

NOTES

Hydraulic modelling has been undertaken using 2D hydraulic modelling software MIKE21-HDFM (ver. 2009), to assess the effect of breaches at specified points and/or overtopping of defences.
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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.
A thorough description of methodology and assumptions is included within the SFRA Main Report.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

CASTLE POINT BREACH
MAXIMUM FLOOD DEPTH
2016, 0.1% AEP, WITHOUT BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
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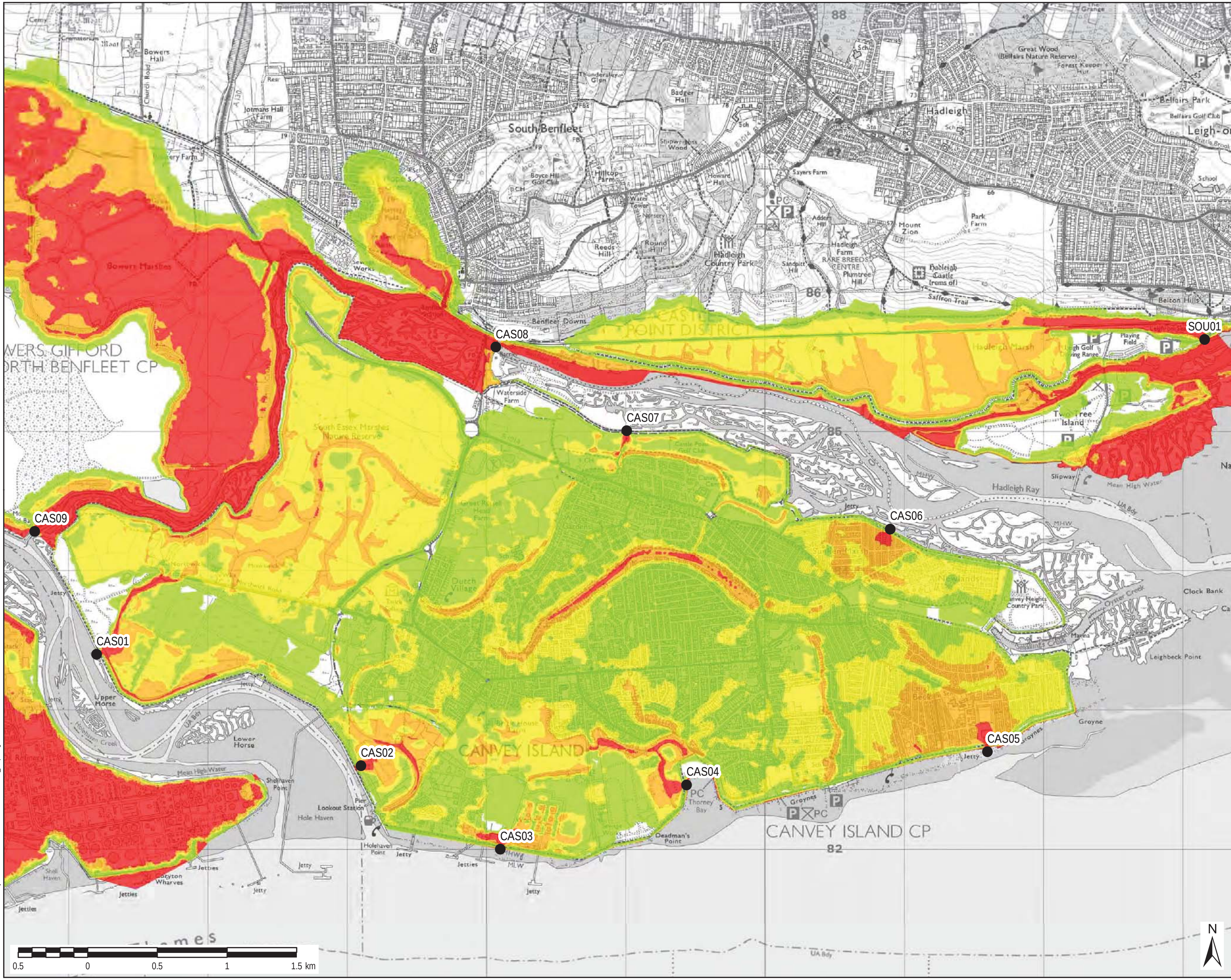
Drawing Number	Rev
FIGURE E28	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E28 Castle Point Breach Maximum Flood Depth – 2016 0.1 AEP without barrier.mxd



File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E29 Castle Point Breach Maximum Flood Hazard – 2016 0.1 AEP without barrier.mxd

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LEGEND

- Breach Location

Maximum Flood Hazard

- Low Hazard
- Moderate Hazard (Danger to Some)
- Significant Hazard (Danger to Most)
- Extreme Hazard (Danger to All)

NOTES

Hydraulic modelling has been undertaken using 2-D hydraulic modelling software MIKE21-HDFM (ver.2011), to assess the effect of a breach at a specific point in the 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 in advance of the peak tide level to assess the maximum potential volume of inflow into the flood cell. Flood hazard is calculated as a function of flood depth and flow velocity at a particular point in the floodplain, along with a suitable debris factor and is based on the methodology from Flood Risk to People FD2320 (Defra &EA, 2005). These hazard classifications do not indicate a change in the flood probability. When using flood hazard maps it should be noted that they represent the hazard arising from one or more specified breach locations, and that the rating will almost certainly vary spatially if the breach locations are in different local areas. 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. A thorough description of methodology and assumptions is included within the SFRA Main Report.

Purpose of Issue
FINAL

Client
Basildon Council, Castle Point, Rochford District Council, Southend on Sea Borough Council

Project Title
SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title
CASTLE POINT BREACH
MAXIMUM FLOOD HAZARD
016, 0.1% AEP, WITHOUT BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:25,000

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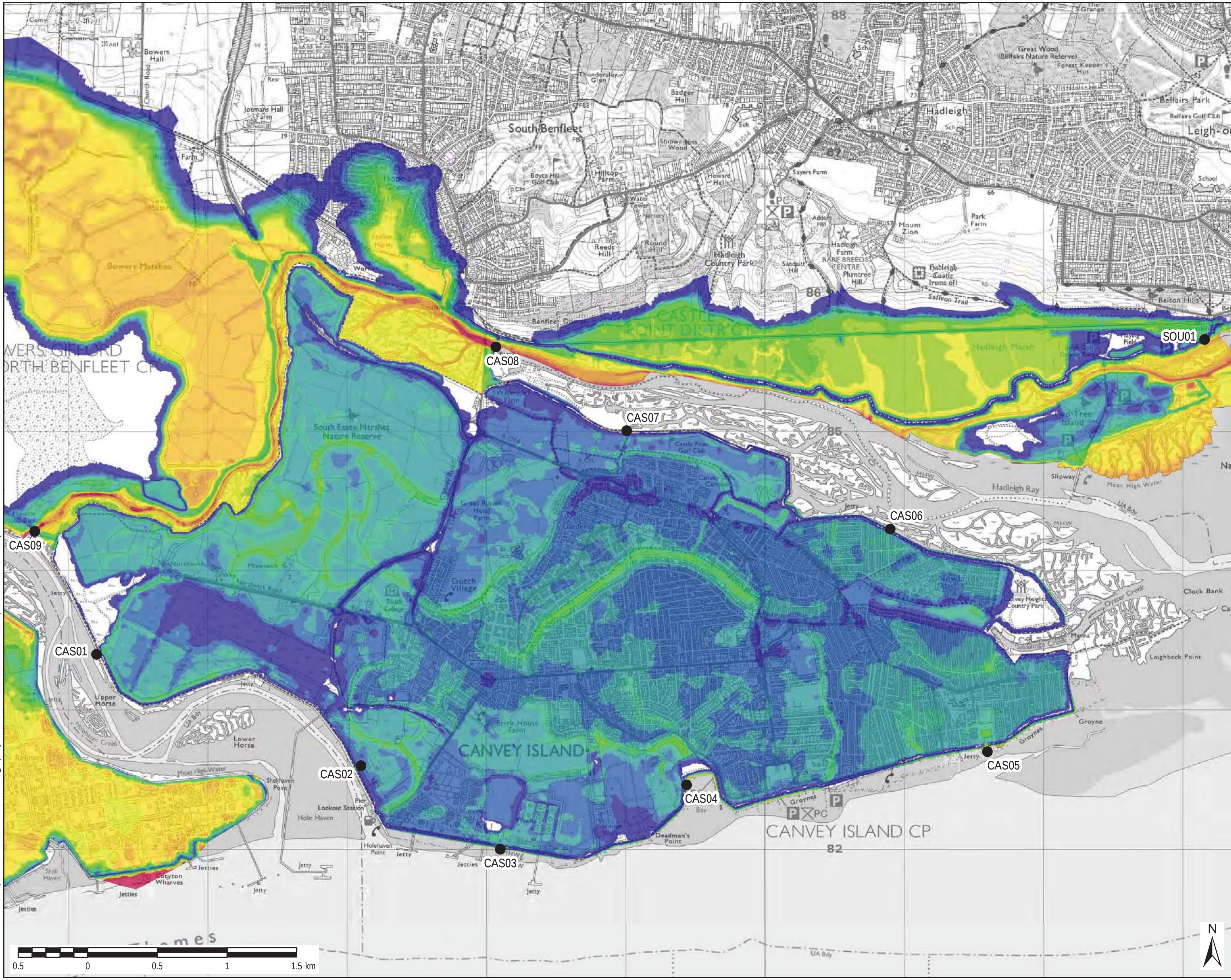
Drawing Number	Rev
FIGURE E29	1



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LEGEND

- Breach Location

Maximum Flood Depth (m)

- > 0 to 0.5m
- > 0.5 to 1m
- > 1 to 1.5m
- > 1.5 to 2m
- > 2 to 2.5m
- > 2.5 to 3m
- > 3 to 3.5m
- > 3.5 to 4m
- > 4 to 4.5m
- > 4.5 to 5m
- > 5 to 5.5m
- > 5.5 to 6m
- > 6m

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Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea Borough Council

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

CASTLE POINT BREACH
MAXIMUM FLOOD DEPTH
2116 WITH CLIMATE CHANGE
0.1% AEP, WITH BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:25,000

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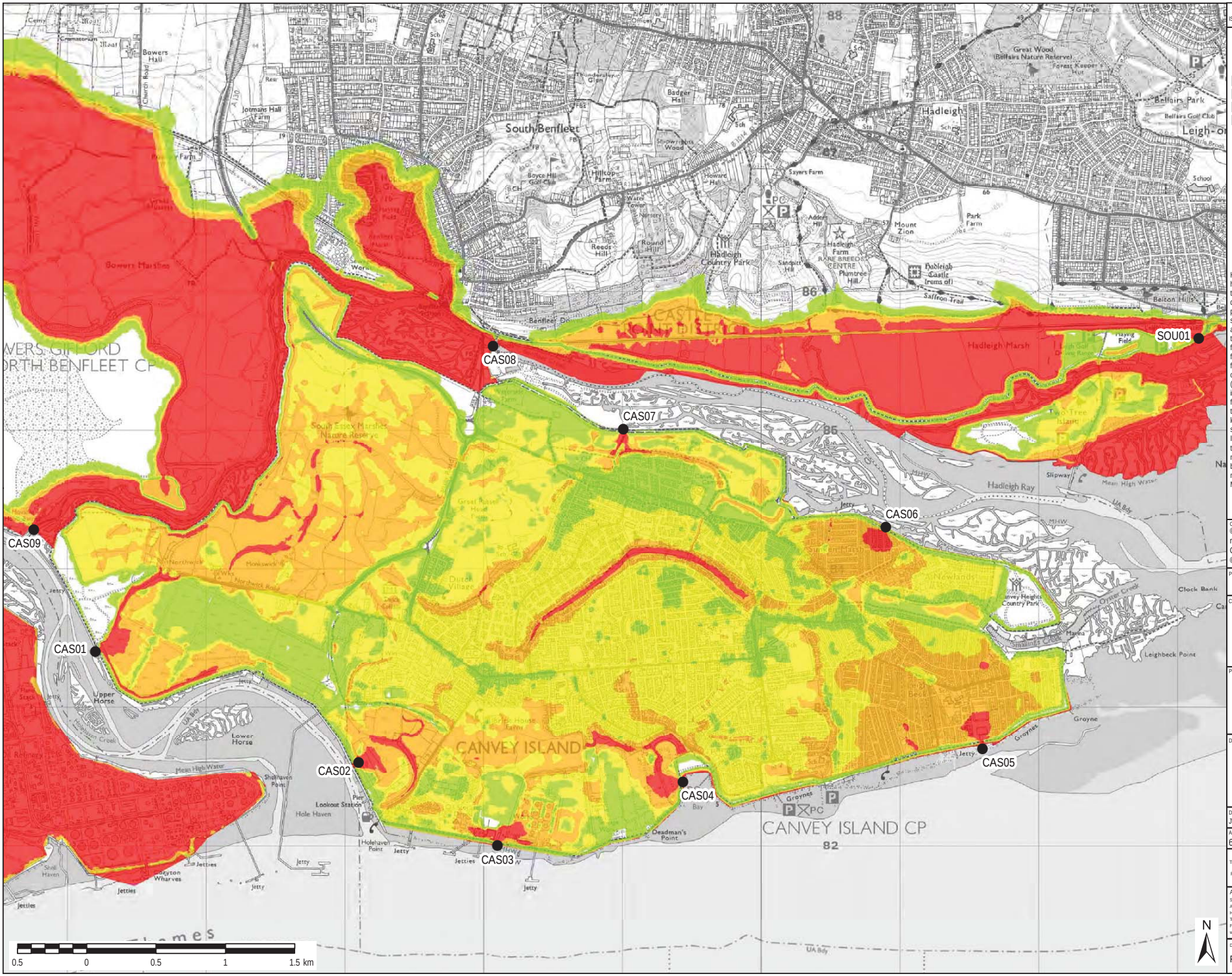
Drawing Number	Rev
FIGURE E30	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E30 Castle Point Breach Maximum Flood Depth - 2116 with climate change 0.1 AEP with barrier.mxd



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LEGEND

- Breach Location

Maximum Flood Hazard (m)

- Low Hazard
- Moderate Hazard (Danger to Some)
- Significant Hazard (Danger to Most)
- Extreme Hazard (Danger to All)

NOTES

Hydraulic modelling has been undertaken using 2-D hydraulic modelling software MIKE21-HDFM (ver.2011), to assess the effect of a breach at a specific point in the 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 in advance of the peak tide level to assess the maximum potential volume of inflow into the flood cell. Flood hazard is calculated as a function of flood depth and flow velocity at a particular point in the floodplain, along with a suitable debris factor and is based on the methodology from Flood Risk to People FD2320 (Defra &EA, 2005). These hazard classifications do not indicate a change in the flood probability. When using flood hazard maps it should be noted that they represent the hazard arising from one or more specified breach locations, and that the rating will almost certainly vary spatially if the breach locations are in different local areas. 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. A thorough description of methodology and assumptions is included within the SFRA Main Report.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

CASTLE POINT BREACH
MAXIMUM FLOOD HAZARD
2116 WITH CLIMATE CHANGE
0.1% AEP, WITH BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
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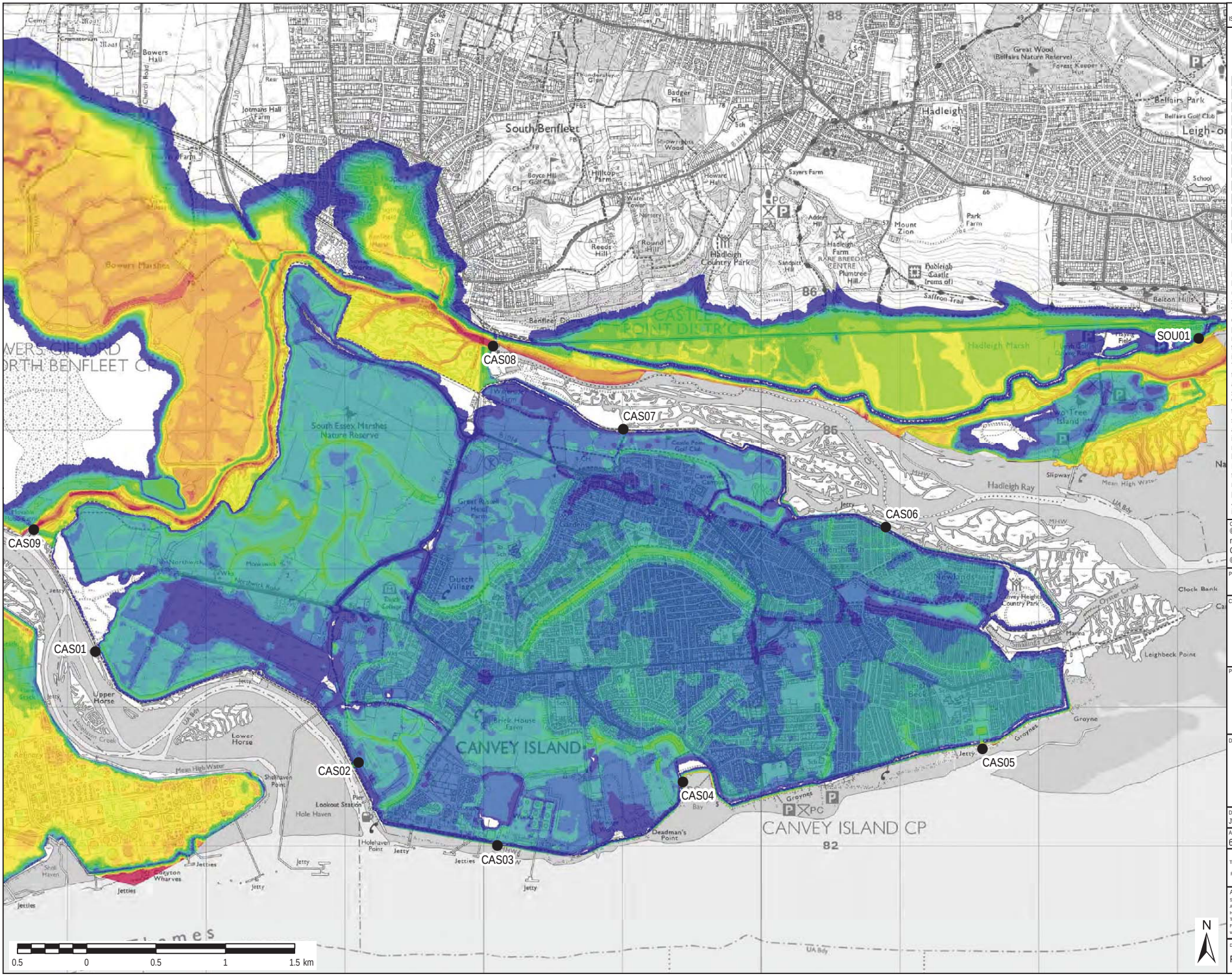
Drawing Number	Rev
FIGURE E31	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E31 Castle Point Breach Maximum Flood Hazard – 2116 with climate change 0.1 AEP with barrier.mxd



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LEGEND

- Breach Location

Maximum Flood Depth (m)

- > 0 to 0.5m
- > 0.5 to 1m
- > 1 to 1.5m
- > 1.5 to 2m
- > 2 to 2.5m
- > 2.5 to 3m
- > 3 to 3.5m
- > 3.5 to 4m
- > 4 to 4.5m
- > 4.5 to 5m
- > 5 to 5.5m
- > 5.5 to 6m
- > 6m

NOTES

Hydraulic modelling has been undertaken using 2D 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.
The maximum flood depth is calculated by subtracting the LIDAR topographic data from the peak water level achieved at each element in the model throughout the simulation.
When using flood depth maps, it should be noted that they represent the flood depth arising from one or more specified breach locations, and that the depth will almost certainly vary spatially if the breach locations are in different local areas. Changes in inundation extent or maximum depth 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.
A thorough description of methodology and assumptions is included within the SFRA Main Report.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

CASTLE POINT BREACH
MAXIMUM FLOOD DEPTH
2116 WITH CLIMATE CHANGE
0.1% AEP, WITHOUT BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
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Alencon Link, Basingstoke
Hampshire, RG21 7PP
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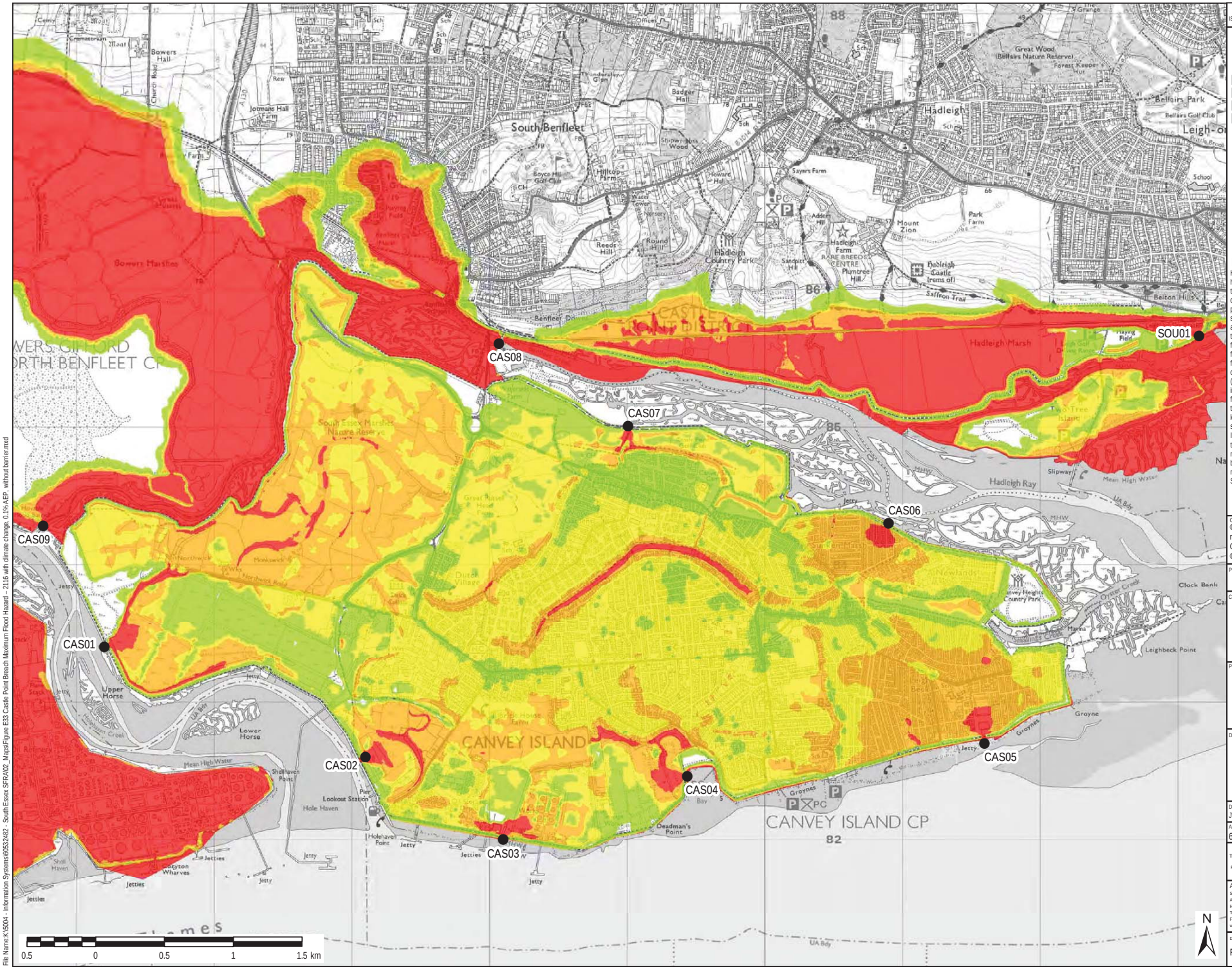
FIGURE 32	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E32 Castle Point Breach Maximum Flood Depth – 2116 with climate change 0.1 AEP without barrier.mxd



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LEGEND

- Breach Location

Maximum Flood Hazard (m)

- Low Hazard
- Moderate Hazard (Danger to Some)
- Significant Hazard (Danger to Most)
- Extreme Hazard (Danger to All)

NOTES

Hydraulic modelling has been undertaken using 2-D hydraulic modelling software MIKE21-HDFM (ver.2011), to assess the effect of a breach at a specific point in the 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 in advance of the peak tide level to assess the maximum potential volume of inflow into the flood cell. Flood hazard is calculated as a function of flood depth and flow velocity at a particular point in the floodplain, along with a suitable debris factor and is based on the methodology from Flood Risk to People FD2320 (Defra &EA, 2005). These hazard classifications do not indicate a change in the flood probability. When using flood hazard maps it should be noted that they represent the hazard arising from one or more specified breach locations, and that the rating will almost certainly vary spatially if the breach locations are in different local areas. 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. A thorough description of methodology and assumptions is included within the SFRA Main Report.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

CASTLE POINT BREACH
MAXIMUM FLOOD HAZARD
2116 WITH CLIMATE CHANGE,
0.1% AEP, WITHOUT BARRIER

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

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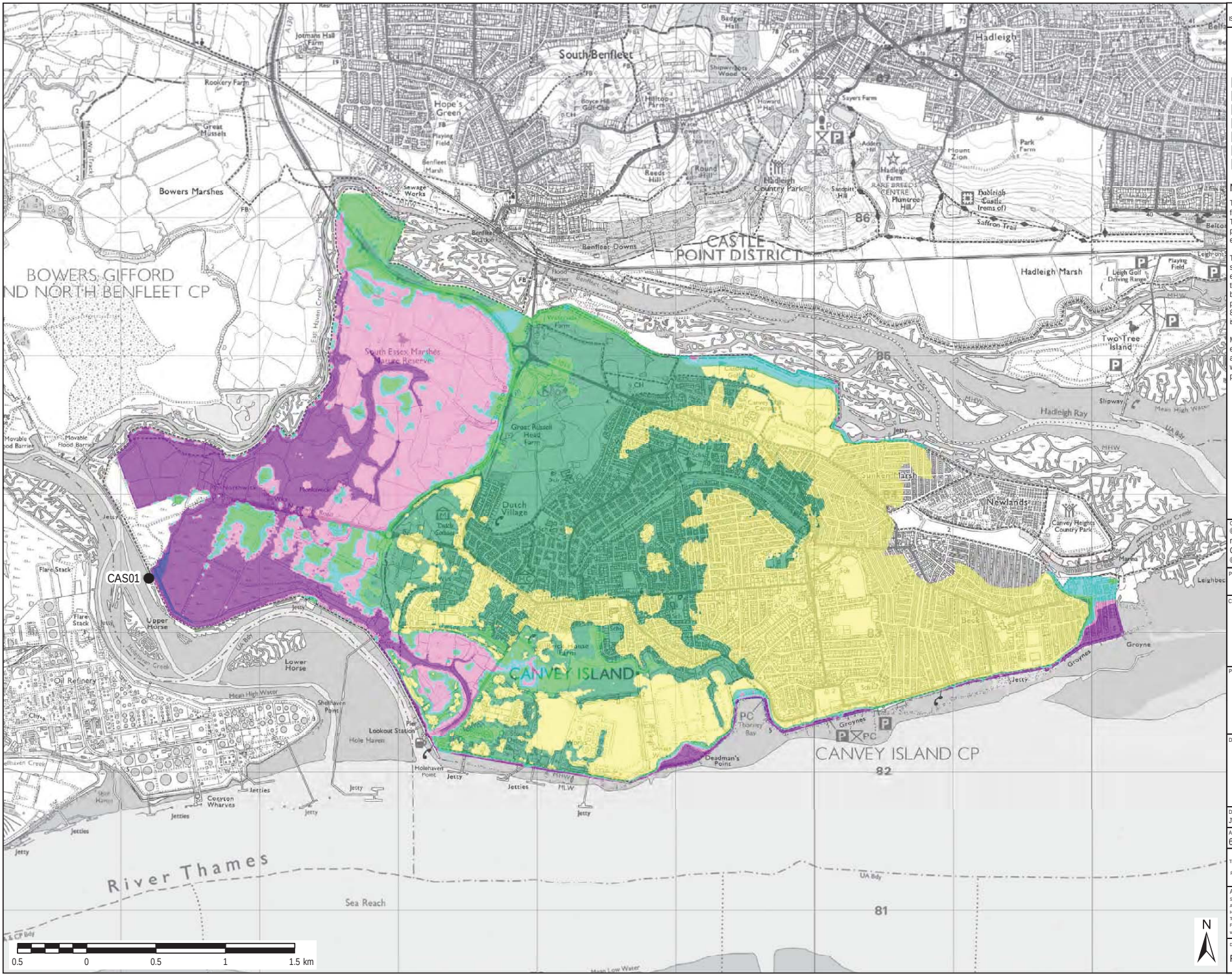
FIGURE E33	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E33 Castle Point Breach Maximum Flood Hazard – 2116 with climate change, 0.1% AEP, without barrier.mxd



File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Inundation Maps\Figure E34a Breach CAS01 Time to Inundation - 2116 with climate change 0.1 AEP .mxd

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LEGEND

- Breach Location

Time to Inundation (Hours)

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

NOTES

Time to inundation mapping illustrates the length of time from a breach before floodwaters reach a particular site. This information is particularly useful for emergency planning as it provides details of the time available for evacuation to a place of safety.

Time zero is set to the time when tidal water enters the specific breach. This means that the <1 hour band encompasses all areas that are inundated (wet) within the first hour of water travelling through the specific breach and into the flood cell. Further bands have been produced to show wet cells at: 1-4 hours, 4-8 hours, 8-12 hours, 12 to 16 and 16-20 hours. Time to inundation is specific to each breach location.

Mapping has been provided for the 1 in 1000 year + CC event as it represents the most conservative scenario and should be used for emergency planning purposes when considering safe access/egress routes from any potential development site.

Purpose of Issue

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Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

BREACH CAS01
TIME TO INUNDATION
2116 WITH CLIMATE CHANGE
0.1% AEP

Drawn	Checked	Approved	Date
JW	BB	CP	09/04/2018

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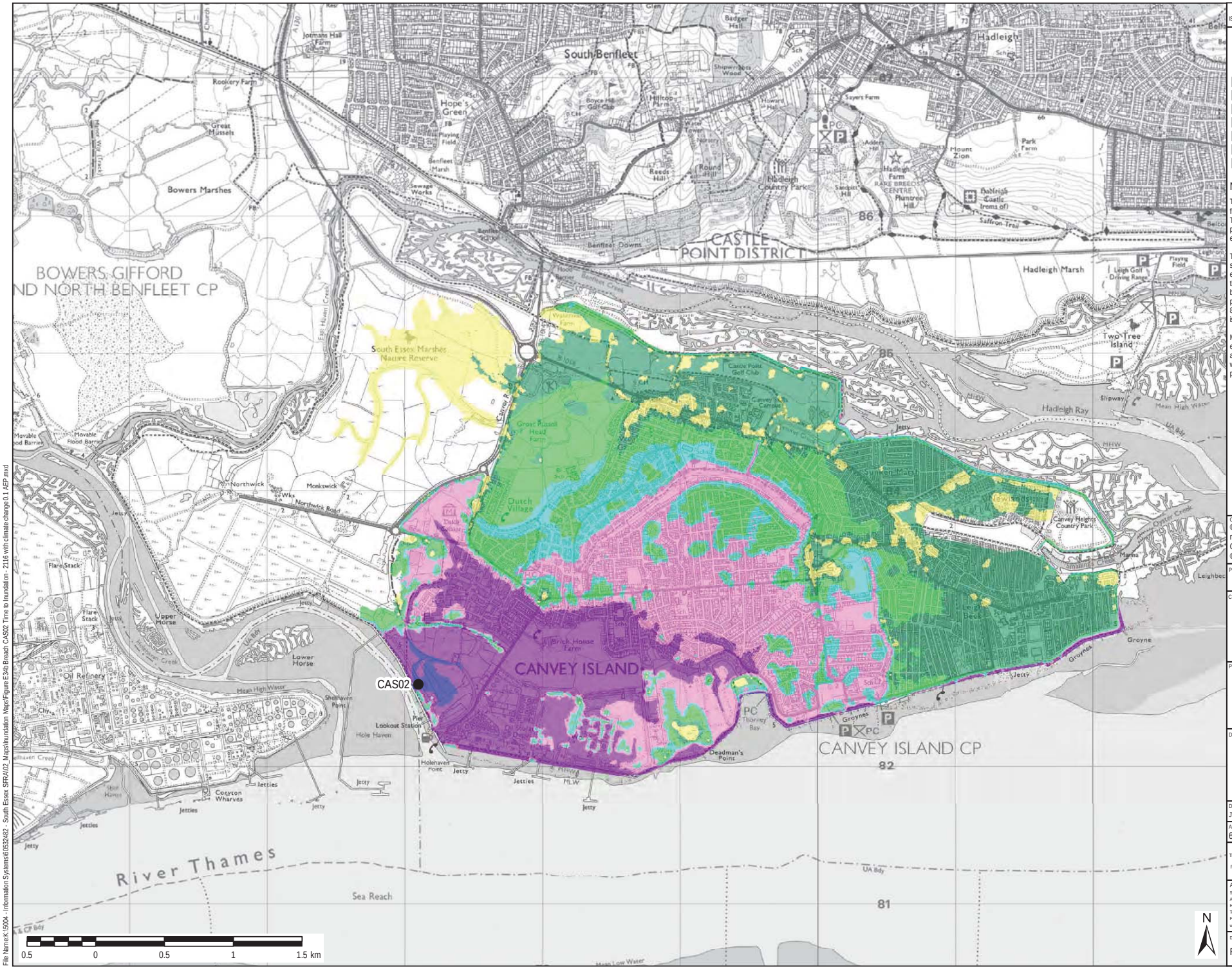
Drawing Number	Rev
FIGURE E34a	1



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LEGEND

- Breach Location

Time to Inundation (Hours)

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

NOTES

Time to inundation mapping illustrates the length of time from a breach before floodwaters reach a particular site. This information is particularly useful for emergency planning as it provides details of the time available for evacuation to a place of safety.

Time zero is set to the time when tidal water enters the specific breach. This means that the <1 hour band encompasses all areas that are inundated (wet) within the first hour of water travelling through the specific breach and into the flood cell. Further bands have been produced to show wet cells at: 1-4 hours, 4-8 hours, 8-12 hours, 12 to 16 and 16-20 hours. Time to inundation is specific to each breach location.

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Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

BREACH CAS02
TIME TO INUNDATION
2116 WITH CLIMATE CHANGE
0.1% AEP

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JW	BB	CP	09/04/2018

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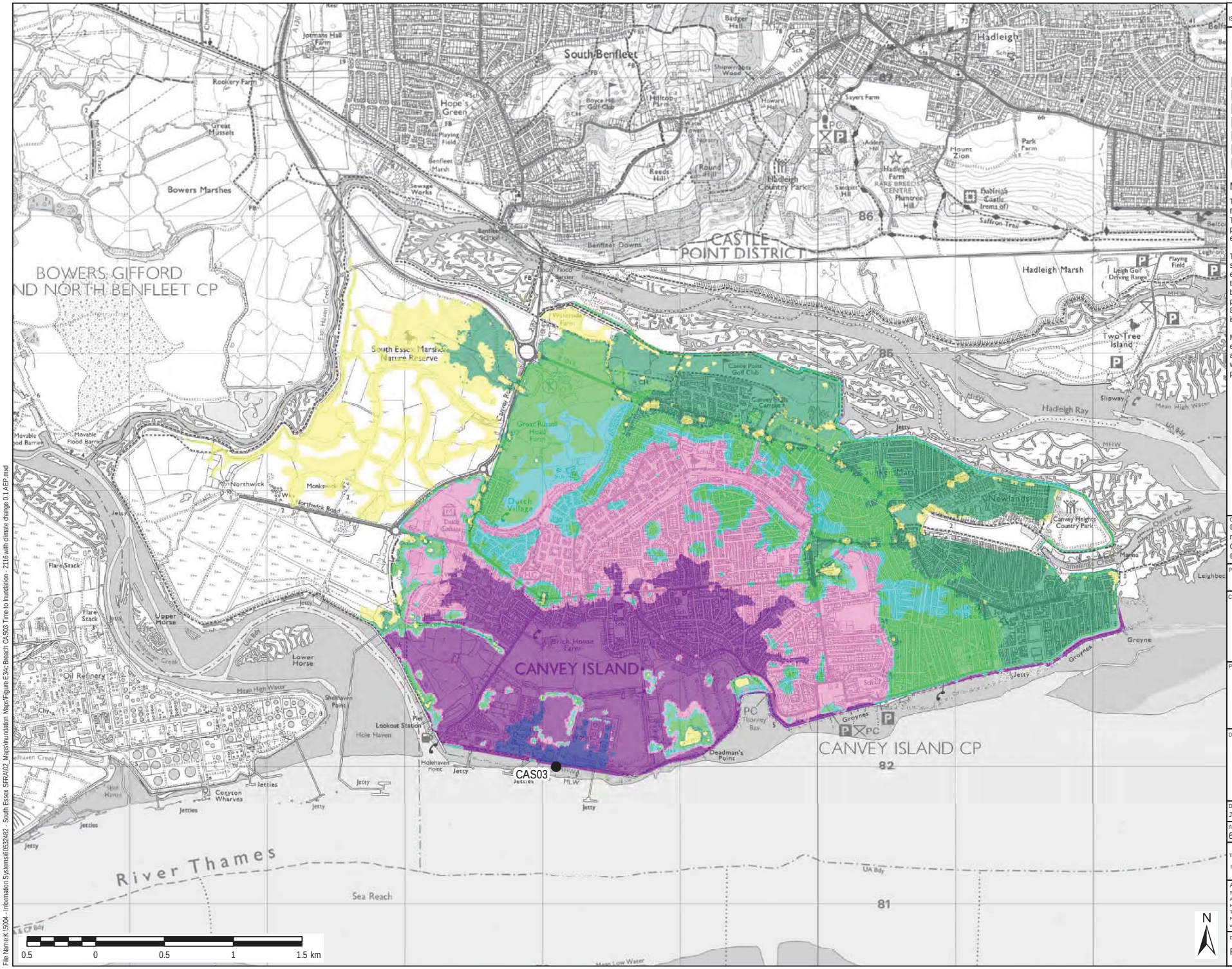
Drawing Number	Rev
FIGURE 34b	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Inundation Maps\Figure E.34b Breach CAS02 Time to Inundation - 2116 with climate change 0.1 AEP .mxd



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LEGEND

- Breach Location

Time to Inundation (Hours)

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

NOTES

Time to inundation mapping illustrates the length of time from a breach before floodwaters reach a particular site. This information is particularly useful for emergency planning as it provides details of the time available for evacuation to a place of safety.

Time zero is set to the time when tidal water enters the specific breach. This means that the <1 hour band encompasses all areas that are inundated (wet) within the first hour of water travelling through the specific breach and into the flood cell. Further bands have been produced to show wet cells at: 1-4 hours, 4-8 hours, 8-12 hours, 12 to 16 and 16-20 hours. Time to inundation is specific to each breach location.

Mapping has been provided for the 1 in 1000 year + CC event as it represents the most conservative scenario and should be used for emergency planning purposes when considering safe access/egress routes from any potential development site.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

BREACH CAS03
TIME TO INUNDATION
2116 WITH CLIMATE CHANGE
0.1% AEP

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JW	BB	CP	09/04/2018

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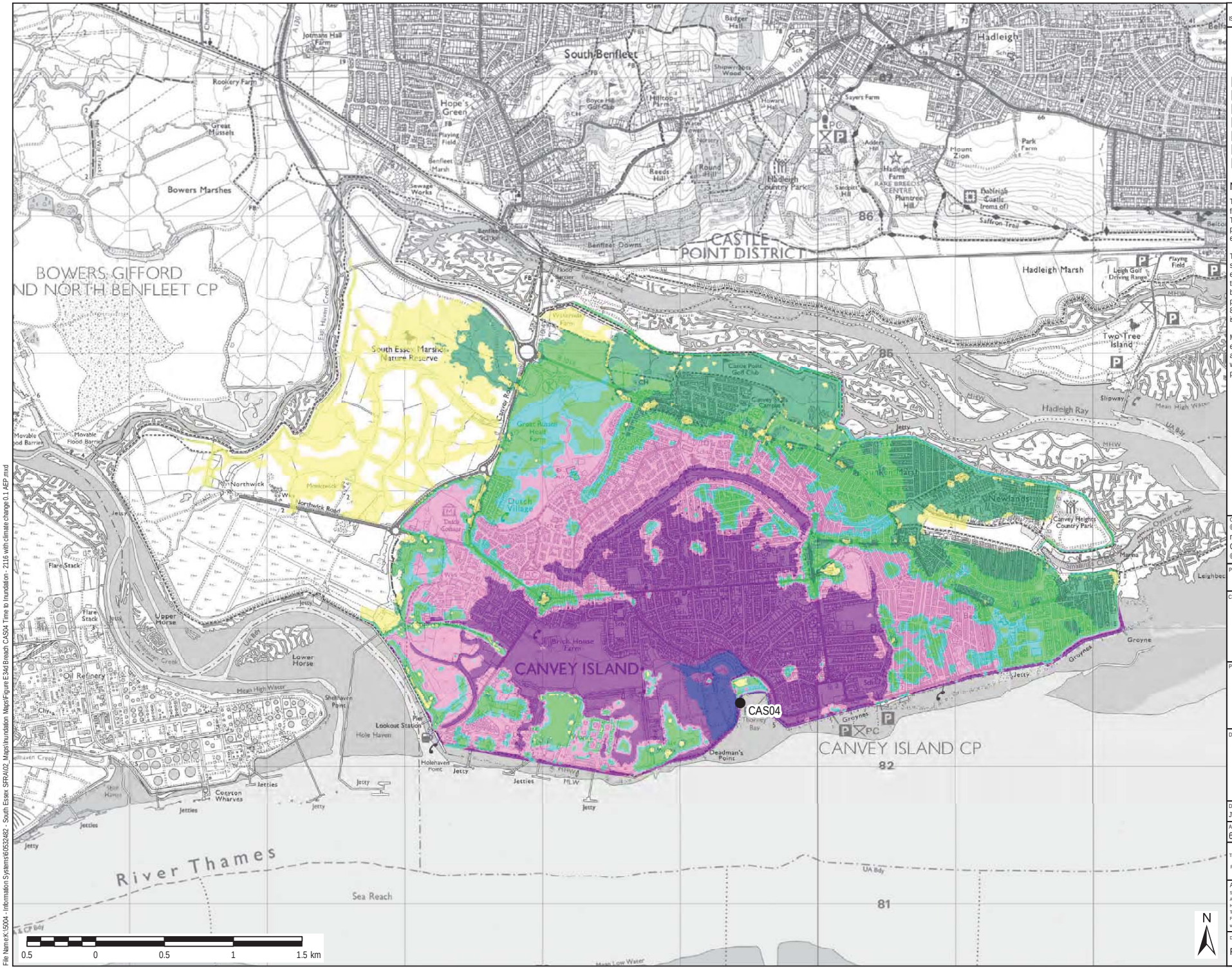
FIGURE E34c	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Inundation Maps\Figure E34c Breach CAS03 Time to Inundation - 2116 with climate change 0.1 AEP.mxd



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LEGEND

- Breach Location

Time to Inundation (Hours)

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

NOTES

Time to inundation mapping illustrates the length of time from a breach before floodwaters reach a particular site. This information is particularly useful for emergency planning as it provides details of the time available for evacuation to a place of safety.

Time zero is set to the time when tidal water enters the specific breach. This means that the <1 hour band encompasses all areas that are inundated (wet) within the first hour of water travelling through the specific breach and into the flood cell. Further bands have been produced to show wet cells at: 1-4 hours, 4-8 hours, 8-12 hours, 12 to 16 and 16-20 hours. Time to inundation is specific to each breach location.

Mapping has been provided for the 1 in 1000 year + CC event as it represents the most conservative scenario and should be used for emergency planning purposes when considering safe access/egress routes from any potential development site.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

BREACH CAS04
TIME TO INUNDATION
2116 WITH CLIMATE CHANGE
0.1% AEP

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JW	BB	CP	09/04/2018

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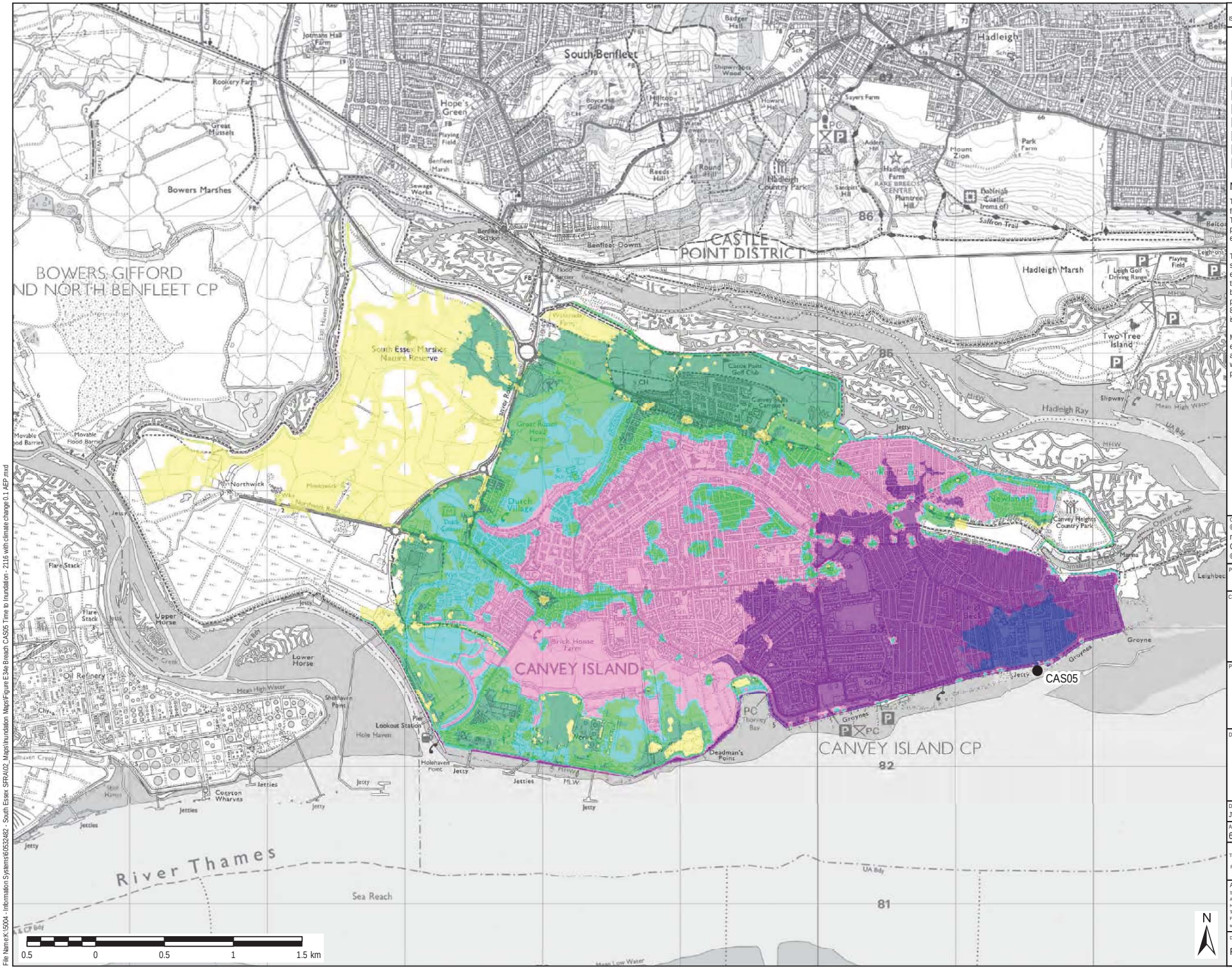
FIGURE E34d	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Inundation Maps\Figure E34d Breach CAS04 Time to Inundation - 2116 with climate change 0.1 AEP .mxd



File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Inundation Maps\Figure E34e Breach CAS05 Time to Inundation - 2116 with climate change 0.1 AEP .mxd

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LEGEND

- Breach Location

Time to Inundation (Hours)

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

NOTES

Time to inundation mapping illustrates the length of time from a breach before floodwaters reach a particular site. This information is particularly useful for emergency planning as it provides details of the time available for evacuation to a place of safety.

Time zero is set to the time when tidal water enters the specific breach. This means that the <1 hour band encompasses all areas that are inundated (wet) within the first hour of water travelling through the specific breach and into the flood cell. Further bands have been produced to show wet cells at: 1-4 hours, 4-8 hours, 8-12 hours, 12 to 16 and 16-20 hours. Time to inundation is specific to each breach location.

Mapping has been provided for the 1 in 1000 year + CC event as it represents the most conservative scenario and should be used for emergency planning purposes when considering safe access/egress routes from any potential development site.

Purpose of Issue

FINAL

Client

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Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

BREACH CAS05
TIME TO INUNDATION
2116 WITH CLIMATE CHANGE
0.1% AEP

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JW	BB	CP	09/04/2018

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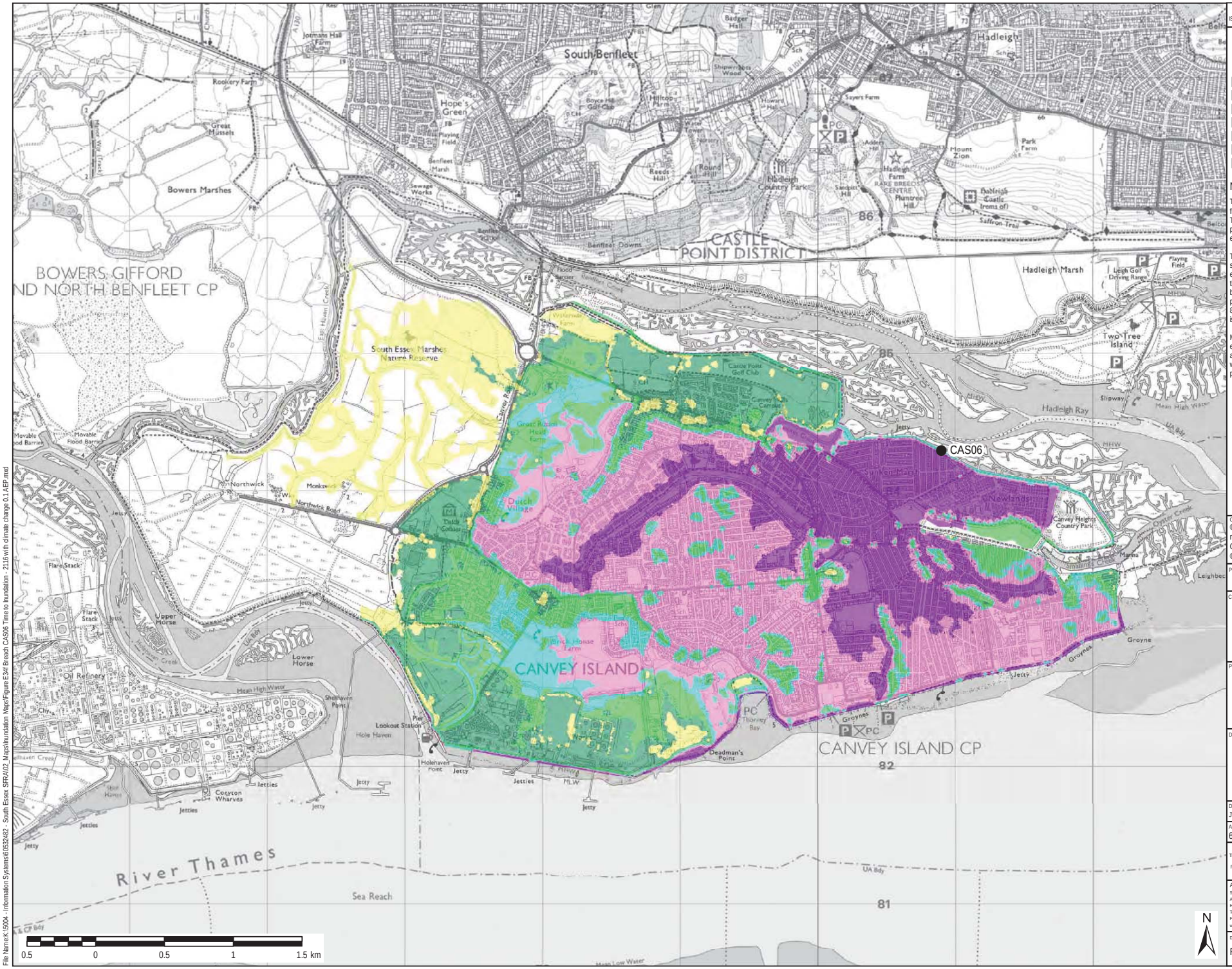
Drawing Number	Rev
FIGURE E34e	1



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LEGEND

- Breach Location

Time to Inundation (Hours)

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

NOTES

Time to inundation mapping illustrates the length of time from a breach before floodwaters reach a particular site. This information is particularly useful for emergency planning as it provides details of the time available for evacuation to a place of safety.

Time zero is set to the time when tidal water enters the specific breach. This means that the <1 hour band encompasses all areas that are inundated (wet) within the first hour of water travelling through the specific breach and into the flood cell. Further bands have been produced to show wet cells at: 1-4 hours, 4-8 hours, 8-12 hours, 12 to 16 and 16-20 hours. Time to inundation is specific to each breach location.

Mapping has been provided for the 1 in 1000 year + CC event as it represents the most conservative scenario and should be used for emergency planning purposes when considering safe access/egress routes from any potential development site.

Purpose of Issue: FINAL

Client: Basildon Council, castlepoint, Rochford District Council, southend on sea

Project Title: SOUTH ESSEX LEVEL 1 SFRA

Drawing Title: BREACH CAS06 TIME TO INUNDATION 2116 WITH CLIMATE CHANGE 0.1% AEP

Drawn	Checked	Approved	Date
JW	BB	CP	09/04/2018

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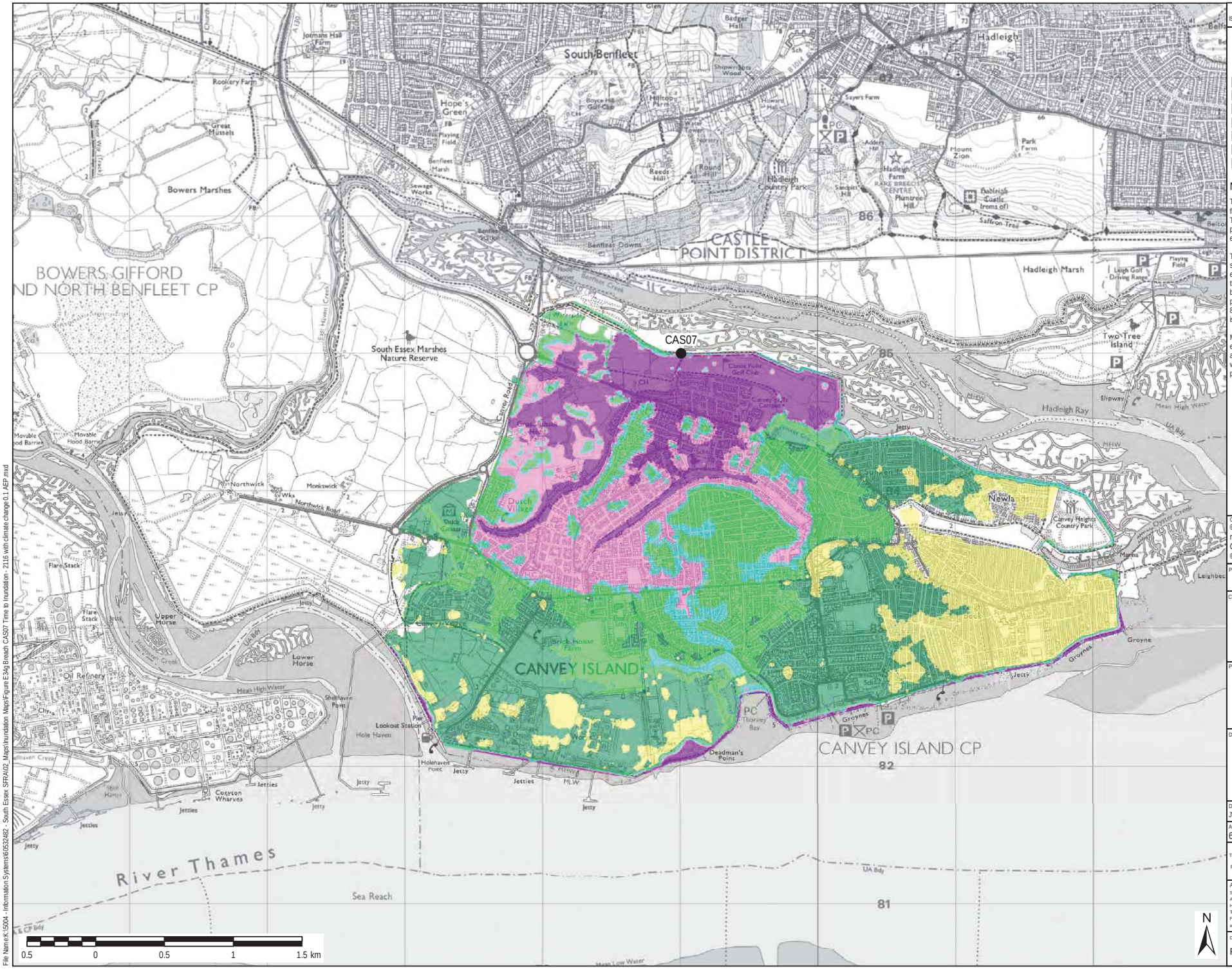
FIGURE E34f	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Inundation Maps\Figure E34f Breach CAS06 Time to Inundation - 2116 with climate change 0.1 AEP.mxd



File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Inundation Maps\Figure E34g Breach CAS07 Time to Inundation - 2116 with climate change 0.1 AEP .mxd

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LEGEND

- Breach Location

Time to Inundation (Hours)

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

NOTES

Time to inundation mapping illustrates the length of time from a breach before floodwaters reach a particular site. This information is particularly useful for emergency planning as it provides details of the time available for evacuation to a place of safety.

Time zero is set to the time when tidal water enters the specific breach. This means that the <1 hour band encompasses all areas that are inundated (wet) within the first hour of water travelling through the specific breach and into the flood cell. Further bands have been produced to show wet cells at: 1-4 hours, 4-8 hours, 8-12 hours, 12 to 16 and 16-20 hours. Time to inundation is specific to each breach location.

Mapping has been provided for the 1 in 1000 year + CC event as it represents the most conservative scenario and should be used for emergency planning purposes when considering safe access/egress routes from any potential development site.

Purpose of Issue

FINAL

Client

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Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

BREACH CAS07
TIME TO INUNDATION
2116 WITH CLIMATE CHANGE
0.1% AEP

Drawn	Checked	Approved	Date
JW	BB	CP	09/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:25,000

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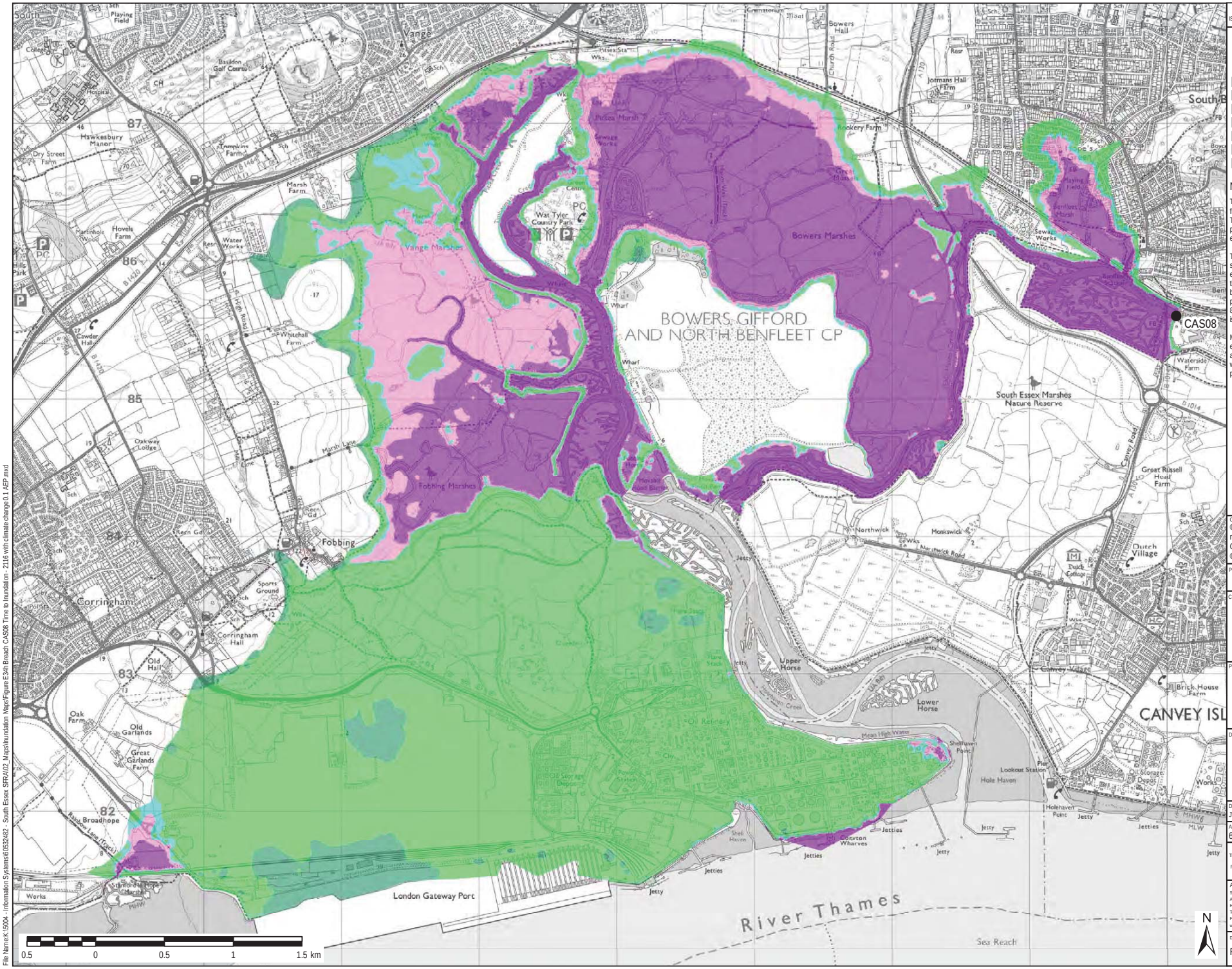
Drawing Number	Rev
FIGURE E34g	1



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LEGEND

- Breach Location

Time to Inundation (Hours)

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

NOTES

Time to inundation mapping illustrates the length of time from a breach before floodwaters reach a particular site. This information is particularly useful for emergency planning as it provides details of the time available for evacuation to a place of safety.

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Mapping has been provided for the 1 in 1000 year + CC event as it represents the most conservative scenario and should be used for emergency planning purposes when considering safe access/egress routes from any potential development site.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

BREACH CAS08
TIME TO INUNDATION
2116 WITH CLIMATE CHANGE
0.1% AEP

Drawn	Checked	Approved	Date
JW	BB	CP	09/04/2018

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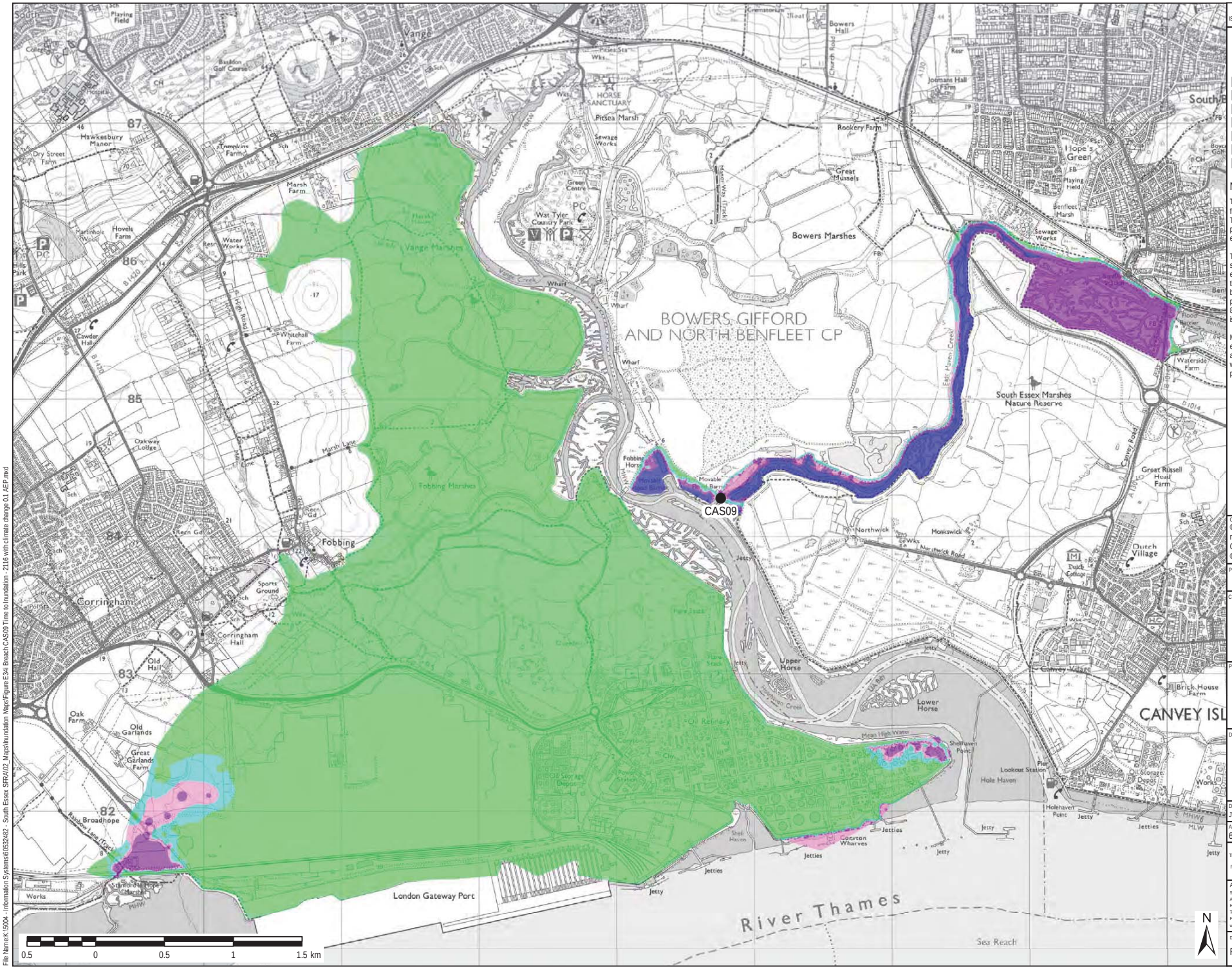
Drawing Number	Rev
FIGURE E34h	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Inundation Maps\Figure E34h Breach CAS08 Time to Inundation - 2116 with climate change 0.1 AEP .mxd



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LEGEND

- Breach Location

Time to Inundation (Hours)

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

NOTES

Time to inundation mapping illustrates the length of time from a breach before floodwaters reach a particular site. This information is particularly useful for emergency planning as it provides details of the time available for evacuation to a place of safety.

Time zero is set to the time when tidal water enters the specific breach. This means that the <1 hour band encompasses all areas that are inundated (wet) within the first hour of water travelling through the specific breach and into the flood cell. Further bands have been produced to show wet cells at: 1-4 hours, 4-8 hours, 8-12 hours, 12 to 16 and 16-20 hours. Time to inundation is specific to each breach location.

Mapping has been provided for the 1 in 1000 year + CC event as it represents the most conservative scenario and should be used for emergency planning purposes when considering safe access/egress routes from any potential development site.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

BREACH CAS09
TIME TO INUNDATION
2116 WITH CLIMATE CHANGE
0.1% AEP

Drawn	Checked	Approved	Date
JW	BB	CP	09/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:25,000

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Alencon Link, Basingstoke
Hampshire, RG21 7PP
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Fax (01256) 310301
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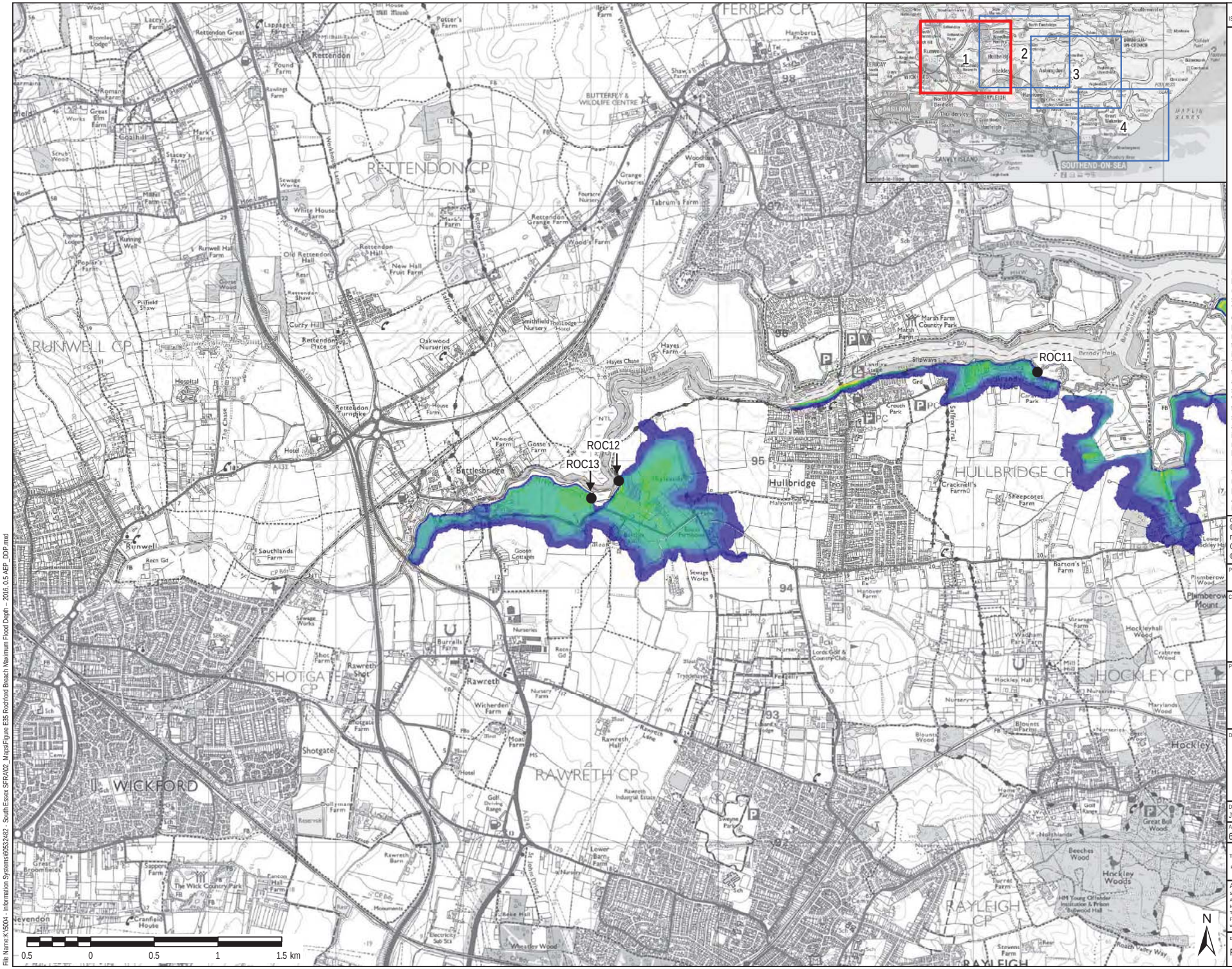
Drawing Number	Rev
FIGURE E34i	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Inundation Maps\Figure E34i Breach CAS09 Time to Inundation - 2116 with climate change 0.1 AEP.mxd



LEGEND

- Breach Location

Maximum Flood Depth (m)

- > 0 to 0.5m
- > 0.5 to 1m
- > 1 to 1.5m
- > 1.5 to 2m
- > 2 to 2.5m
- > 2.5 to 3m
- > 3 to 3.5m
- > 3.5 to 4m
- > 4 to 4.5m
- > 4.5 to 5m
- > 5 to 5.5m
- > 5.5 to 6m
- > 6m

NOTES

Hydraulic modelling has been undertaken using 2D hydraulic modelling software MIKE21-HDFM (ver. 2009), to assess the effect of breaches at specified points and/or overtopping of defences.
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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.
A thorough description of methodology and assumptions is included within the SFRA Main Report.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

ROCHFORD BREACH
MAXIMUM FLOOD DEPTH
2016, 0.5% AEP

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:27,000

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Alencon Link, Basingstoke
Hampshire, RG21 7PP
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Fax (01256) 310201
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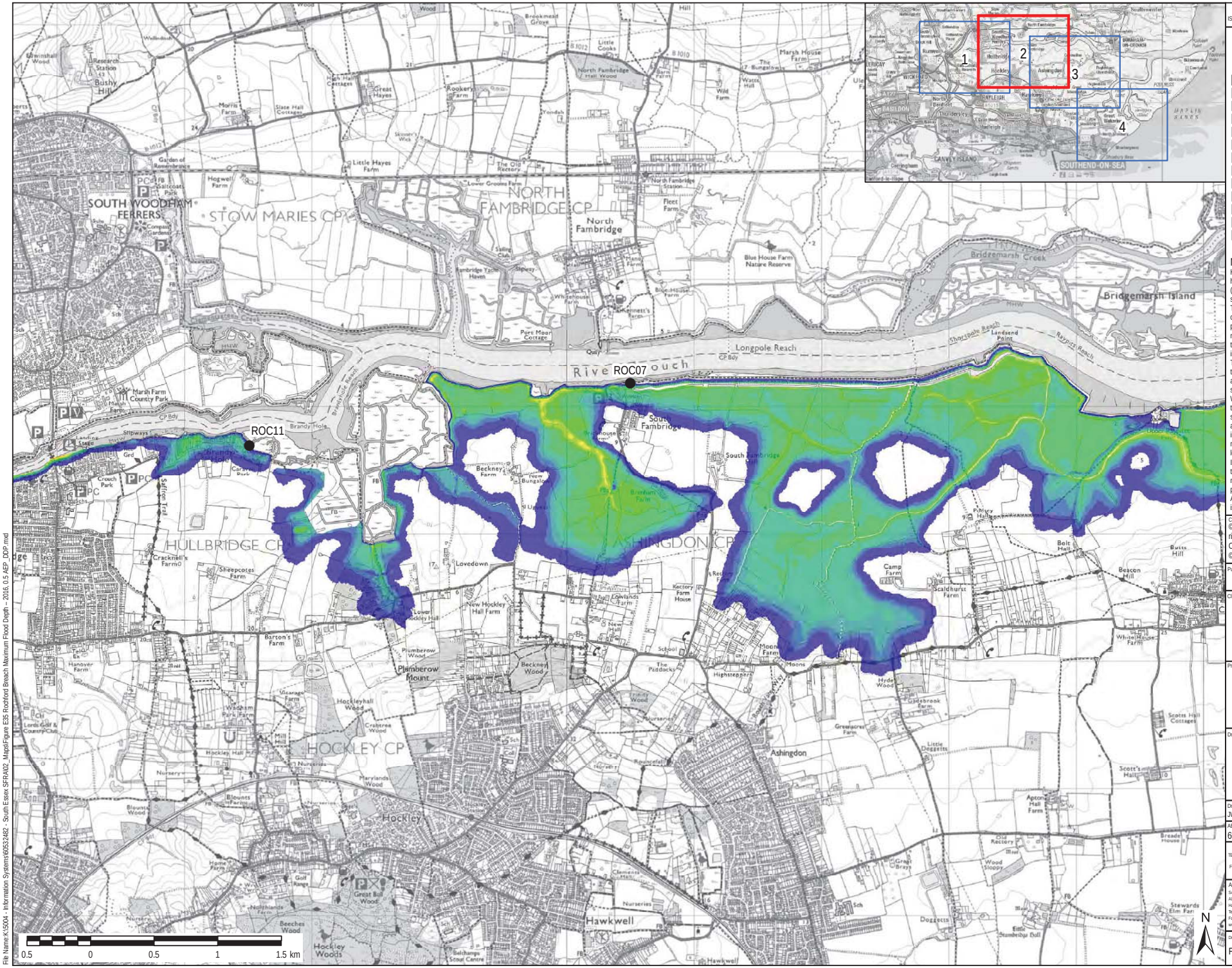
Drawing Number	Rev
FIGURE E35a	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E35 Rochford Breach Maximum Flood Depth – 2016, 0.5 AEP_DDP.mxd



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LEGEND

- Breach Location

Maximum Flood Depth (m)

- > 0 to 0.5m
- > 0.5 to 1m
- > 1 to 1.5m
- > 1.5 to 2m
- > 2 to 2.5m
- > 2.5 to 3m
- > 3 to 3.5m
- > 3.5 to 4m
- > 4 to 4.5m
- > 4.5 to 5m
- > 5 to 5.5m
- > 5.5 to 6m
- > 6m

NOTES

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Purpose of Issue: FINAL

Client: Basildon Council, castlepoint, Rochford District Council, southend on sea

Project Title: SOUTH ESSEX LEVEL 1 SFRA

Drawing Title: ROCHFORD BREACH MAXIMUM FLOOD DEPTH 2016, 0.5% AEP

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.: 60532482
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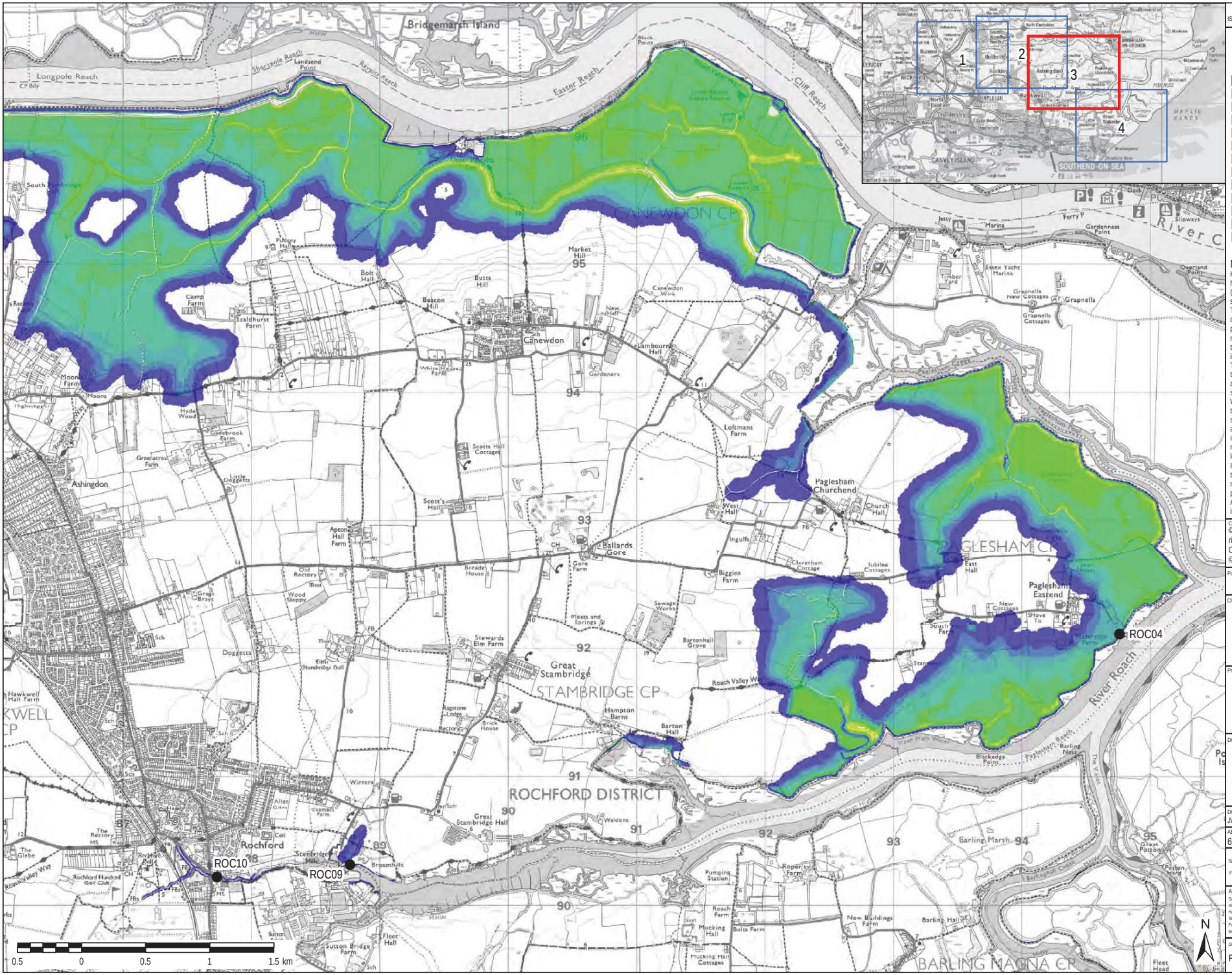
Drawing Number: FIGURE E35b
Rev: 1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E35 Rochford Breach Maximum Flood Depth – 2016, 0.5 AEP_DDP.mxd



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LEGEND

- Breach Location

Maximum Flood Depth (m)

- > 0 to 0.5m
- > 0.5 to 1m
- > 1 to 1.5m
- > 1.5 to 2m
- > 2 to 2.5m
- > 2.5 to 3m
- > 3 to 3.5m
- > 3.5 to 4m
- > 4 to 4.5m
- > 4.5 to 5m
- > 5 to 5.5m
- > 5.5 to 6m
- > 6m

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Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

ROCHFORD BREACH
MAXIMUM FLOOD DEPTH
2016, 0.5% AEP

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
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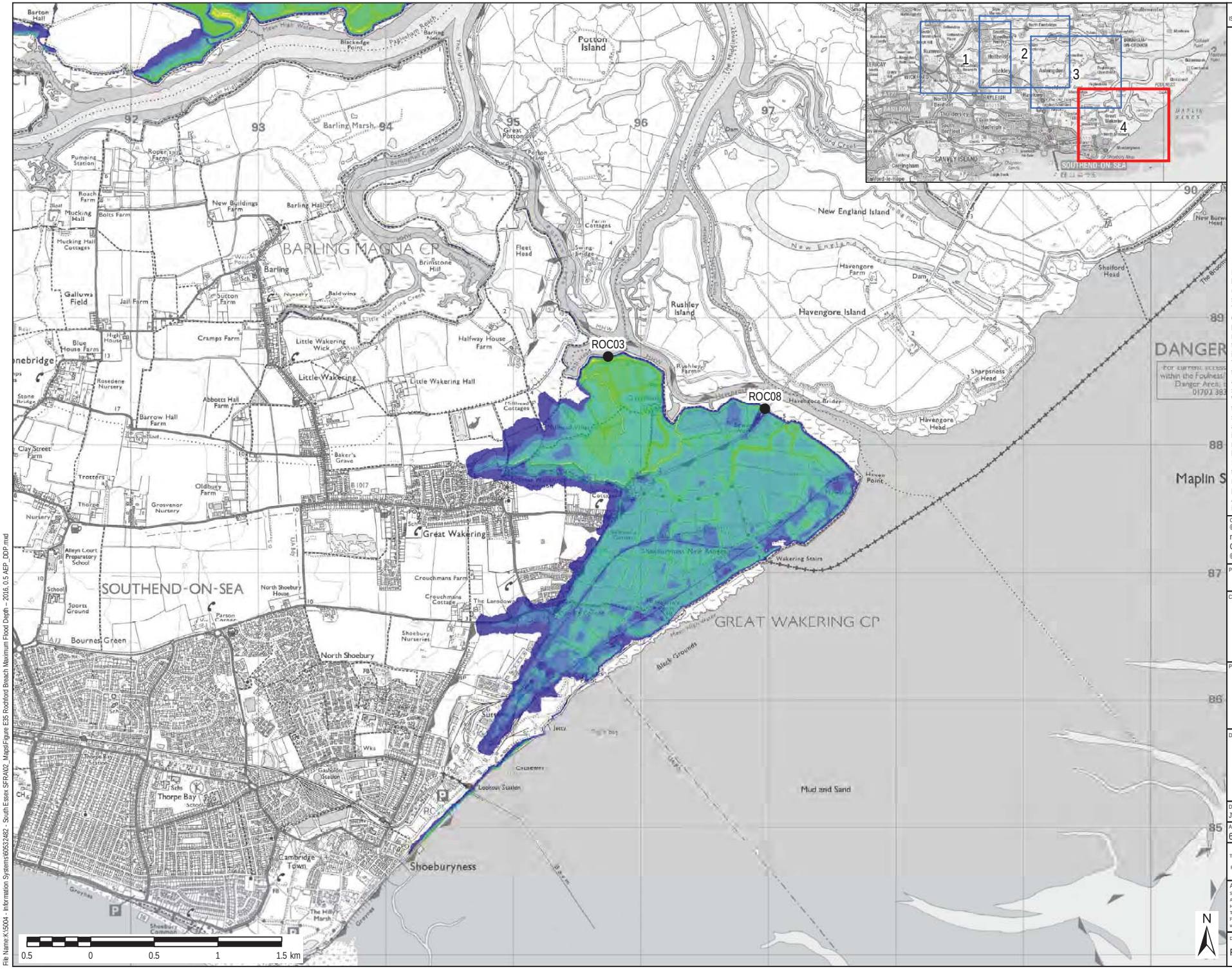
Drawing Number	Rev
FIGURE E35c	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E35 Rochford Breach Maximum Flood Depth – 2016, 0.5 AEP_DDP.mxd



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LEGEND

- Breach Location

Maximum Flood Depth (m)

- > 0 to 0.5m
- > 0.5 to 1m
- > 1 to 1.5m
- > 1.5 to 2m
- > 2 to 2.5m
- > 2.5 to 3m
- > 3 to 3.5m
- > 3.5 to 4m
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- > 5 to 5.5m
- > 5.5 to 6m
- > 6m

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Purpose of Issue: FINAL

Client: Basildon Council, castlepoint, Rochford District Council, southend on sea

Project Title: SOUTH ESSEX LEVEL 1 SFRA

Drawing Title: ROCHFORD BREACH MAXIMUM FLOOD DEPTH 2016, 0.5% AEP

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

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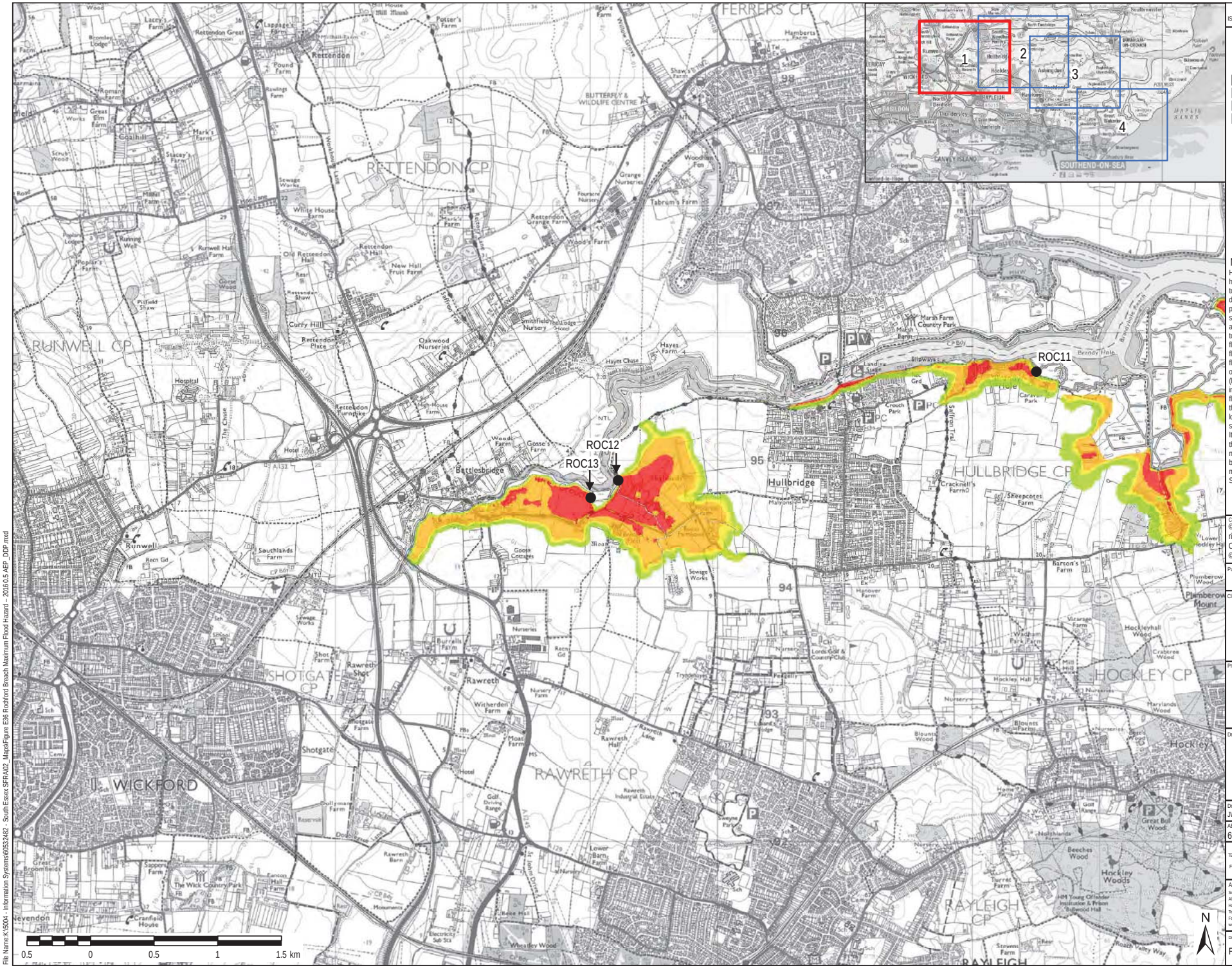
Drawing Number	Rev
FIGURE E35d	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E35 Rochford Breach Maximum Flood Depth – 2016, 0.5 AEP_DDP.mxd



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LEGEND

- Breach Location

Maximum Flood Hazard

- Low Hazard
- Moderate Hazard (Danger to Some)
- Significant Hazard (Danger to Most)
- Extreme Hazard (Danger to All)

NOTES

Hydraulic modelling has been undertaken using 2-D hydraulic modelling software MIKE21-HDFM (ver.2011), to assess the effect of a breach at a specific point in the 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 in advance of the peak tide level to assess the maximum potential volume of inflow into the flood cell. Flood hazard is calculated as a function of flood depth and flow velocity at a particular point in the floodplain, along with a suitable debris factor and is based on the methodology from Flood Risk to People FD2320 (Defra &EA, 2005). These hazard classifications do not indicate a change in the flood probability. When using flood hazard maps it should be noted that they represent the hazard arising from one or more specified breach locations, and that the rating will almost certainly vary spatially if the breach locations are in different local areas. 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. A thorough description of methodology and assumptions is included within the SFRA Main Report.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

ROCHFORD BREACH
MAXIMUM FLOOD HAZARD
2016, 0.5% AEP

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

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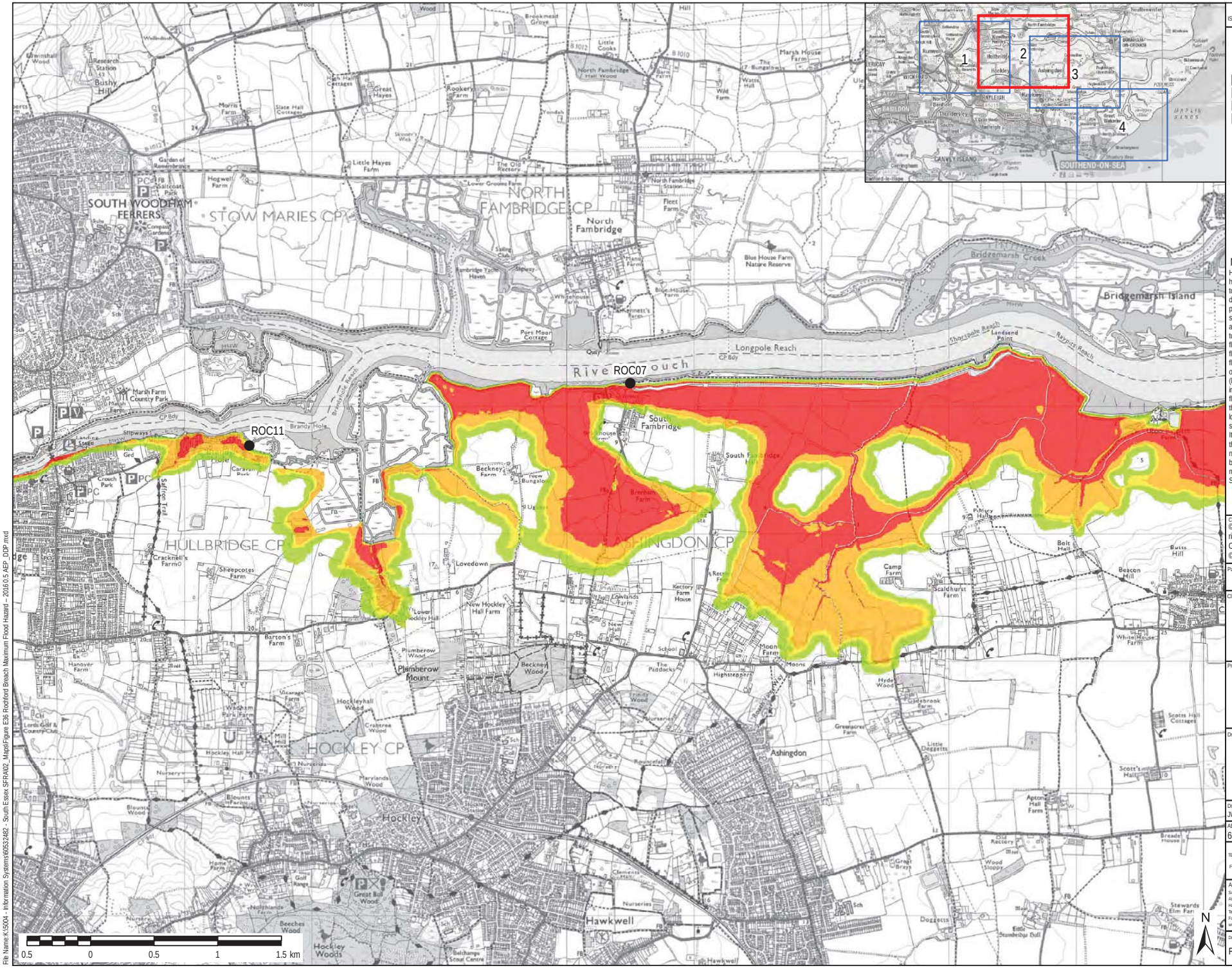
FIGURE E36a	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E36 Rochford Breach Maximum Flood Hazard – 2016 0.5 AEP_DDP.mxd



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LEGEND

- Breach Location

Maximum Flood Hazard

- Low Hazard
- Moderate Hazard (Danger to Some)
- Significant Hazard (Danger to Most)
- Extreme Hazard (Danger to All)

NOTES

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Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

ROCHFORD BREACH
MAXIMUM FLOOD HAZARD
2016, 0.5% AEP

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
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Hampshire, RG21 7PP
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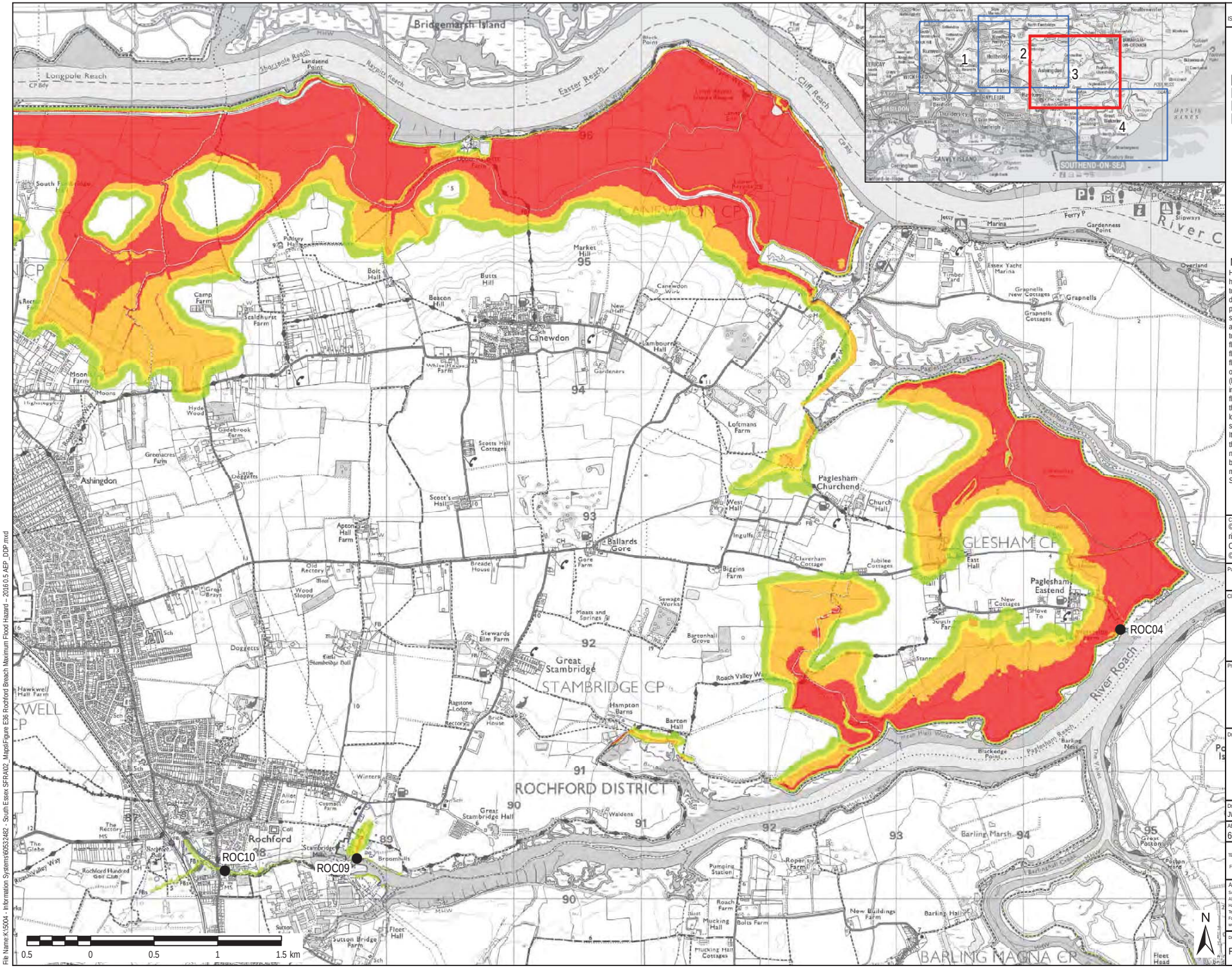
Drawing Number	Rev
FIGURE E36b	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E36 Rochford Breach Maximum Flood Hazard – 2016 0.5 AEP_DDP.mxd



THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

LEGEND

- Breach Location

Maximum Flood Hazard

- Low Hazard
- Moderate Hazard (Danger to Some)
- Significant Hazard (Danger to Most)
- Extreme Hazard (Danger to All)

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Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

ROCHFORD BREACH
MAXIMUM FLOOD HAZARD
2016, 0.5% AEP

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:27,000

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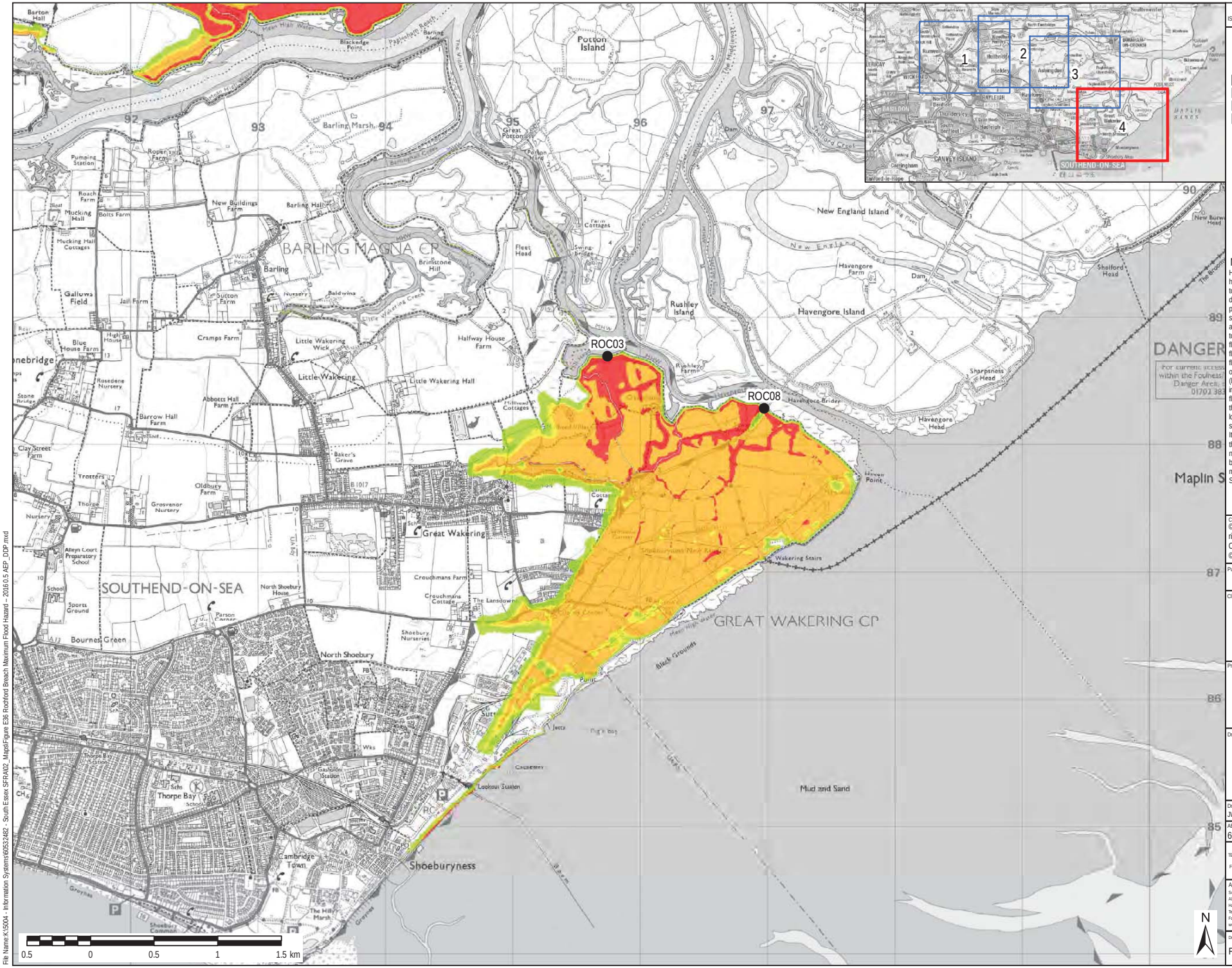
Drawing Number	Rev
FIGURE E36c	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E36 Rochford Breach Maximum Flood Hazard – 2016.0.5 AEP_DDP.mxd



LEGEND

- Breach Location

Maximum Flood Hazard

- Low Hazard
- Moderate Hazard (Danger to Some)
- Significant Hazard (Danger to Most)
- Extreme Hazard (Danger to All)

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Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

ROCHFORD BREACH
MAXIMUM FLOOD HAZARD
2016, 0.5% AEP

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
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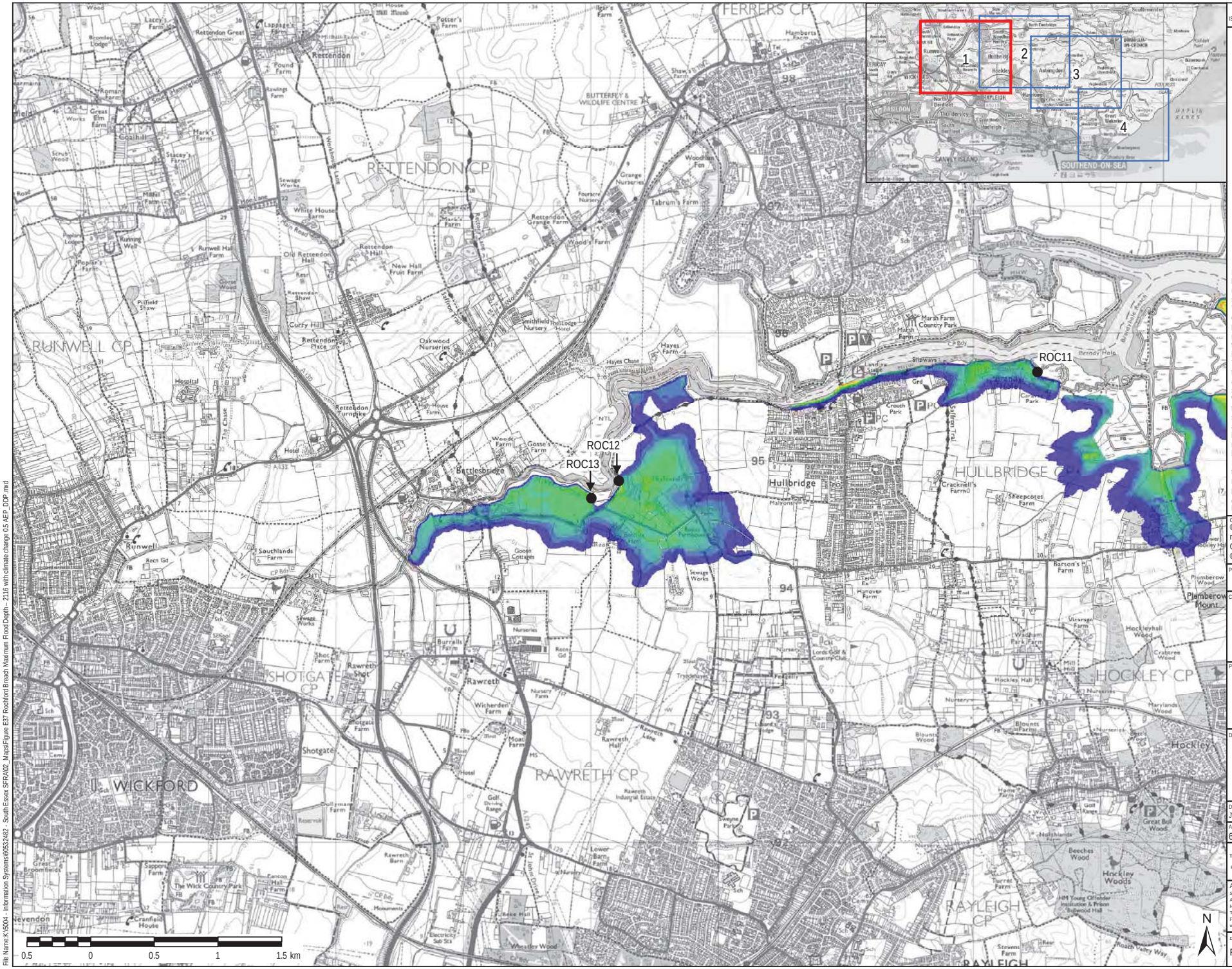
Drawing Number	Rev
FIGURE E36d	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E36 Rochford Breach Maximum Flood Hazard – 2016.0.5 AEP_DDP.mxd



LEGEND

- Breach Location

Maximum Flood Depth (m)

- > 0 to 0.5m
- > 0.5 to 1m
- > 1 to 1.5m
- > 1.5 to 2m
- > 2 to 2.5m
- > 2.5 to 3m
- > 3 to 3.5m
- > 3.5 to 4m
- > 4 to 4.5m
- > 4.5 to 5m
- > 5 to 5.5m
- > 5.5 to 6m
- > 6m

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Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

ROCHFORD BREACH
MAXIMUM FLOOD DEPTH
2116 WITH CLIMATE CHANGE
0.5% AEP

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:27,000

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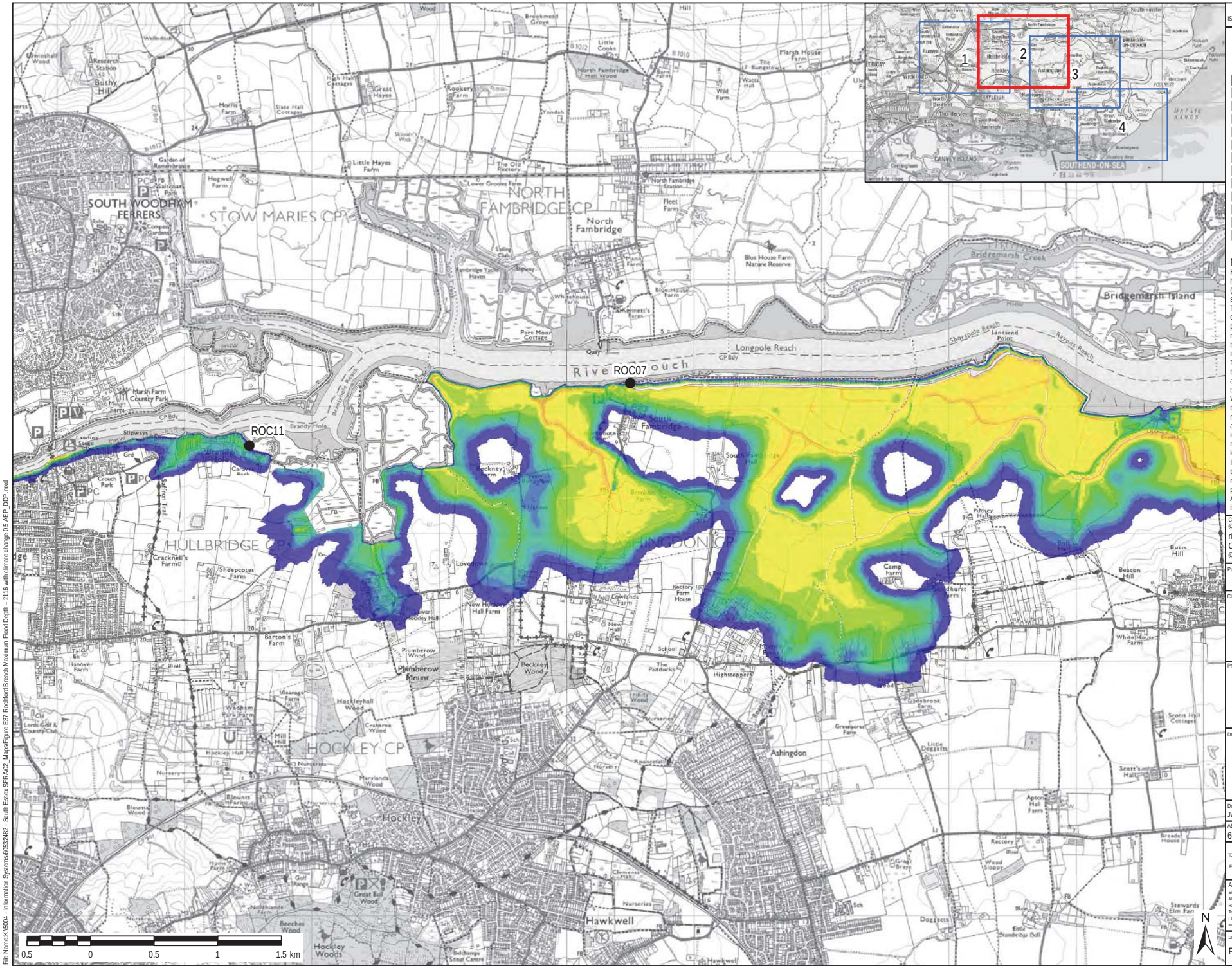
Drawing Number	Rev
FIGURE E37a	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E37 Rochford Breach Maximum Flood Depth – 2116 with climate change 0.5 AEP_DDP .mxd



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LEGEND

- Breach Location

Maximum Flood Depth (m)

- > 0 to 0.5m
- > 0.5 to 1m
- > 1 to 1.5m
- > 1.5 to 2m
- > 2 to 2.5m
- > 2.5 to 3m
- > 3 to 3.5m
- > 3.5 to 4m
- > 4 to 4.5m
- > 4.5 to 5m
- > 5 to 5.5m
- > 5.5 to 6m
- > 6m

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Purpose of Issue

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Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

ROCHFORD BREACH
MAXIMUM FLOOD DEPTH
2116 WITH CLIMATE CHANGE
0.5% AEP

Drawn	Checked	Approved	Date
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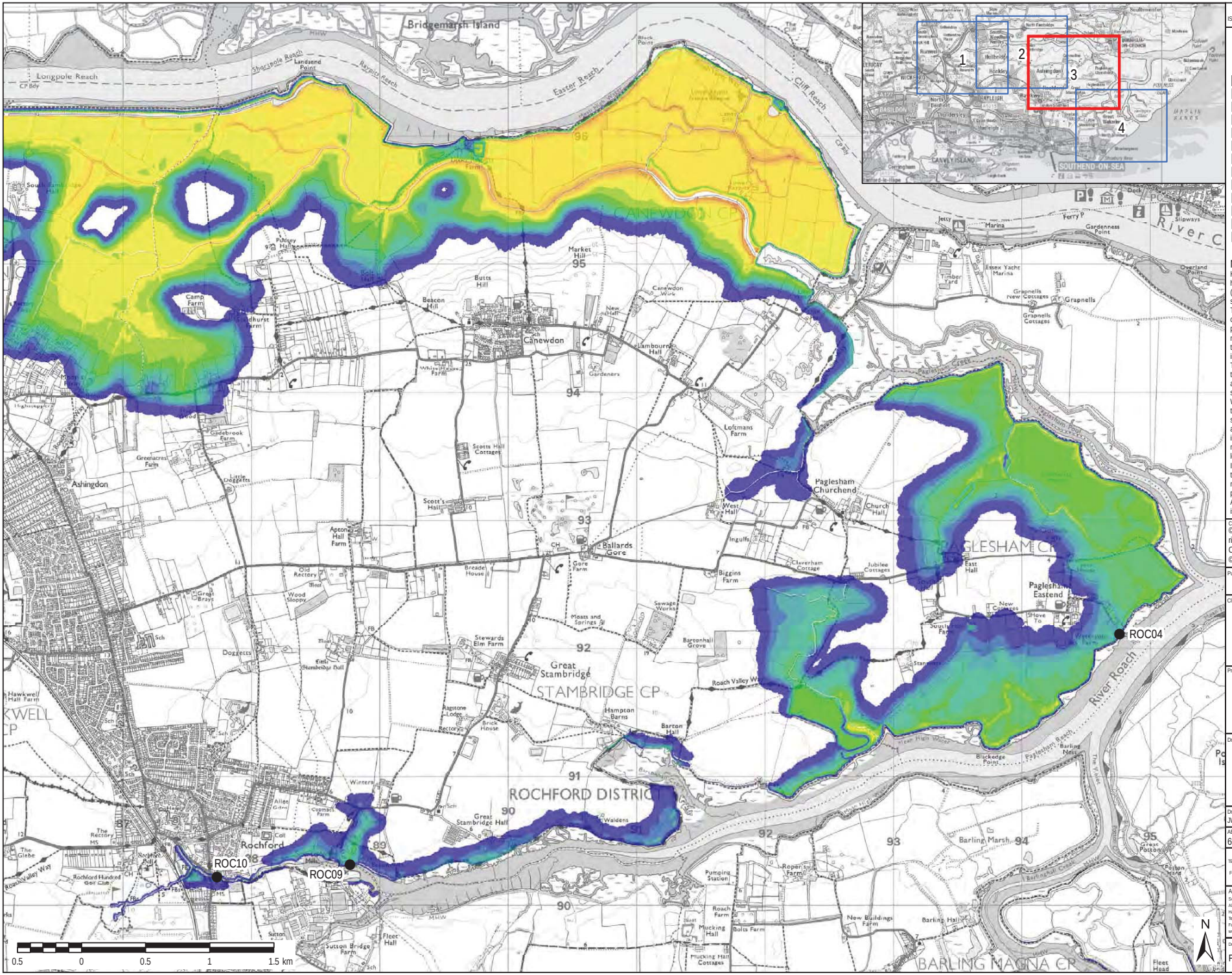
Drawing Number	Rev
FIGURE E37b	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E37 Rochford Breach Maximum Flood Depth – 2116 with climate change 0.5 AEP_DDP .mxd



LEGEND

- Breach Location

Maximum Flood Depth (m)

- > 0 to 0.5m
- > 0.5 to 1m
- > 1 to 1.5m
- > 1.5 to 2m
- > 2 to 2.5m
- > 2.5 to 3m
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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.
A thorough description of methodology and assumptions is included within the SFRA Main Report.

Purpose of Issue

FINAL

Client

Basildon Council · castlepoint · Rochford District Council · southend on sea

Project Title

SOUTH ESSEX
LEVEL 1 SFRA

Drawing Title

ROCHFORD BREACH
MAXIMUM FLOOD DEPTH
2116 WITH CLIMATE CHANGE
0.5% AEP

Drawn	Checked	Approved	Date
JW	BB	CP	08/04/2018

AECOM Internal Project No.	Scale @ A3
60532482	1:27,000

AECOM
Scott House
Alencon Link, Basingstoke
Hampshire, RG21 7PP
Telephone (01256) 310200
Fax (01256) 310201
www.aecom.com

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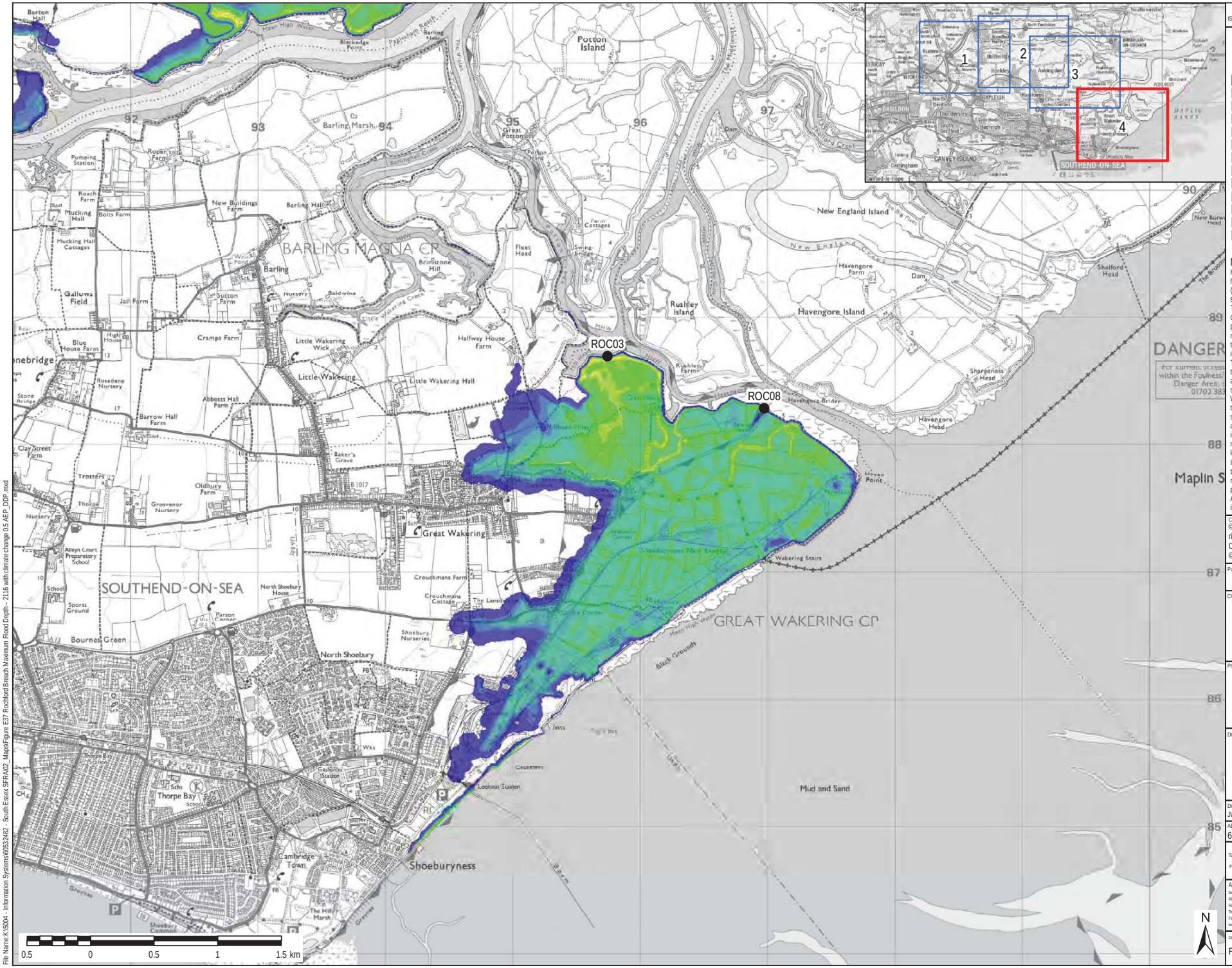
Drawing Number	Rev
FIGURE E37c	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E37 Rochford Breach Maximum Flood Depth – 2116 with climate change 0.5 AEP_DDP .mxd



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LEGEND

- Breach Location

Maximum Flood Depth (m)

- > 0 to 0.5m
- > 0.5 to 1m
- > 1 to 1.5m
- > 1.5 to 2m
- > 2 to 2.5m
- > 2.5 to 3m
- > 3 to 3.5m
- > 3.5 to 4m
- > 4 to 4.5m
- > 4.5 to 5m
- > 5 to 5.5m
- > 5.5 to 6m
- > 6m

NOTES

Hydraulic modelling has been undertaken using 2D 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.
The maximum flood depth is calculated by subtracting the LIDAR topographic data from the peak water level achieved at each element in the model throughout the simulation.
When using flood depth maps, it should be noted that they represent the flood depth arising from one or more specified breach locations, and that the depth will almost certainly vary spatially if the breach locations are in different local areas. Changes in inundation extent or maximum depth 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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Alencon Link, Basingstoke
Hampshire, RG21 7PP
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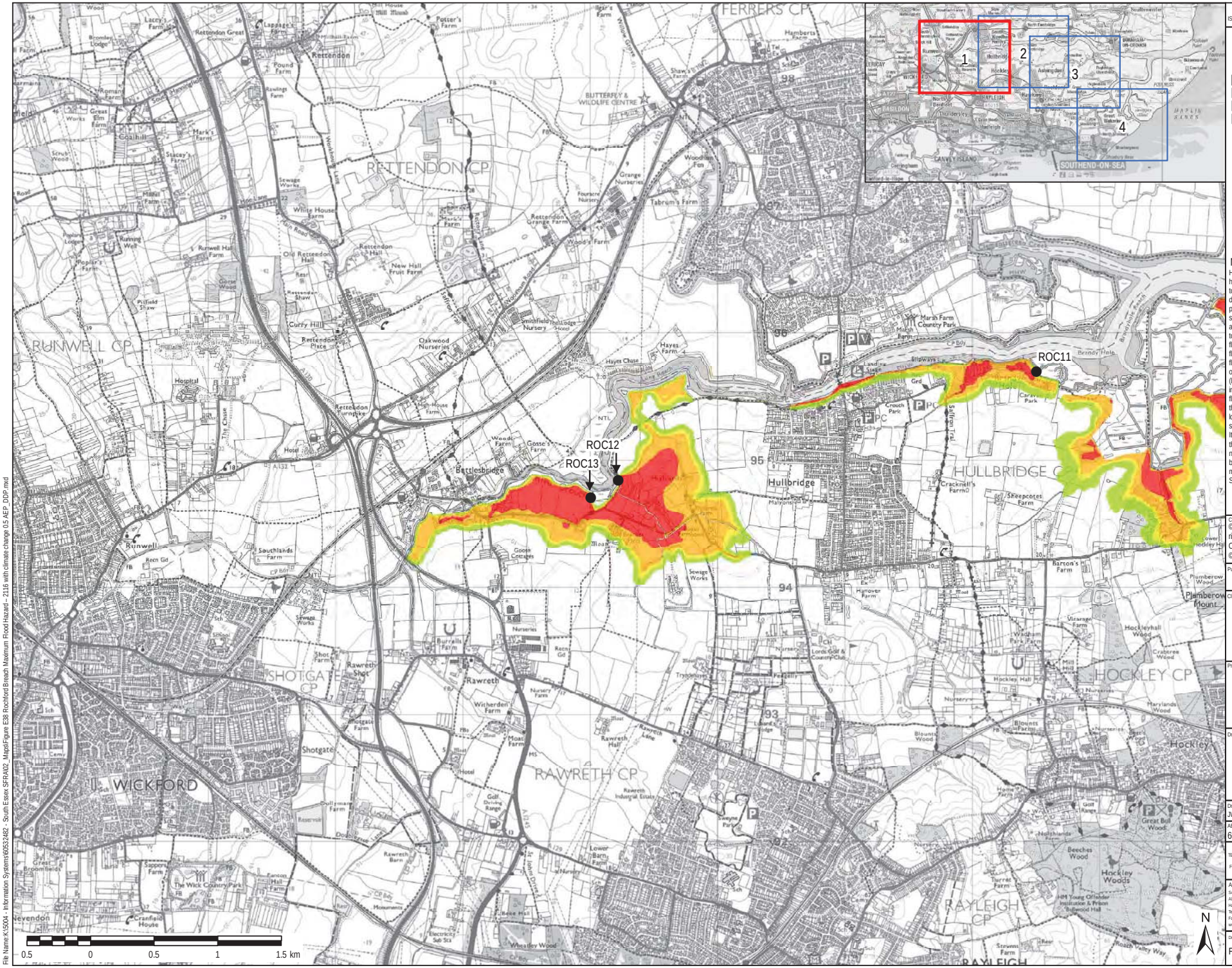
Drawing Number	Rev
FIGURE E37d	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E37 Rochford Breach Maximum Flood Depth – 2116 with climate change 0.5 AEP_DDP .mxd



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LEGEND

- Breach Location

Maximum Flood Hazard

- Low Hazard
- Moderate Hazard (Danger to Some)
- Significant Hazard (Danger to Most)
- Extreme Hazard (Danger to All)

NOTES

Hydraulic modelling has been undertaken using 2-D hydraulic modelling software MIKE21-HDFM (ver.2011), to assess the effect of a breach at a specific point in the 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 in advance of the peak tide level to assess the maximum potential volume of inflow into the flood cell. Flood hazard is calculated as a function of flood depth and flow velocity at a particular point in the floodplain, along with a suitable debris factor and is based on the methodology from Flood Risk to People FD2320 (Defra &EA, 2005). These hazard classifications do not indicate a change in the flood probability. When using flood hazard maps it should be noted that they represent the hazard arising from one or more specified breach locations, and that the rating will almost certainly vary spatially if the breach locations are in different local areas. 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. A thorough description of methodology and assumptions is included within the SFRA Main Report.

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LEVEL 1 SFRA

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MAXIMUM FLOOD HAZARD
2116 WITH CLIMATE CHANGE
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Scott House
Alencon Link, Basingstoke
Hampshire, RG21 7PP
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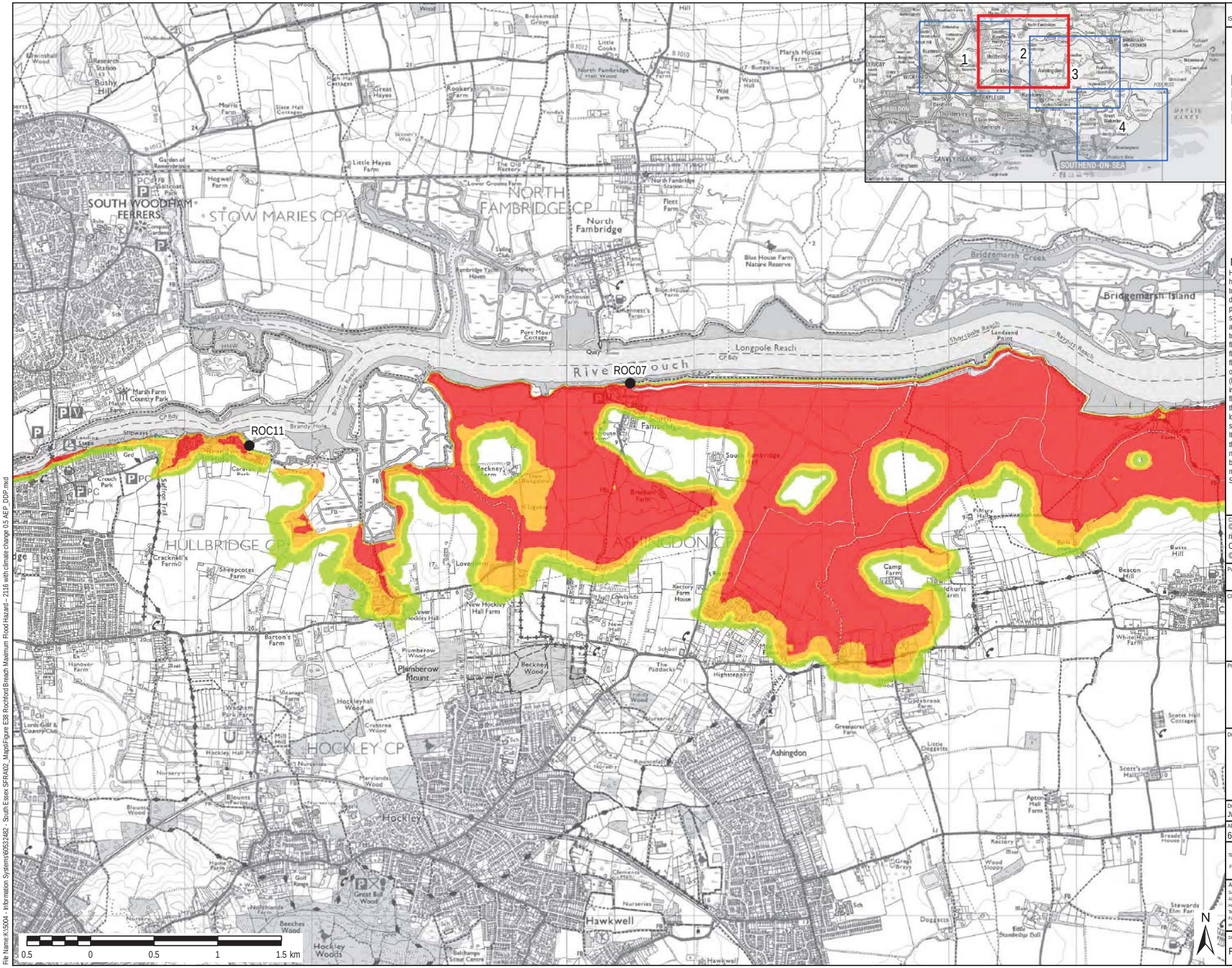
Drawing Number	Rev
FIGURE E38a	1

File Name:K:\5004 - Information Systems\60532482 - South Essex SFRA\02_Maps\Figure E38 Rochford Breach Maximum Flood Hazard – 2116 with climate change 0.5 AEP_DDP.mxd



LEGEND

- Breach Location

Maximum Flood Hazard

- Low Hazard
- Moderate Hazard (Danger to Some)
- Significant Hazard (Danger to Most)
- Extreme Hazard (Danger to All)

NOTES

Hydraulic modelling has been undertaken using 2-D hydraulic modelling software MIKE21-HDFM (ver.2011), to assess the effect of a breach at a specific point in the 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 in advance of the peak tide level to assess the maximum potential volume of inflow into the flood cell. Flood hazard is calculated as a function of flood depth and flow velocity at a particular point in the floodplain, along with a suitable debris factor and is based on the methodology from Flood Risk to People FD2320 (Defra &EA, 2005). These hazard classifications do not indicate a change in the flood probability. When using flood hazard maps it should be noted that they represent the hazard arising from one or more specified breach locations, and that the rating will almost certainly vary spatially if the breach locations are in different local areas. 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. A thorough description of methodology and assumptions is included within the SFRA Main Report.

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Drawing Title

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Scott House
Alencon Link, Basingstoke
Hampshire, RG21 7PP
Telephone (01256) 310200
Fax (01256) 310201
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Drawing Number	Rev
FIGURE E38b	1

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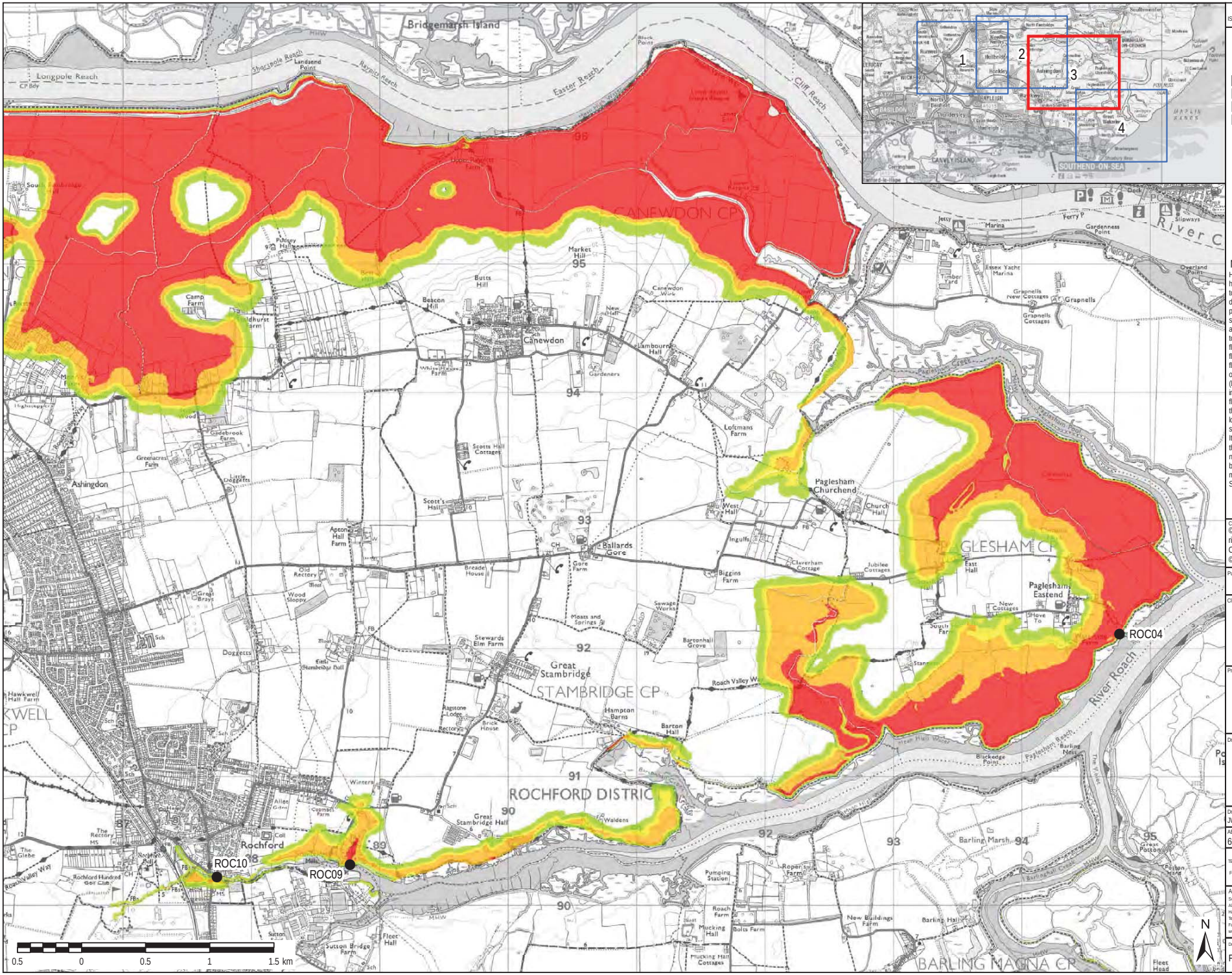

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LEGEND

- Breach Location

Maximum Flood Hazard

- Low Hazard
- Moderate Hazard (Danger to Some)
- Significant Hazard (Danger to Most)
- Extreme Hazard (Danger to All)

NOTES

Hydraulic modelling has been undertaken using 2-D hydraulic modelling software MIKE21-HDFM (ver.2011), to assess the effect of a breach at a specific point in the 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 in advance of the peak tide level to assess the maximum potential volume of inflow into the flood cell. Flood hazard is calculated as a function of flood depth and flow velocity at a particular point in the floodplain, along with a suitable debris factor and is based on the methodology from Flood Risk to People FD2320 (Defra &EA, 2005). These hazard classifications do not indicate a change in the flood probability. When using flood hazard maps it should be noted that they represent the hazard arising from one or more specified breach locations, and that the rating will almost certainly vary spatially if the breach locations are in different local areas. 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. A thorough description of methodology and assumptions is included within the SFRA Main Report.

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Project Title

SOUTH ESSEX
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MAXIMUM FLOOD HAZARD
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Hampshire, RG21 7PP
Telephone (01256) 310200
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Drawing Number	Rev
FIGURE E38c	1

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