north

Legend

Site Boundary

Breach 9

Velocity (m/s)

<= 0.25

0.25 - 0.50

0.50 - 1.00

1.00 - 1.50

1.50 - 2.00

2.00 - 2.50

> 2.50

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| - | FIRST ISSUE | CF | 22.04.2024 |

STATUS: FOR INFORMATION

CLIENT:

RWE

SITE:

Peartree Hill Solar Farm

TITLE:

Monk's Dyke Breach 9
100yr + 17% Maximum Velocity

calibro

Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | T 0117 2441 970
E hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:14,000 | 22.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-125 | REVISION: - |

north

Legend

Site Boundary

Breach 10

Depth (m)

0 - 0.1

0.1 - 0.3

0.3 - 0.5

0.5 - 0.7

0.7 - 0.9

0.9 - 1.1

1.1 - 1.5

1.5 - 1.8

>1.8

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| - | FIRST ISSUE | CF | 23.04.2024 |

STATUS: FOR INFORMATION

CLIENT: RWE

SITE: Peartree Hill Solar Farm

TITLE: Monk's Dyke Breach 10
100yr + 17% Maximum Depth

calibro
Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | T 0117 2441 970
E hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:14,000 | 23.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-127 | REVISION: - |


Legend

Site Boundary

Breach 10

Velocity (m/s)

<= 0.25

0.25 - 0.50

0.50 - 1.00

1.00 - 1.50

1.50 - 2.00

2.00 - 2.50

> 2.50

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| - | FIRST ISSUE | CF | 23.04.2024 |

STATUS: FOR INFORMATION

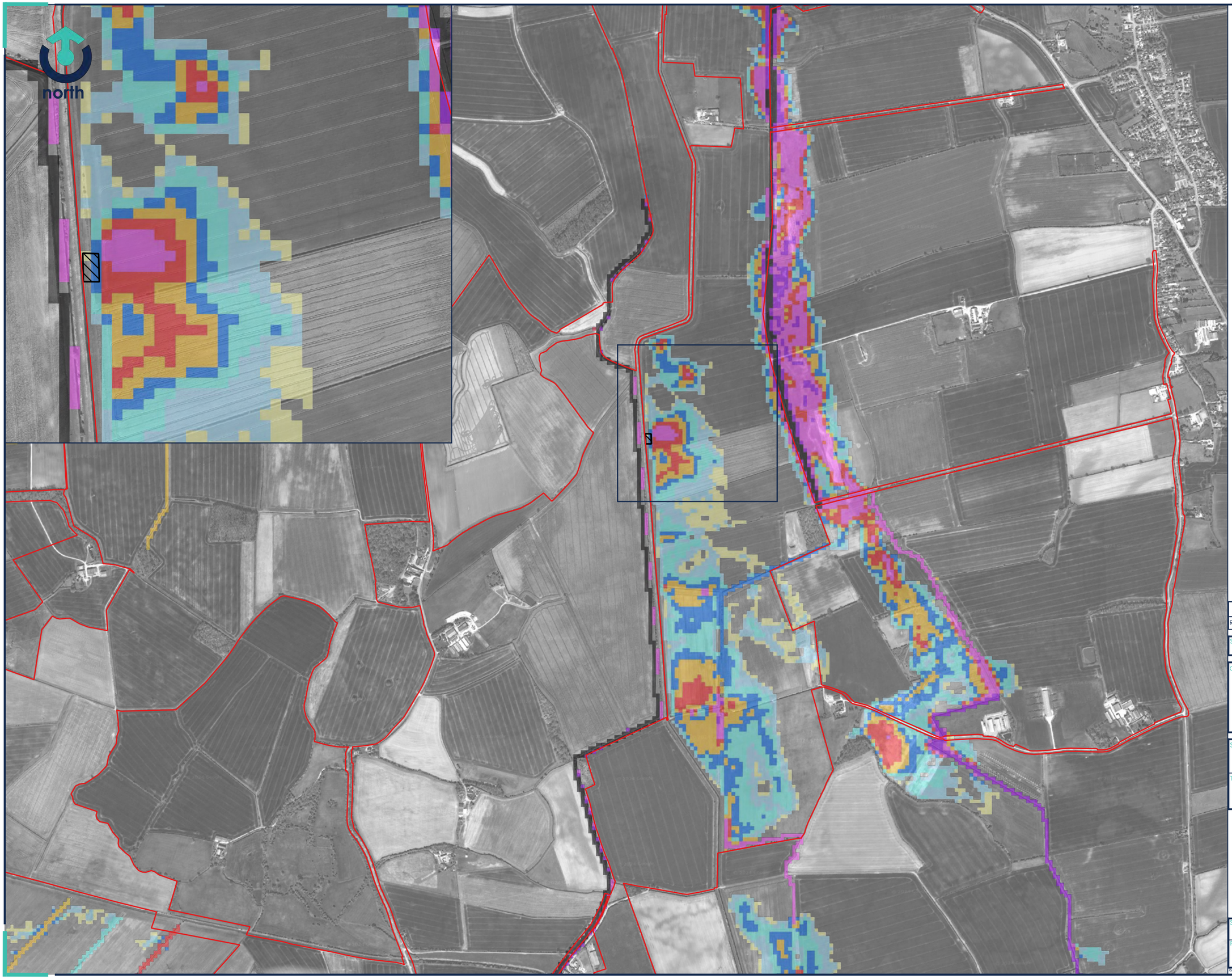
CLIENT: RWE

SITE: Peartree Hill Solar Farm

TITLE: Monk's Dyke Breach 10
100yr + 17% Maximum Velocity

calibro
Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | T: 0117 241 970
E: hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:14,000 | 23.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-128 | REVISION: - |




Legend

Site Boundary

Breach 11

Depth (m)

0 - 0.1

0.1 - 0.3

0.3 - 0.5

0.5 - 0.7

0.7 - 0.9

0.9 - 1.1

1.1 - 1.5

1.5 - 1.8

>1.8

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| - | FIRST ISSUE | CF | 23.04.2024 |

STATUS: FOR INFORMATION

CLIENT: RWE

SITE: Peartree Hill Solar Farm

TITLE: Monk's Dyke Breach 11
100yr + 17% Maximum Depth

calibro

Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | T 0117 2441 970
E hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:14,000 | 23.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-130 | REVISION: - |

north

Legend

Site Boundary

Breach 11

Velocity (m/s)

<= 0.25

0.25 - 0.50

0.50 - 1.00

1.00 - 1.50

1.50 - 2.00

2.00 - 2.50

> 2.50

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| - | FIRST ISSUE | CF | 23.04.2024 |

STATUS: FOR INFORMATION

CLIENT:

RWE

SITE:

Peartree Hill Solar Farm

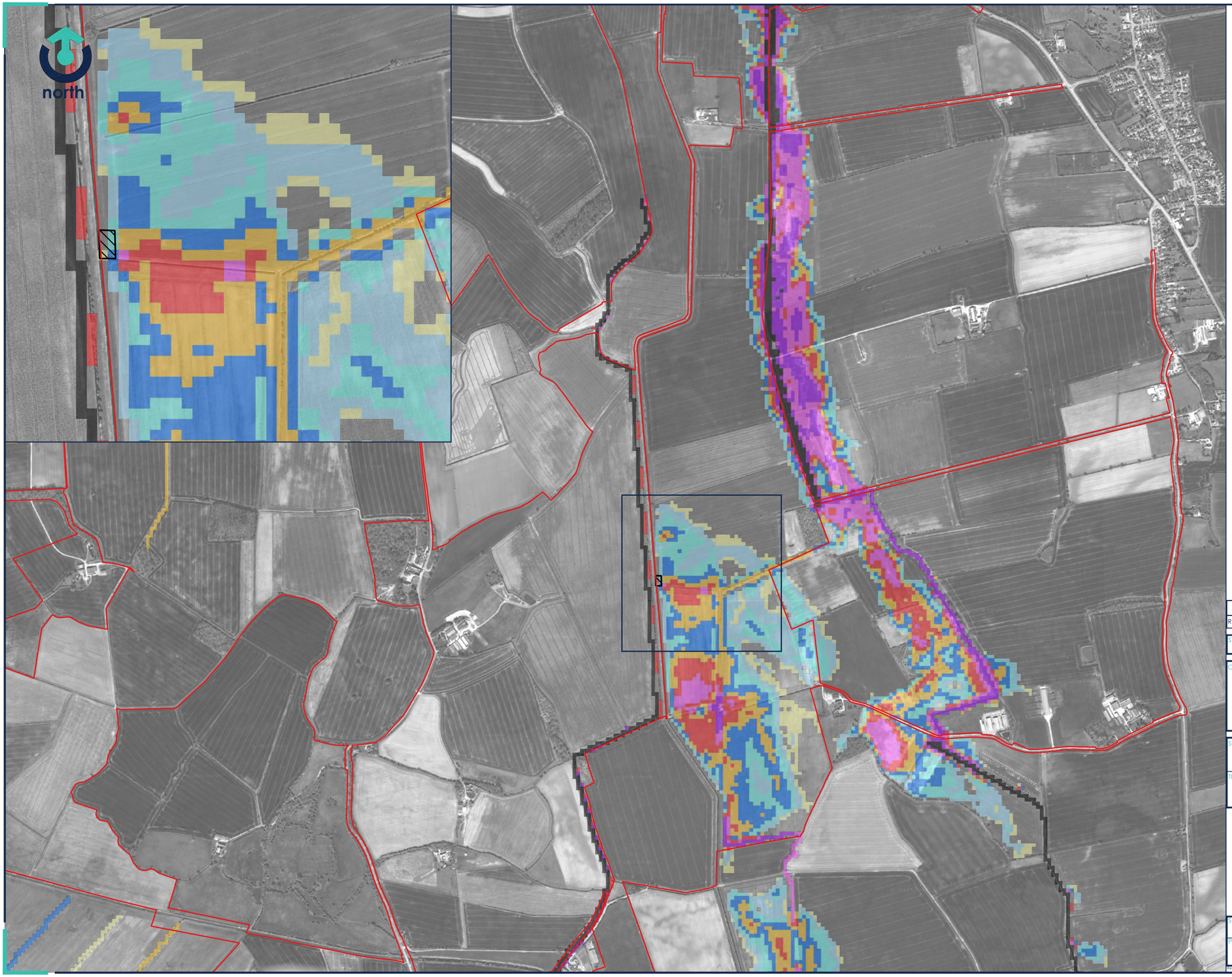
TITLE:

Monk's Dyke Breach 11
100yr + 17% Maximum Depth

calibro

Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | T: 0117 2441 970
E: hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:14,000 | 23.04.2024 | CF | AB |
| PROJECT NO: | | DRAWING NO: | REVISION: |
| 20-206 | | 60-131 | - |




Legend

Site Boundary

Breach 12

Depth (m)

0 - 0.1

0.1 - 0.3

0.3 - 0.5

0.5 - 0.7

0.7 - 0.9

0.9 - 1.1

1.1 - 1.5

1.5 - 1.8

>1.8

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| - | FIRST ISSUE | CF | 23.04.2024 |

STATUS: FOR INFORMATION

CLIENT: RWE

SITE: Peartree Hill Solar Farm

TITLE: Monk's Dyke Breach 12
100yr + 17% Maximum Depth

calibro

Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | T 0117 2441 970
E hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:14,000 | 23.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-133 | REVISION: - |

north

Legend

Site Boundary

Breach 12

Velocity (m/s)

<= 0.25

0.25 - 0.50

0.50 - 1.00

1.00 - 1.50

1.50 - 2.00

2.00 - 2.50

> 2.50

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| - | FIRST ISSUE | CF | 23.04.2024 |

STATUS: FOR INFORMATION

CLIENT:

RWE

SITE:

Peartree Hill Solar Farm

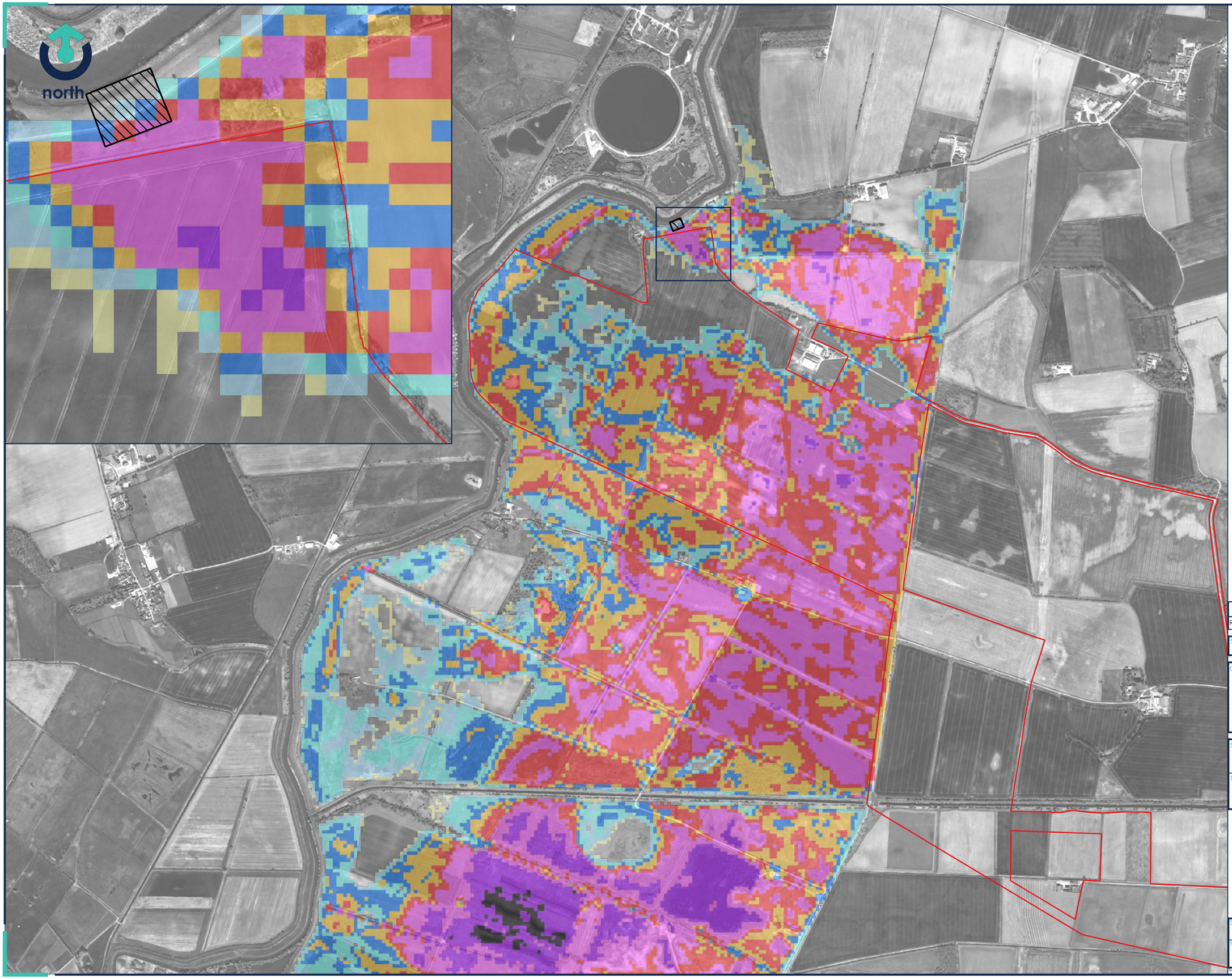
TITLE:

Monk's Dyke Breach 12
100yr + 17% Maximum Velocity

calibro

Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | T: 0117 2441 970
E: hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:14,000 | 23.04.2024 | CF | AB |
| PROJECT NO: | | DRAWING NO: | REVISION: |
| 20-206 | | 60-134 | - |




Legend

Site Boundary

Breach A

Depths (m)

0 - 0.1

0.1 - 0.3

0.3 - 0.5

0.5 - 0.7

0.7 - 0.9

0.9 - 1.1

1.1 - 1.5

1.5 - 1.8

>1.8

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| 01 | SECOND ISSUE | CF | 23.04.2024 |

STATUS: FOR INFORMATION

CLIENT: RWE

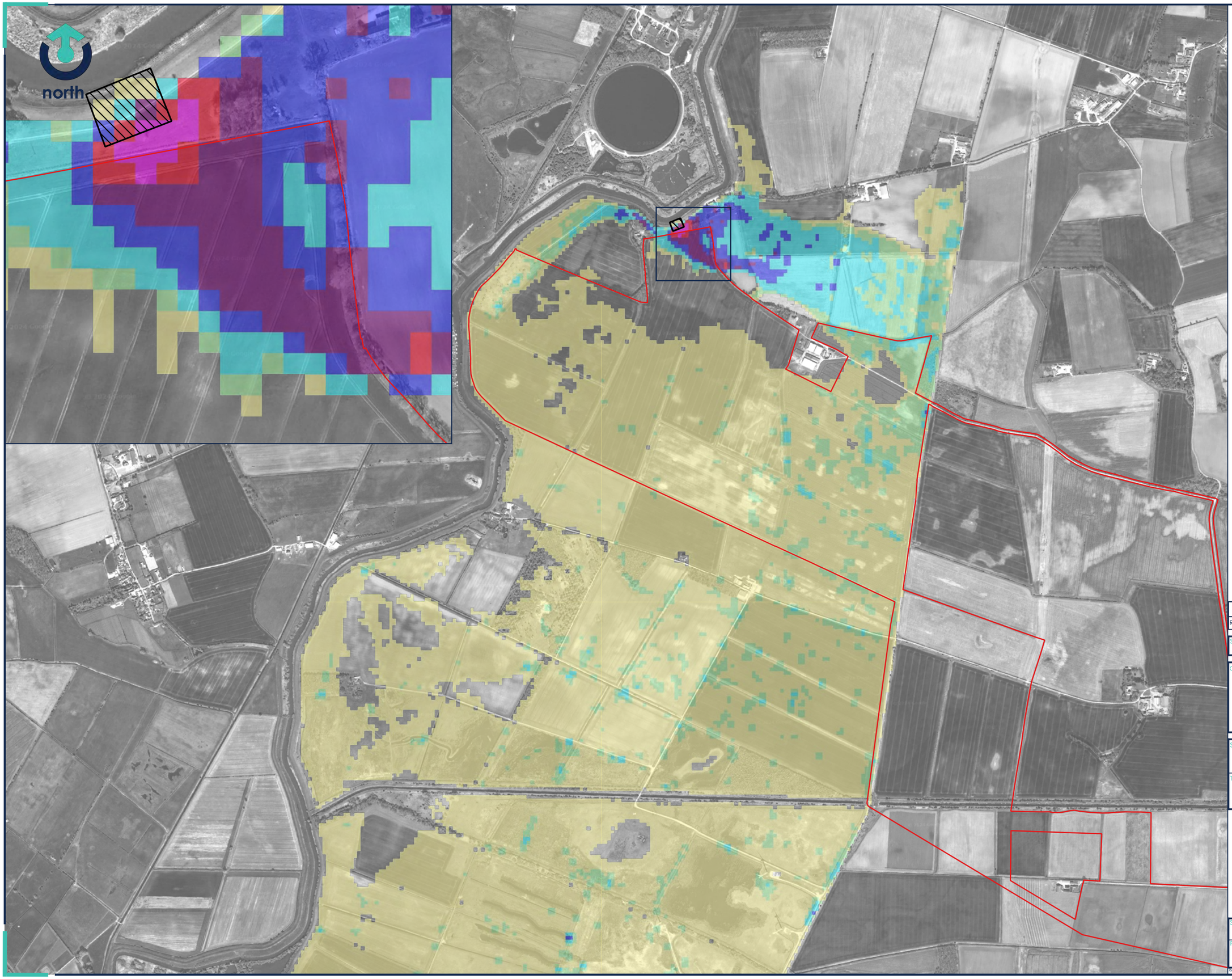
SITE: Peartree Hill Solar Farm

TITLE: Hull River Breach A
100yr + 17% Maximum Depth

calibro

Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | T: 0117 2441 970
E: hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:15,000 | 23.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-200 | REVISION: 01 |




Legend

Site Boundary

Breach A

Velocity (m/s)

<= 0.25

0.25 - 0.50

0.50 - 1.00

1.00 - 1.50

1.50 - 2.00

2.00 - 2.50

> 2.50

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| 01 | SECOND ISSUE | CF | 23.04.2024 |

STATUS: FOR INFORMATION

CLIENT: RWE

SITE: Peartree Hill Solar Farm

TITLE: Hull River Breach A
100yr + 17% Maximum Velocity

calibro
Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | T: 0117 2441 970
E: hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:15,000 | 23.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-201 | REVISION: 01 |

north

Legend

Site Boundary

Breach B1

Depth (m)

0 - 0.1

0.1 - 0.3

0.3 - 0.5

0.5 - 0.7

0.7 - 0.9

0.9 - 1.1

1.1 - 1.5

1.5 - 1.8

>1.8

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| 01 | SECOND ISSUE | CF | 24.04.2024 |

STATUS: FOR INFORMATION

CLIENT:

RWE

SITE:

Peartree Hill Solar Farm

TITLE:

Hull River Breach B
100yr + 17% Maximum Depth

calibro

Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | 0117 2441 970
E hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:15,000 | 24.04.2024 | CF | AB |
| PROJECT NO: | | DRAWING NO: | REVISION: |
| 20-206 | | 60-206 | 01 |

north

Legend

Site Boundary

Breach B

Velocity (m/s)

<= 0.25

0.25 - 0.50

0.50 - 1.00

1.00 - 1.50

1.50 - 2.00

2.00 - 2.50

> 2.50

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| 01 | SECOND ISSUE | CF | 23.04.2024 |

STATUS: FOR INFORMATION

CLIENT: RWE

SITE: Peartree Hill Solar Farm

TITLE: Hull River Breach B
100yr + 17% Maximum Velocity

calibro
Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | T 0117 2441 970
E hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:15,000 | 23.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-206 | REVISION: 01 |


Legend

Site Boundary

BREACH D

Depth (m)

0 - 0.1

0.1 - 0.3

0.3 - 0.5

0.5 - 0.7

0.7 - 0.9

0.9 - 1.1

1.1 - 1.5

1.5 - 1.8

>1.8

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| 01 | SECOND ISSUE | CF | 23.04.2024 |

STATUS: FOR INFORMATION

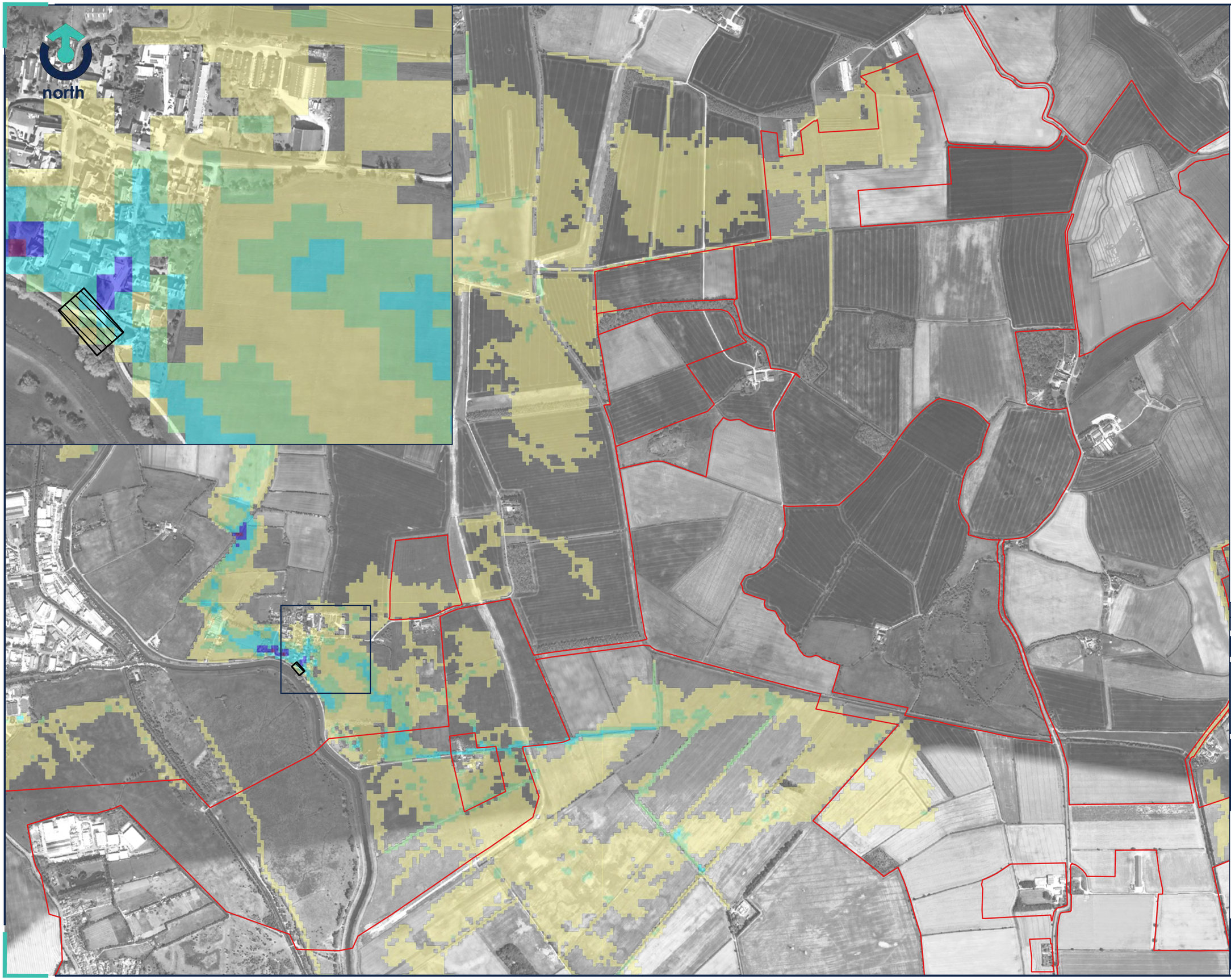
CLIENT: RWE

SITE: Peartree Hill Solar Farm

TITLE: Hull River Breach D
100yr + 17% Maximum Depth

calibro
Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | 0117 2441 970
E hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:15,000 | 23.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-215 | REVISION: 01 |




Legend

Site Boundary

BREACH D1

Velocity (m/s)

<= 0.25

0.25 - 0.50

0.50 - 1.00

1.00 - 1.50

1.50 - 2.00

2.00 - 2.50

> 2.50

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| 01 | SECOND ISSUE | CF | 23.04.2024 |

STATUS: FOR INFORMATION

CLIENT: RWE

SITE: Peartree Hill Solar Farm

TITLE: Hull River Breach D
100yr + 17% Maximum Velocity

calibro

Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | T: 0117 2441 970
E: hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:15,000 | 23.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-216 | REVISION: 01 |

north

Legend

Site Boundary

Breach E1

Depths (m)

0 - 0.1

0.1 - 0.3

0.3 - 0.5

0.5 - 0.7

0.7 - 0.9

0.9 - 1.1

1.1 - 1.5

1.5 - 1.8

>1.8

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| 01 | SECOND ISSUE | CF | 23.04.2024 |

STATUS: FOR INFORMATION

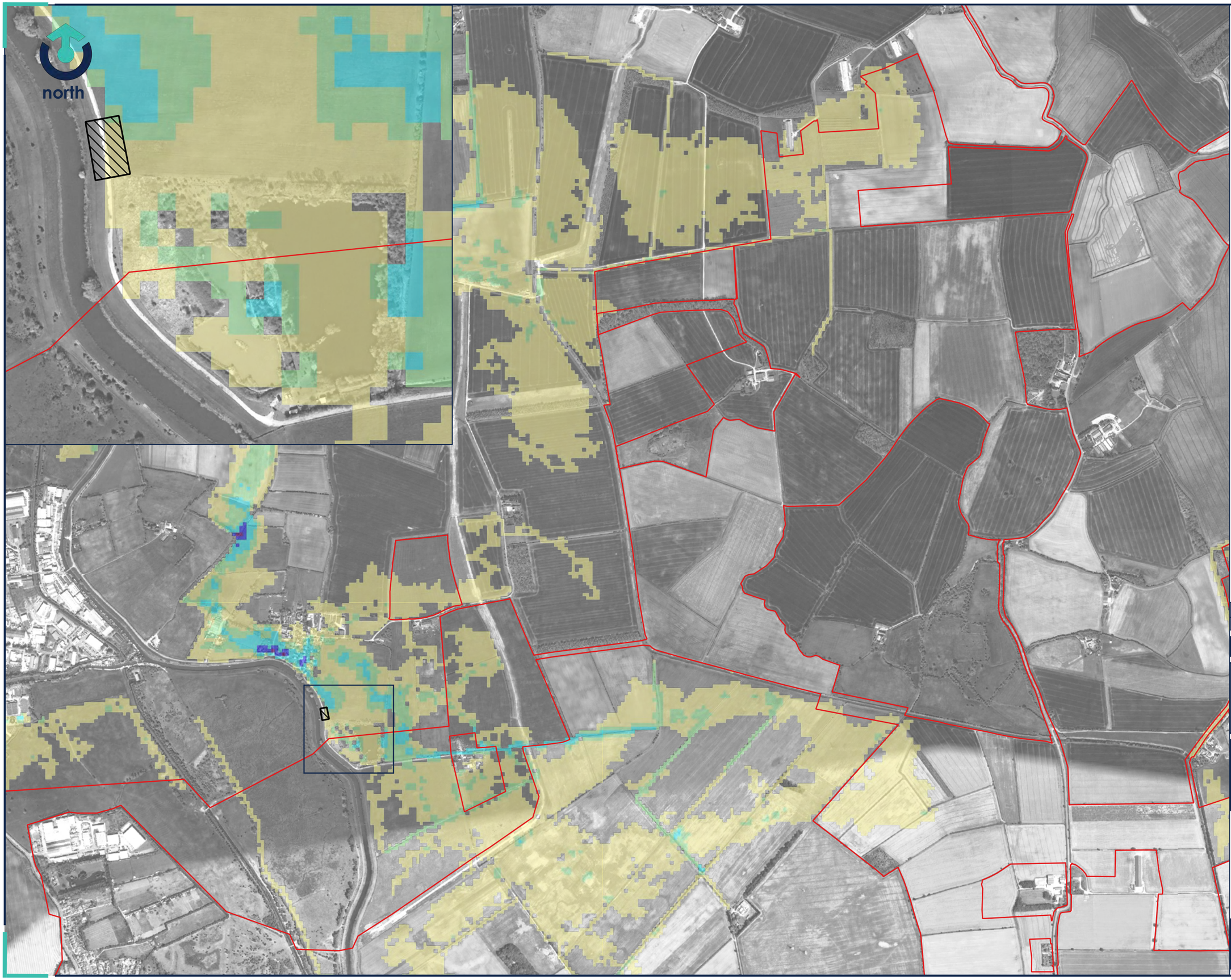
CLIENT: RWE

SITE: Peartree Hill Solar Farm

TITLE: Hull River Breach E
100yr + 17% Maximum Depth

calibro
Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | 0117 2441 970
E hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:15,000 | 23.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-218 | REVISION: 01 |




Legend

Site Boundary

Breach E1

Velocity (m/s)

<= 0.25

0.25 - 0.50

0.50 - 1.00

1.00 - 1.50

1.50 - 2.00

2.00 - 2.50

> 2.50

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| 01 | SECOND ISSUE | CF | 23.04.2024 |

STATUS: FOR INFORMATION

CLIENT:

RWE

SITE:

Peartree Hill Solar Farm

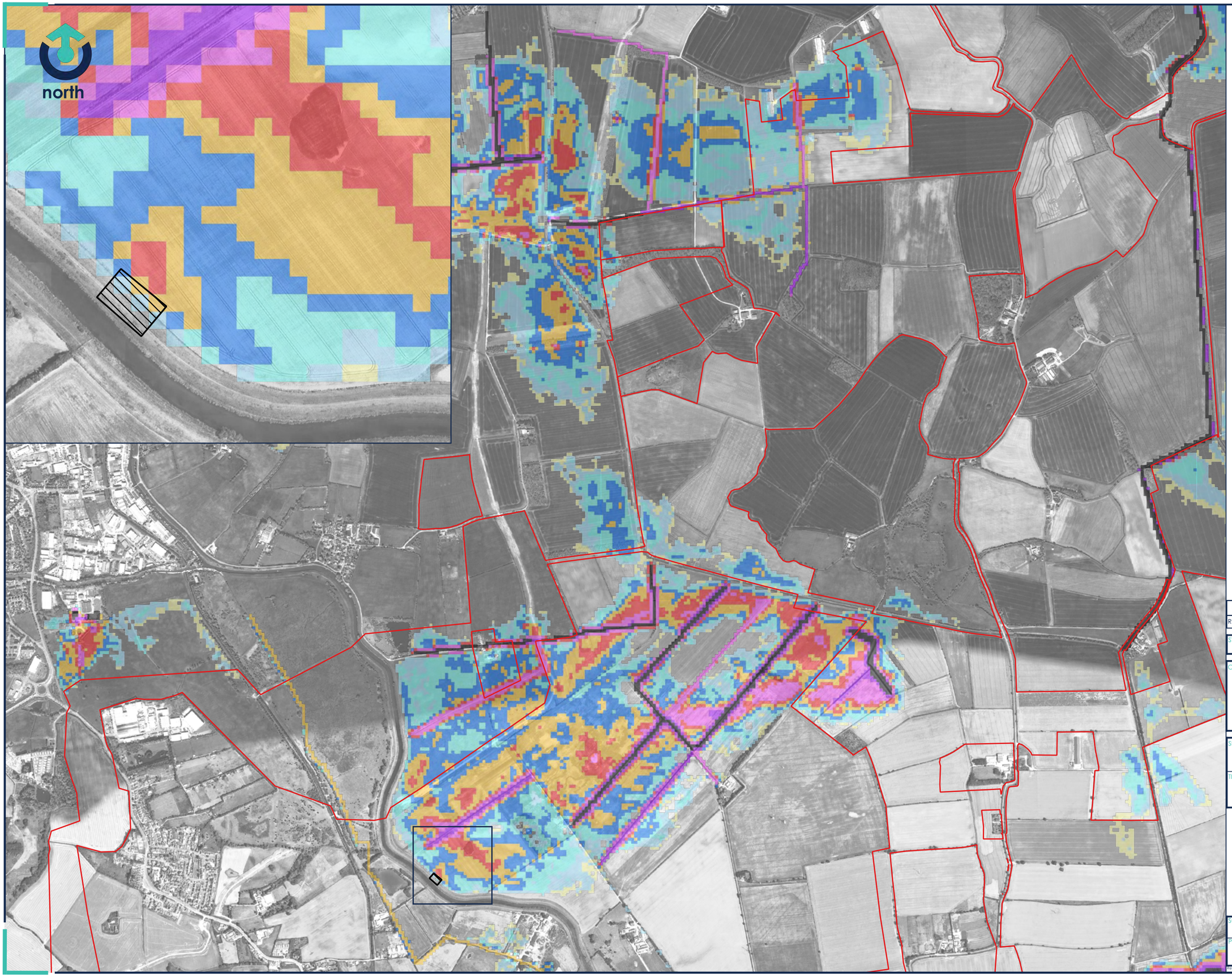
TITLE:

Hull River Breach E
100yr + 17% Maximum Velocity

calibro

Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | T: 0117 2441 970
E: hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:15,000 | 23.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-219 | REVISION: 01 |




Legend

Site Boundary

Breach F

Depths (m)

0 - 0.1

0.1 - 0.3

0.3 - 0.5

0.5 - 0.7

0.7 - 0.9

0.9 - 1.1

1.1 - 1.5

1.5 - 1.8

>1.8

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| 01 | SECOND ISSUE | CF | 23.04.2024 |

STATUS: FOR INFORMATION

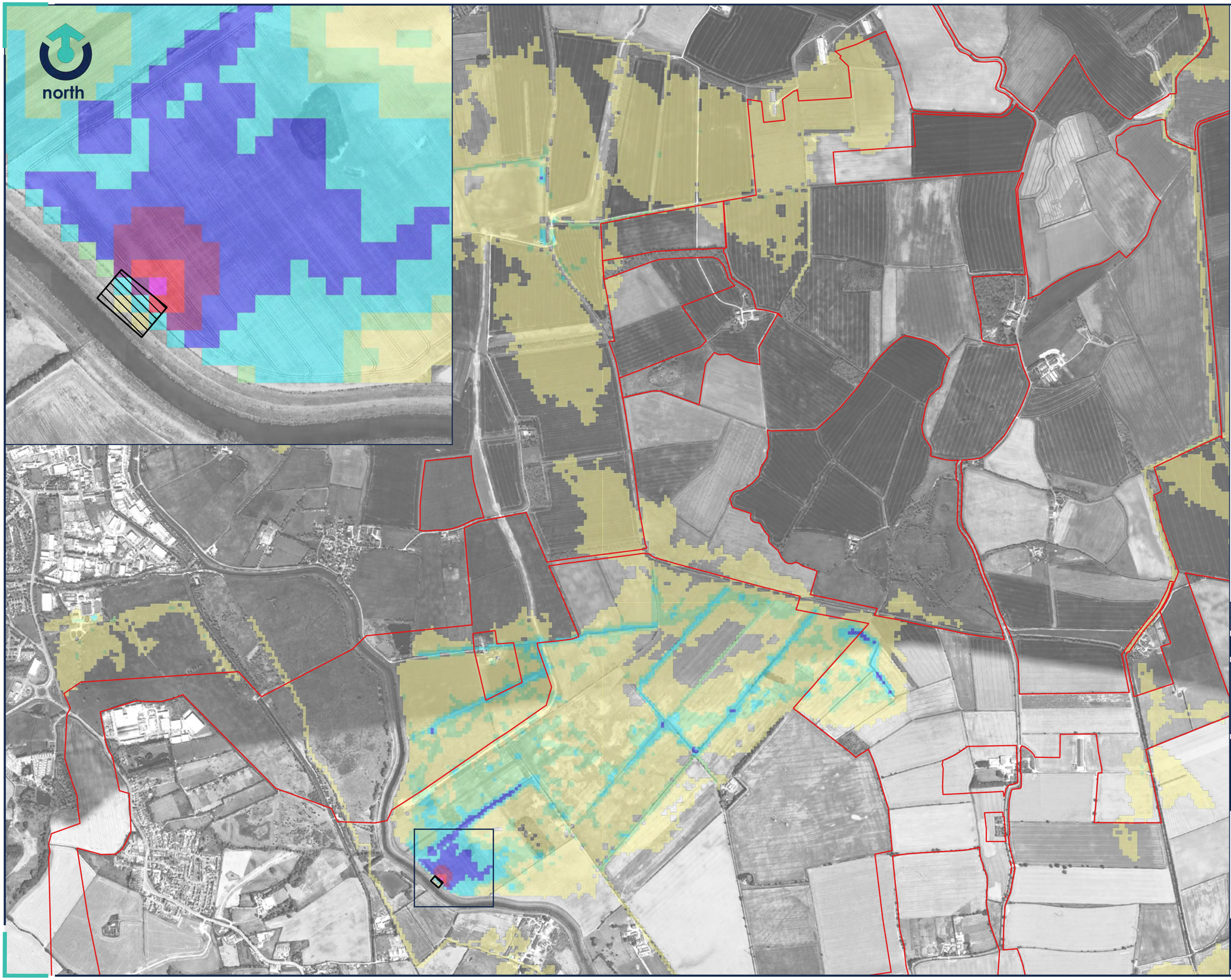
CLIENT: RWE

SITE: Peartree Hill Solar Farm

TITLE: Hull River Breach
100yr + 17% Maximum Depth

calibro
Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | 0117 2441 970
hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:17,000 | 23.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-221 | REVISION: 01 |




Legend

Site Boundary

Breach F

Velocity (m/s)

Band 1

<= 0.25

0.25 - 0.50

0.50 - 1.00

1.00 - 1.50

1.50 - 2.00

2.00 - 2.50

> 2.50

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| 01 | SECOND ISSUE | CF | 23.04.2024 |

STATUS: FOR INFORMATION

CLIENT: RWE

SITE: Peartree Hill Solar Farm

TITLE: Hull River Breach
100yr + 17% Maximum Velocity

calibro

Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | 0117 2441 970
E hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:17,000 | 23.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-222 | REVISION: 01 |

north

Legend

Site Boundary

Breach C

Depth (m)

0 - 0.1

0.1 - 0.3

0.3 - 0.5

0.5 - 0.7

0.7 - 0.9

0.9 - 1.1

1.1 - 1.5

1.5 - 1.8

>1.8

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| 01 | SECOND ISSUE | CF | 23.04.2024 |

STATUS: FOR INFORMATION

CLIENT:

RWE

SITE:

Peartree Hill Solar Farm

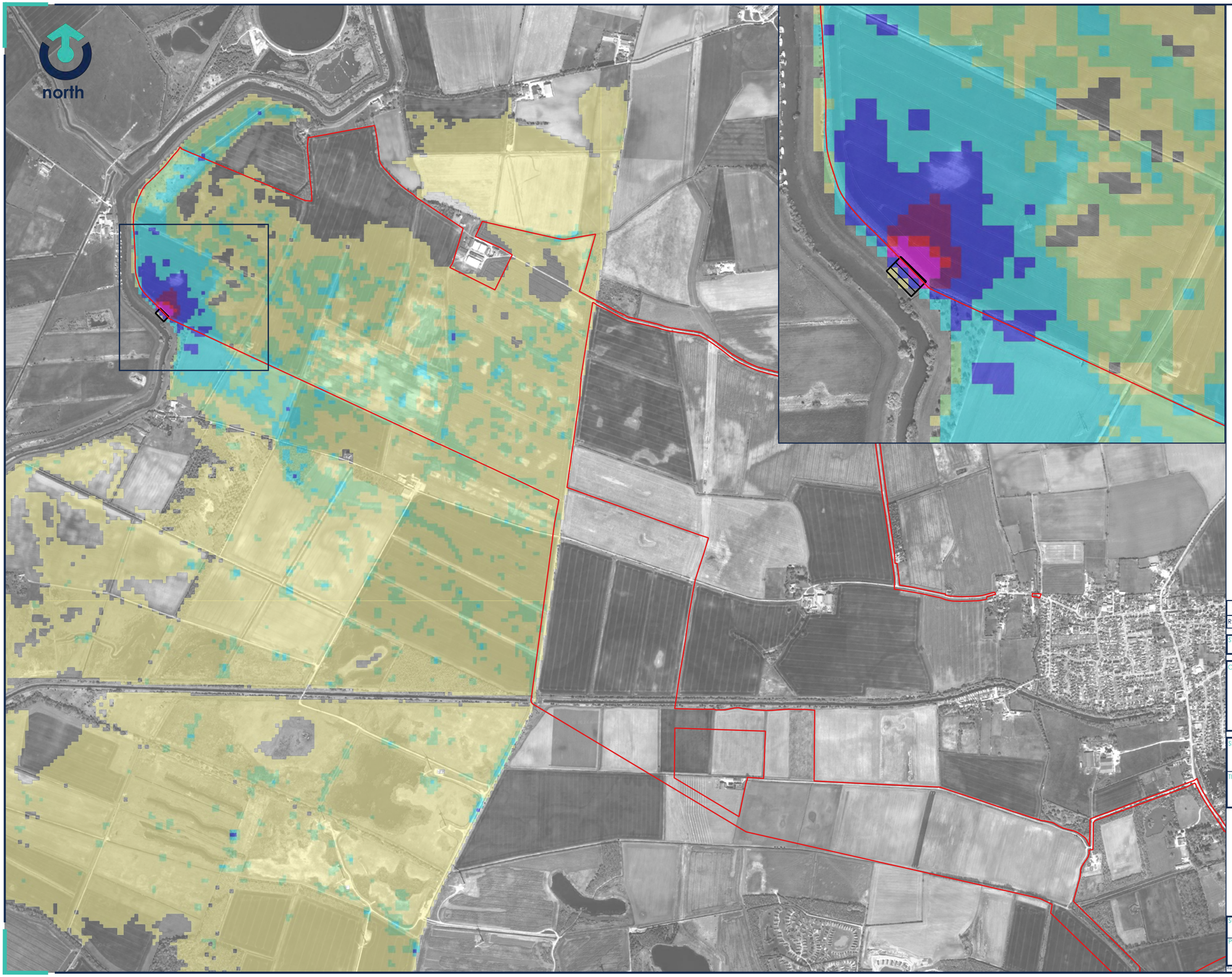
TITLE:

Hull River Breach C
100yr + 17% Maximum Depth

calibro

Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | 0117 2441 970
E hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:15,000 | 23.04.2024 | CF | AB |
| PROJECT NO: | | DRAWING NO: | REVISION: |
| 20-206 | | 60-212 | 01 |




Legend

Site Boundary

Breach C

Velocity (m/s)

<= 0.25

0.25 - 0.50

0.50 - 1.00

1.00 - 1.50

1.50 - 2.00

2.00 - 2.50

> 2.50

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| 01 | SECOND ISSUE | CF | 23.04.2024 |

STATUS: FOR INFORMATION

CLIENT: RWE

SITE: Peartree Hill Solar Farm

TITLE: Hull River Breach C
100yr + 17% Maximum Velocity

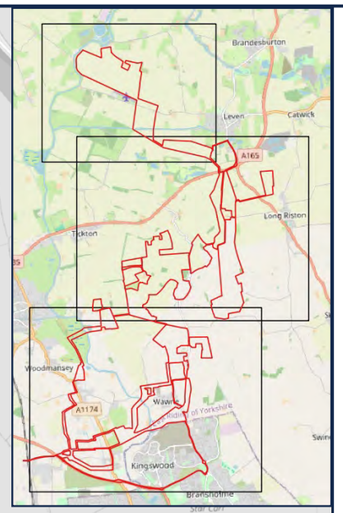
calibro
Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | T 0117 2441 970
E hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:15,000 | 23.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-213 | REVISION: 01 |

# APPENDIX E

## Sensitivity Tests Output Drawings

north




## Legend

- Site Boundary
- Sensitive Infrastructure
- Flood Level Increase (m)
  - < -0.1
  - -0.1 to -0.05
  - -0.05 to -0.01
  - -0.01 to -0.005
  - -0.005 to 0.005
  - 0.005 to 0.01
  - 0.01 to 0.05
  - 0.05 to 0.1
  - > 0.1
  - Was wet now dry
  - Was dry now wet

Notes

Sensitive infrastructure areas encompass the coverage of solar panels, substations, inverters, battery storage etc. but do not include access or cable routes.

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| - | FIRST ISSUE | CF | 17.04.2024 |

STATUS: INTERNAL USE ONLY

CLIENT: RWE

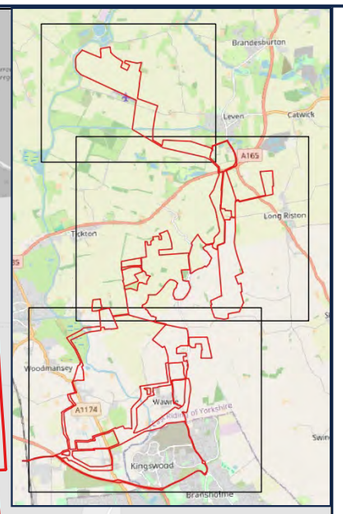
SITE: Peartree Hill Solar Farm

TITLE: Tidal Boundary Sensitivity
Sheet 1 of 3

calibro
Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | 0117 2441 970
hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:15,000 | 17.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-231 | REVISION: - |

north




## Legend

- Site Boundary
- Sensitive Infrastructure

Flood Level Increase (m)

- < -0.1
- -0.1 to -0.05
- -0.05 to -0.01
- -0.01 to -0.005
- -0.005 to 0.005
- 0.005 to 0.01
- 0.01 to 0.05
- 0.05 to 0.1
- > 0.1
- Was wet now dry
- Was dry now wet

Notes

Sensitive infrastructure areas encompass the coverage of solar panels, substations, inverters, battery storage etc. but do not include access or cable routes.

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| - | FIRST ISSUE | CF | 17.04.2024 |

STATUS: INTERNAL USE ONLY

CLIENT: RWE

SITE: Peartree Hill Solar Farm

TITLE: Tidal Boundary Sensitivity
Sheet 2 of 3

calibro
Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | 0117 2441 970
hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:20,000 | 17.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-232 | REVISION: - |

north

Legend

- Site Boundary
- Sensitive Infrastructure

Flood Level Increase (m)

- < -0.1
- -0.1 to -0.05
- -0.05 to -0.01
- -0.01 to -0.005
- -0.005 to 0.005
- 0.005 to 0.01
- 0.01 to 0.05
- 0.05 to 0.1
- > 0.1
- Was wet now dry
- Was dry now wet

Notes

Sensitive infrastructure areas encompass the coverage of solar panels, substations, inverters, battery storage etc. but do not include access or cable routes.

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| - | FIRST ISSUE | CF | 17.04.2024 |

STATUS: INTERNAL USE ONLY

CLIENT: RWE

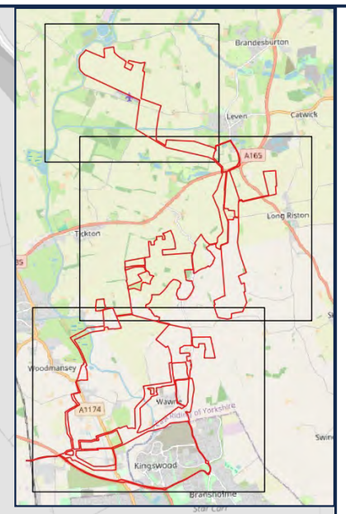
SITE: Peartree Hill Solar Farm

TITLE: Tidal Boundary Sensitivity
Sheet 3 of 3

calibro
Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | 0117 2441 970
E hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:20,000 | 17.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-233 | REVISION: - |

north




## Legend

- Site Boundary
- Sensitive Infrastructure

Level Increase (m)

- < -0.25
- -0.25 to -0.15
- -0.15 to -0.1
- -0.1 to -0.005
- -0.005 to 0.005
- 0.005 to 0.1
- 0.1 to 0.15
- 0.15 to 0.25
- > 0.25
- Was wet now dry
- Was dry now wet

Notes

Sensitive infrastructure areas encompass the coverage of solar panels, substations, inverters, battery storage etc. but do not include access or cable routes.

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| - | FIRST ISSUE | CF | 17.04.2024 |

STATUS: INTERNAL USE ONLY

CLIENT: RWE

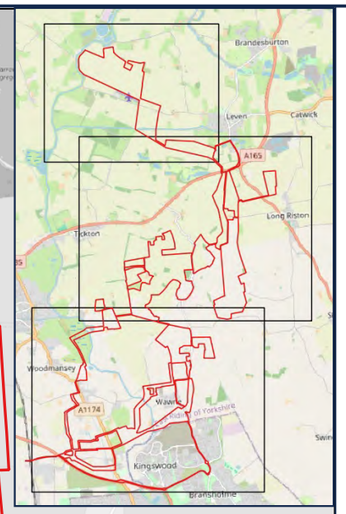
SITE: Peartree Hill Solar Farm

TITLE: Flow Sensitivity
Sheet 1 of 3

calibro
Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | 0117 2441 970
hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:15,000 | 17.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-234 | REVISION: - |

north




## Legend

- Site Boundary
- Sensitive Infrastructure

Level Increase (m)

- < -0.25
- -0.25 to -0.15
- -0.15 to -0.1
- -0.1 to -0.005
- -0.005 to 0.005
- 0.005 to 0.1
- 0.1 to 0.15
- 0.15 to 0.25
- > 0.25
- Was wet now dry
- Was dry now wet

Notes

Sensitive infrastructure areas encompass the coverage of solar panels, substations, inverters, battery storage etc. but do not include access or cable routes.

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| - | FIRST ISSUE | CF | 17.04.2024 |

STATUS: INTERNAL USE ONLY

CLIENT: RWE

SITE: Peartree Hill Solar Farm

TITLE: Flow Sensitivity
Sheet 2 of 3

calibro
Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | 0117 2441 970
E hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:20,000 | 17.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-235 | REVISION: - |

north

Legend

- Site Boundary
- Sensitive Infrastructure
- Level Increase (m)
- < -0.25
- -0.25 to -0.15
- -0.15 to -0.1
- -0.1 to -0.005
- -0.005 to 0.005
- 0.005 to 0.1
- 0.1 to 0.15
- 0.15 to 0.25
- > 0.25
- Was wet now dry
- Was dry now wet

Notes

Sensitive infrastructure areas encompass the coverage of solar panels, substations, inverters, battery storage etc. but do not include access or cable routes.

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| - | FIRST ISSUE | CF | 17.04.2024 |

STATUS: INTERNAL USE ONLY

CLIENT: RWE

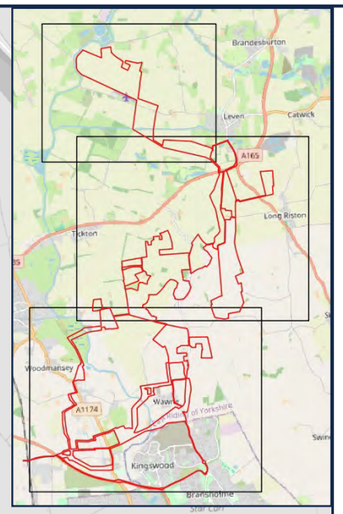
SITE: Peartree Hill Solar Farm

TITLE: Flow Sensitivity
Sheet 3 of 3

calibro
Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | T 0117 2441 970
E hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:20,000 | 17.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-236 | REVISION: - |

north




## Legend

- Site Boundary
- Sensitive Infrastructure

Increase (m)

- < -0.1
- -0.1 to -0.05
- -0.05 to -0.01
- -0.01 to -0.005
- -0.005 to 0.005
- 0.005 to 0.01
- 0.01 to 0.05
- 0.05 to 0.1
- > 0.1
- Was wet now dry
- Was dry now wet

Notes

Sensitive infrastructure areas encompass the coverage of solar panels, substations, inverters, battery storage etc. but do not include access or cable routes.

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| - | FIRST ISSUE | CF | 18.04.2024 |

STATUS: INTERNAL USE ONLY

CLIENT: RWE

SITE: Peartree Hill Solar Farm

TITLE: Manning's Roughness Sensitivity Sheet 1 of 3

calibro
Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | T 0117 2441 970
E hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:15,000 | 18.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-241 | REVISION: - |

north

Legend

Site Boundary

Sensitive Infrastructure

Increase (m)

< -0.1

-0.1 to -0.05

-0.05 to -0.01

-0.01 to -0.005

-0.005 to 0.005

0.005 to 0.01

0.01 to 0.05

0.05 to 0.1

> 0.1

Was wet now dry

Was dry now wet

Notes

Sensitive infrastructure areas encompass the coverage of solar panels, substations, inverters, battery storage etc. but do not include access or cable routes.

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| - | FIRST ISSUE | CF | 18.04.2024 |

STATUS: INTERNAL USE ONLY

CLIENT: RWE

SITE: Peartree Hill Solar Farm

TITLE: Manning's Roughness Sensitivity Sheet 2 of 3

calibro
Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | 0117 2441 970
hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:20,000 | 18.04.2024 | CF | AB |

| PROJECT NO: | DRAWING NO: | REVISION: |
|---|---|---|
| 20-206 | 60-242 | - |

north

Legend

- Site Boundary
- Sensitive Infrastructure

Increase (m)

- < -0.1
- -0.1 to -0.05
- -0.05 to -0.01
- -0.01 to -0.005
- -0.005 to 0.005
- 0.005 to 0.01
- 0.01 to 0.05
- 0.05 to 0.1
- > 0.1
- Was wet now dry
- Was dry now wet

Notes

Sensitive infrastructure areas encompass the coverage of solar panels, substations, inverters, battery storage etc. but do not include access or cable routes.

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| - | FIRST ISSUE | CF | 18.04.2024 |

STATUS: INTERNAL USE ONLY

CLIENT: RWE

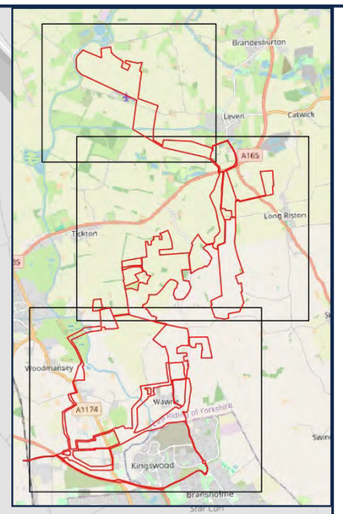
SITE: Peartree Hill Solar Farm

TITLE: Manning's Roughness Sensitivity Sheet 3 of 3

calibro
Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | 0117 2441 970
E hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:20,000 | 18.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-243 | REVISION: - |

north




## Legend

- Site Boundary
- Sensitive Infrastructure

Increase (m)

- < -0.1
- -0.1 to -0.05
- -0.05 to -0.01
- -0.01 to -0.005
- -0.005 to 0.005
- 0.005 to 0.01
- 0.01 to 0.05
- 0.05 to 0.1
- > 0.1
- Was wet now dry
- Was dry now wet

Notes

Sensitive infrastructure areas encompass the coverage of solar panels, substations, inverters, battery storage etc. but do not include access or cable routes.

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| - | FIRST ISSUE | CF | 18.04.2024 |

STATUS: INTERNAL USE ONLY

CLIENT: RWE

SITE: Peartree Hill Solar Farm

TITLE: Developed Areas Roughness Increase Sheet 1 of 3

calibro
Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | T: 0117 2441 970
E: hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:15,000 | 18.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO.: 60-244 | REVISION: - |

north

Legend

Site Boundary

Sensitive Infrastructure

Increase (m)

< -0.1

-0.1 to -0.05

-0.05 to -0.01

-0.01 to -0.005

-0.005 to 0.005

0.005 to 0.01

0.01 to 0.05

0.05 to 0.1

> 0.1

Was wet now dry

Was dry now wet

Notes

Sensitive infrastructure areas encompass the coverage of solar panels, substations, inverters, battery storage etc. but do not include access or cable routes.

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| - | FIRST ISSUE | CF | 18.04.2024 |

STATUS: INTERNAL USE ONLY

CLIENT: RWE

SITE: Peartree Hill Solar Farm

TITLE: Developed Areas Roughness Increase Sheet 2 of 3

calibro
Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | 0117 2441 970
hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:20,000 | 18.04.2024 | CF | AB |

| PROJECT NO: | DRAWING NO: | REVISION: |
|---|---|---|
| 20-206 | 60-245 | - |

north

Legend

- Site Boundary
- Sensitive Infrastructure

Increase (m)

- < -0.1
- -0.1 to -0.05
- -0.05 to -0.01
- -0.01 to -0.005
- -0.005 to 0.005
- 0.005 to 0.01
- 0.01 to 0.05
- 0.05 to 0.1
- > 0.1
- Was wet now dry
- Was dry now wet

Notes

Sensitive infrastructure areas encompass the coverage of solar panels, substations, inverters, battery storage etc. but do not include access or cable routes.

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| - | FIRST ISSUE | CF | 18.04.2024 |

STATUS: INTERNAL USE ONLY

CLIENT: RWE

SITE: Peartree Hill Solar Farm

TITLE: Developed Areas Roughness Increase Sheet 3 of 3

calibro
Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UAE | 0117 2441 970
E hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:20,000 | 18.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-246 | REVISION: - |

north

Legend

- Site Boundary
- Sensitive Infrastructure
- 1D Channel

Level Increase (m)

- < -0.2
- -0.2 to -0.15
- -0.2 to -0.1
- -0.1 to -0.005
- -0.005 to 0.005
- 0.005 to 0.1
- 0.1 to 0.15
- 0.15 to 0.2
- > 0.2
- Was wet now dry
- Was dry now wet

Notes

Sensitive infrastructure areas encompass the coverage of solar panels, substations, inverters, battery storage etc. but do not include access or cable routes.

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| - | FIRST ISSUE | CF | 23.04.2024 |

STATUS: FOR INFORMATION

CLIENT: RWE

SITE: Peartree Hill Solar Farm

TITLE: Maximum Credible Scenario (2100) Level Change Sheet 1 of 3

calibro
Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | T 0117 2441 970
E hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:15,000 | 23.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-247 | REVISION: - |

north

Legend

- Site Boundary
- Sensitive Infrastructure
- 1D Channel

Level Increase (m)

- < -0.2
- -0.2 to -0.15
- -0.2 to -0.1
- -0.1 to -0.005
- -0.005 to 0.005
- 0.005 to 0.1
- 0.1 to 0.15
- 0.15 to 0.2
- > 0.2
- Was wet now dry
- Was dry now wet

Notes

Sensitive infrastructure areas encompass the coverage of solar panels, substations, inverters, battery storage etc. but do not include access or cable routes.

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| - | FIRST ISSUE | CF | 23.04.2024 |

STATUS: FOR INFORMATION

CLIENT: RWE

SITE: Peartree Hill Solar Farm

TITLE: Maximum Credible Scenario (2100) Level Change Sheet 2 of 3

calibro
Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | 0117 2441 970
E hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:20,000 | 23.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-248 | REVISION: - |

north

Legend

Site Boundary

Sensitive Infrastructure

1D Channel

Level Increase (m)

Band 1

< -0.2

-0.2 to -0.15

-0.2 to -0.1

-0.1 to -0.005

-0.005 to 0.005

0.005 to 0.1

0.1 to 0.15

0.15 to 0.2

> 0.2

Was wet now dry

Was dry now wet

Notes

Sensitive infrastructure areas encompass the coverage of solar panels, substations, inverters, battery storage etc. but do not include access or cable routes.

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| - | FIRST ISSUE | CF | 23.04.2024 |

STATUS: FOR INFORMATION

CLIENT: RWE

SITE: Peartree Hill Solar Farm

TITLE: Maximum Credible Scenario (2100) Level Change Sheet 3 of 3

calibro

Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4UA | 0117 2441 970
E hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:20,000 | 23.04.2024 | CF | AB |
| PROJECT NO: 20-206 | | DRAWING NO: 60-249 | REVISION: - |

# APPENDIX F

## Hydraulic Modelling Addendum

# Technical Note 004

Revision 05

| | |
|---|---|
| Title | **Hydraulic Modelling Addendum** |
| Job Name | Peartree Hill Solar Farm |
| Job number | 20-206 |
| Date | 6th November 2023 |

## 1 INTRODUCTION

1.1.1 This Technical Note discusses additional work carried out to support proposed Solar PV development at Peartree Hill following the Environment Agency (EA) review of the development proposals and hydraulic modelling. It forms and addendum to the Peartree Hill Solar Farm Hydraulic Modelling Report 20-206-60-050.

1.1.2 Since submission of Revision 05 of this document to the EA, the development proposals have been updated. The Flood Risk Assessment reflects the updated development proposals.

1.1.3 The modifications were carried out to address comments relating to:

- The potential for maintenance to be withdrawn from defences
- Missing Structures
- The impact of the flow sensitivity runs on vulnerable infrastructure
- Sense checking flood levels against available gauge data.

## 2 DEFENCES

### 2.1 EA Comment

2.1.1 The Environment Agency letter dated 25th June 2024 (ref:XA/2024/100093/01-L01) states:

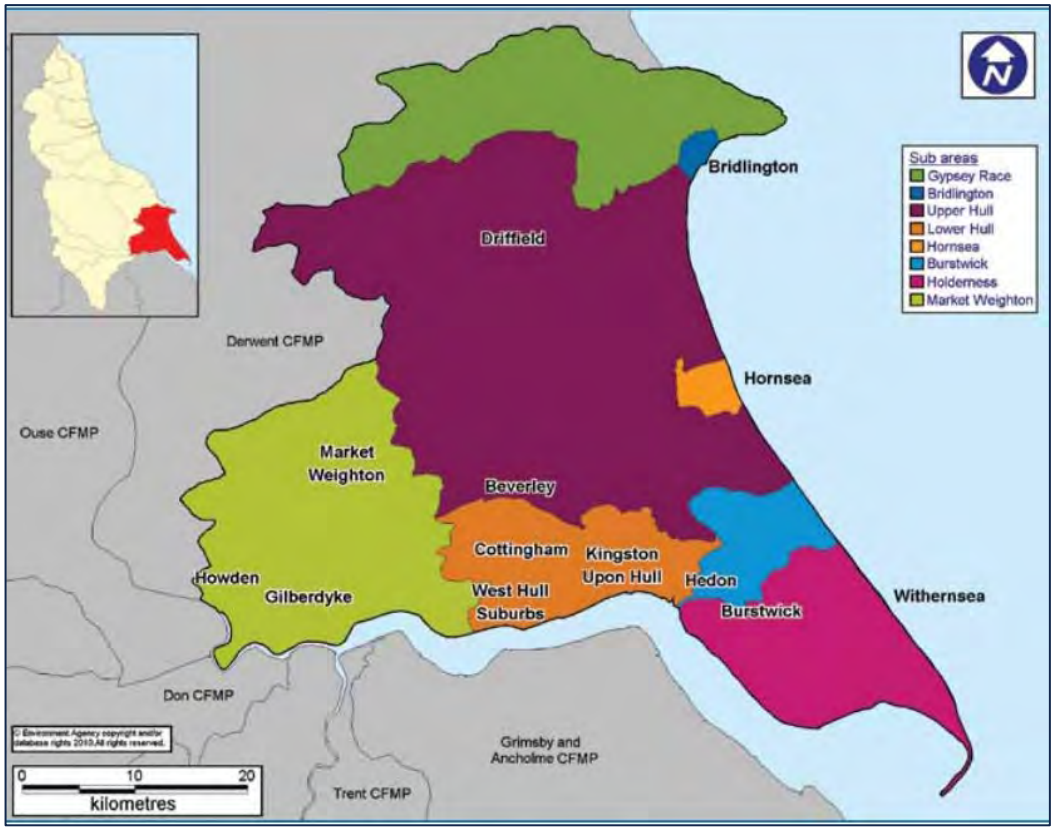
*"Although breach modelling is being undertaken by the applicant, any assessment of residual flood risk, both now and in the future, will be insufficient without further consideration of the condition of the flood defences. Through understanding the condition of existing defences and how defence conditions may change over the lifetime of the development, you must give appropriate consideration to how residual flood risk can be managed and mitigated."*

## 2.2 Defences

2.2.1 The site benefits from a range of defences. The policy for managing flood risk in this area is set out in the Hull and Coastal Streams Catchment Flood Management Plan (CFMP). The document which was published in 2010 sets out "our preferred plan for sustainable flood risk management over the next 50 to 100 years".

The defences alongside the Humber Estuary fall within Lower Hull catchment sub-area (as shown in Figure 1-1). The policy for this area is to "take action to further reduce flood risk".

*Figure 1-1 CFMP catchment sub-areas*




2.2.2 There have recently been significant defence improvements in the area generally consisting of flood embankments and walls which have been designed so a managed adaptive approach can be taken – i.e. so that the height of these defences can be raised in the future to keep pace with sea-level rise should it be required.

2.2.3 Give the commitment to defences in this area, the fact that they protect thousands of properties in the City of Hull and that tidal flooding would be significantly attenuated before reaching the site no further investigation is considered necessary, as agreed with the Environment Agency during a meeting on 1st July 2024.

## Upper Hull Defences

2.2.4 The site and surroundings fall within the Upper Hull subcatchment. The policy for this area is to *"Continue with existing or alternative actions to manage flood risk at the current level"*.

2.2.5 The EA cited concerns about the potential for maintenance of the defences to be withdrawn resulting in the defences falling into disrepair.

2.2.6 The defences in the Upper Hull subcatchment which afford significant protection to the site are the embankments alongside the River Hull and the Monk Dike. The condition of these defences as recorded in the 'Spatial Flood Defences including Standardised Attributes' data download from data.gov.uk was reviewed and is presented in Drawings 20-206-60-303 & 20-206-60-304 appended to this note.

### River Hull Defences

2.2.7 The defences on the left bank of the River Hull which afford protection of the site have all been inspected this year (2024) and meet the target condition of 3 categorized as 'Fair'. The River Hull is tidal and significant proportions of land behind it are below high tide levels. Consequently, it is considered extremely unlikely that these defences will be allowed to fall into disrepair over the 40 year lifetime of the development. This create a huge saline/brackish marsh where there is currently significant amount of agricultural land and a number of small settlements.

2.2.8 The River Hull embankments adjacent to areas where solar development will be take place (East of Beverley and North of Linley Hill airstrip) are substantial generally 3-4m high and 30-40m wide.

2.2.9 Given the condition of these defences, their substantial nature, the policy to maintain them and the widespread effects of withdrawing maintenance no modelling to represent the loss of defences in this area has been carried out.

2.2.10 It should be noted however that numerous breach scenarios have been carried out in worst-case locations for the development (with the breach locations and parameters being agreed with the EA). These breaches are instantaneous and are centred around the peak of a future 1 in 100 year fluvial flood event. The loss of large sections of defences in this area would result in flooding being distributed over a wider area and therefore unlikely to exceed the worst-case breach output.

2.2.11 It should also be noted that development adjacent to the River Hull (i.e. to the north of Beverley Airfield), has since been removed from the proposals.

### Monk Dike Defences

2.2.12 The Monk Dike embankments adjacent to proposed solar development were last inspected in 2024. The left (eastern bank) is recorded as meeting it's target condition of 3 – Fair. The northern section of the right (western) bank is in below it's target condition being recorded as 4 – Poor.

2.2.13 A simulation was carried out to determine the impact of complete failure of this defence by adjusting model bank lines to match existing ground levels at the toe of the defence. In essence this represents a situation where the defence is completely removed for its entire reach of approximately 4km.

2.2.14 Even if maintenance was with withdrawn, it would take a significant period of time for the defence to provide no protection to the site. In fact t is likely that overtopping of the lowest part which is at the northern end of the reach (just south of the A1035) would erode the bank and progressively reduce its height and that further loss of bank would be limited beyond this point.

2.2.15 The results of this simulation for the future 1 in 100 year flood is presented in Drawing 20-206-60-253-00 appended to this note. The drawing shows that the extent of flooding on the site only marginally exceeds the maximum breach extent. A review of modelled depths reveals that the flooding is not increased significantly when compared to the combined worst-case from the breach scenarios for the vast majority of the site. The exception being in Parcels B1 & B7 where flood levels are typically 0.1m higher.

2.2.16 Although the left (eastern) bank is recorded as being in good condition, there is arguably a larger probability of maintenance being withdrawn (notwithstanding the fact that the solar operator will have significant interest in maintaining the assets to protect their investment) than there is for the River Hull.

2.2.17 As the Monk Dike preferentially overtops the low spot in the right bank at the upstream end of the site, the more likely mechanism for failure of the left bank would be seepage, piping and then collapse of a section of the bank. For this reason, to assess the potential impact of this a section of the bank was removed where ground levels at the toe are the lowest. This will produce a similar result as removing the entire reach as ground levels elsewhere are higher and overtopping is unlikely to occur.

2.2.18 The results of this simulation for the future 1 in 100 year flood is presented in Drawing 20-206-60-253-00 appended to this note. The extent of flooding adjacent to the section of defence removed is almost identical to the worst-case breach scenario and flood levels are just 5mm higher.

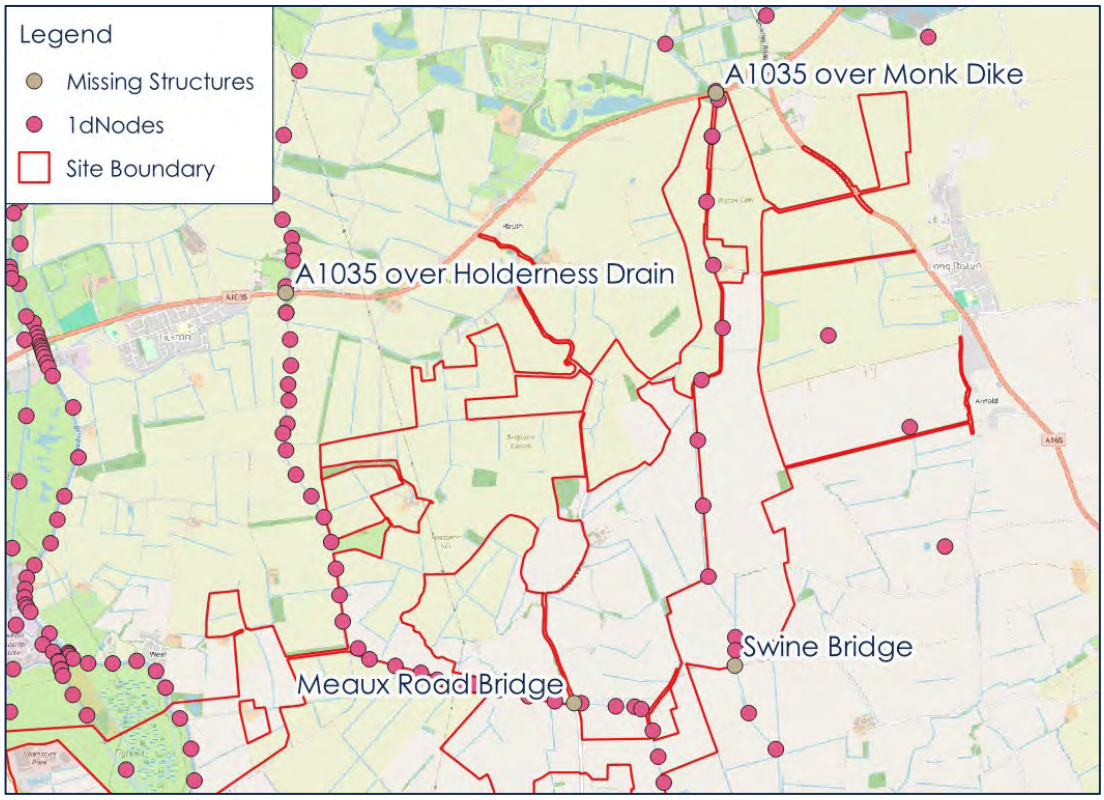
## 3 MISSING STRUCTURES

3.1.1 The EA model review notes a number of missing structure in vicinity of the site as listed below and shown in Figure 3-1:

- A1035 bridge over Monk Dike (FM cross section Cat00000)
- A1035 bridge over Holderness Drain (FM cross section HN43),
- Swine Road Bridge over Monk Dike (closest FM cross section MK4055), and
- Meaux Road Bridge over Holderness Drain (FM cross section HN21).

3.1.2 Three of these structures have been added to the model using available data and where information was sparse a conservative approach to the structure definition was taken. The structure at HN21 as it appears to be a clear span structure with the deck approximately 3m above the maximum water level. Structure details definitions are appended to this document.

*Figure 3-1 Missing Structures*




3.1.3 The model was reran with the design event flood. The maximum flood level was compared with the existing baseline design event outputs and the results are shown in Drawing 20-206-60-255-00 & 20-206-60-256-00.

3.1.4 Flood levels are generally within +/-20mm within the site boundary, the exception being a small part of parcel B1 where levels are reduced by 60mm and land west of parcel F12 where levels are reduced by 180mm. The only significant increase within the site are the parcels to the east of the Monk Dike (B2-4, B8 & C1-C3) where levels increase by 20mm. The change in outline is insignificant.

3.1.5 Given the very minor changes experienced in flood levels across the site it is concluded that the definition of these structures has no material impact on the flood levels, the mitigation (a freeboard of 300mm has been applied), or the layout.

3.1.6 As an additional sensitivity the bridge openings were reduced as follows:

- Cat0000 – from 6m to 4m wide
- MK3935 – from 5.5m to 4m wide
- HN43 – from 3.5m wide to 2.5m wide

## 4 IMPACT OF FLOW SENSITIVITY ON VULNERABLE INFRASTRUCTURE

4.1.1 The EA letter pertaining to the review of the hydraulic modelling (ref: XA/2024/100110/01-L01) includes the following query.

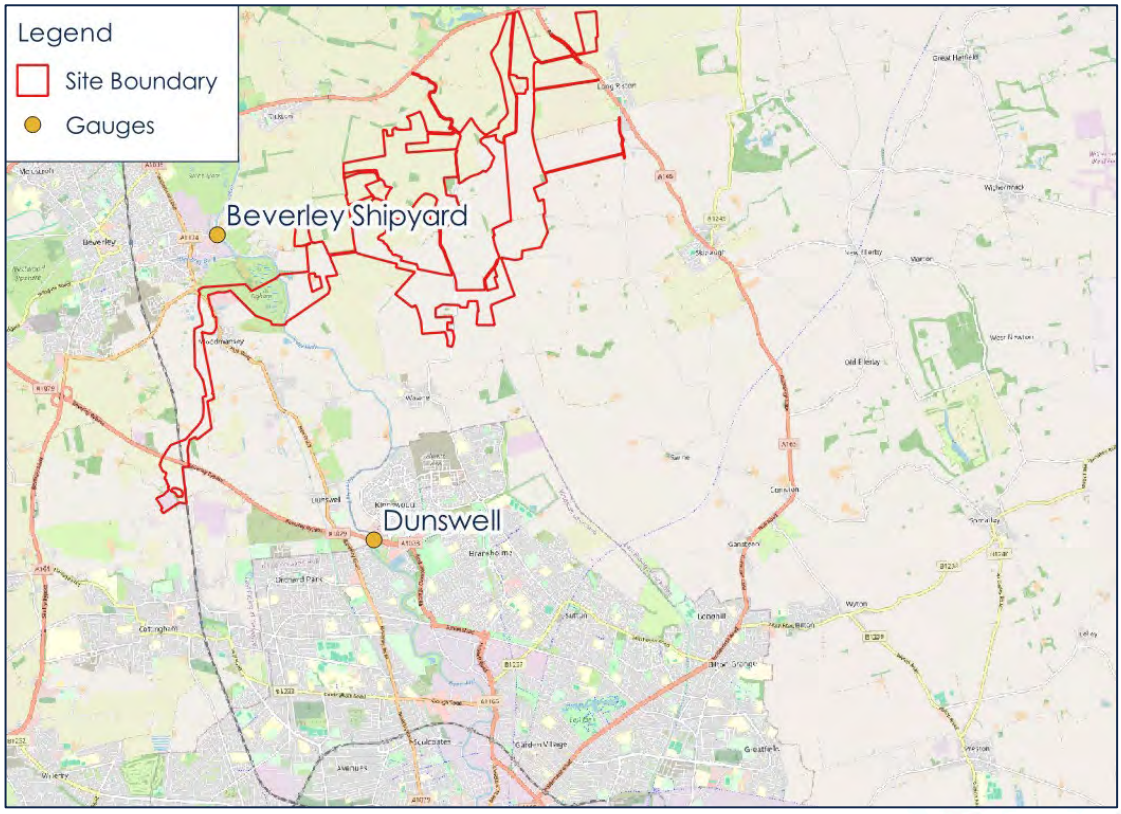
*"There are some areas of additional flooding in the baseflow/SPR sensitivity test within the development area. Is sensitive infrastructure located outside of these areas?"*

4.1.2 There is no sensitive infrastructure in these areas. Solar panels will be in these areas but will be raised significantly above the predicted flood levels. A revised version of the flow sensitivity drawings which includes containerised infrastructure and substation locations is appended to this note.

## 5 GAUGE LEVELS CHECK

The EA model review spreadsheet includes peak water levels for most years for two gauges: Dunswell gauge starting from 2001 and the Beverley Shipyard gauge starting from 1994. The location of the gauges is shown in Figure 4-1.

*Figure 4-1 Gauge Locations.*




5.1.1 Both of these gauges are located on the River Hull which is heavily tidally influenced and drains a large catchment so the causes of high levels are difficult to apportion. This is complicated by the fact the tidal ingress and fluvial egress are prevented when the Hull Tidal Surge barrier is closed.

5.1.2 The levels at Beverly Shipyard which are most relevant for the site vary between 2.99mAOD and 3.89mAOD over the 29 year record and have an average value of 3.54mAOD. When accounting for the predicted sea level rise to 2066 of 0.36m, the peak modelled flood level of 4.06mAOD seems reasonable.

5.1.3 The tidal boundary has been subject to sensitivity testing as have the fluvial flows neither of which produce significantly different results.

## Enclosures

Revised Site Layout

Structure Information

20-206-60-303-00 Inland Defences (Sheet 1 of 2)

20-206-60-304-00 Inland Defences (Sheet 2 of 2)

20-206-60-253-00 Monk Dike Defence Removal West – 1 in 100yr +17% Depths

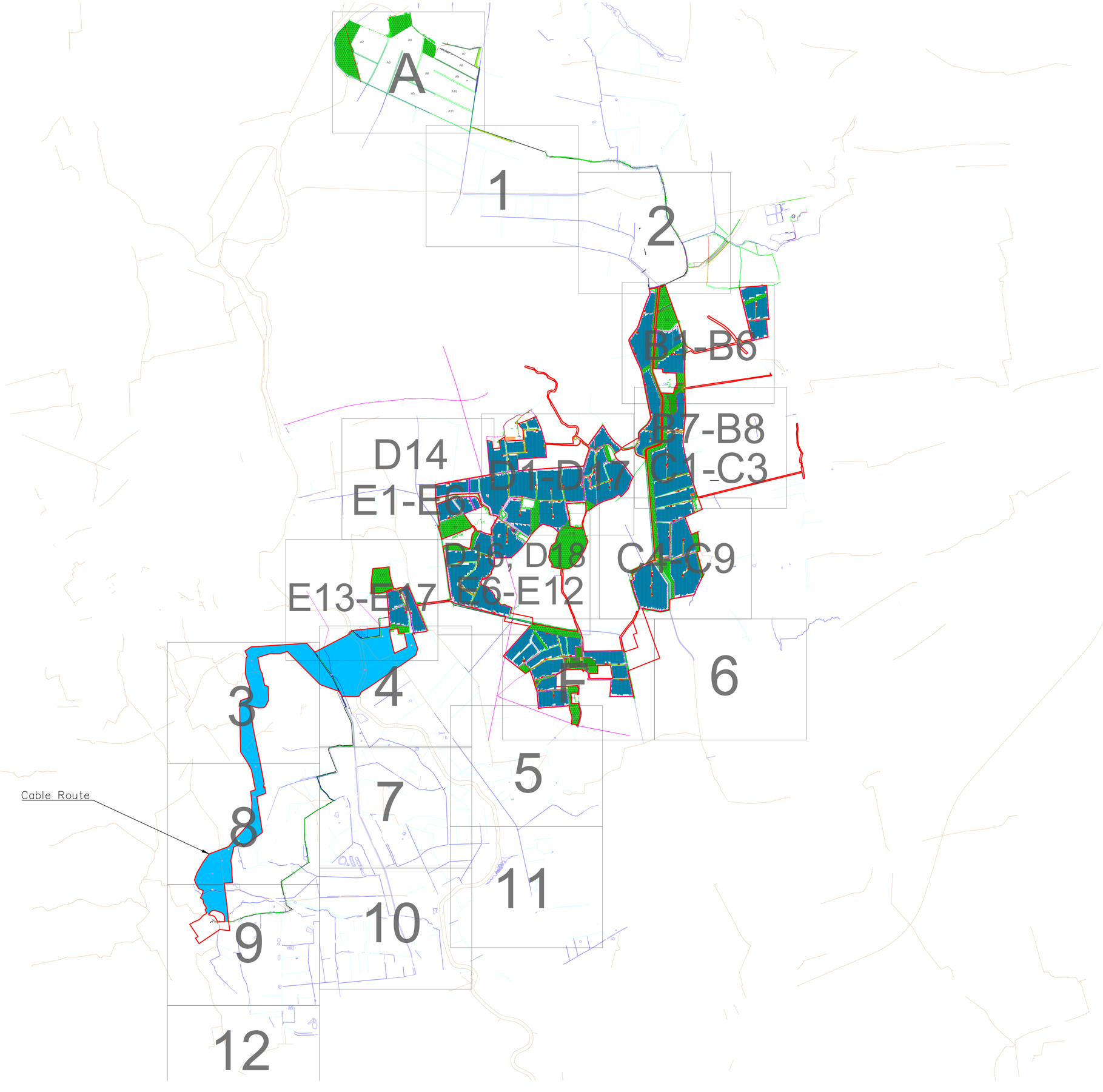
20-206-60-254-00 Monk Dike Defence Removal East – 1 in 100yr +17% Depths

20-206-60-255-00 Structure Sensitivity 1 in 100 yr Flood Level Changes (Sheet 1 of 2)

20-206-60-256-00 Structure Sensitivity 1 in 100 yr Flood Level Changes (Sheet 2 of 2)

20-206-60-235-01 Flow Sensitivity (Sheet 1 of 2)

20-206-60-236-01 Flow Sensitivity (Sheet 2 of 2)




0 1000 2000 Meters

REF NORTH

## NOTES

1. All details are indicative only.
2. Dimensions are in metres unless stated otherwise.
3. Refer to HSE document "Avoiding danger from overhead power lines – Guidance Note GS6" to ensure safe operation of machinery in proximity to overhead power lines.
4. Contains OS Data @ Crown copyright and database rights 2023 Ordnance Survey 0100031673
5. CCTV Icons are indicative positions at 1.5m from the fence line

## LEGEND

- Planning Red Line
- Landowners Line
- Road
- Landowner Road
- Solar panels
- Fence
- Hedges
- Trees
- Hybrid Inverter Container
- Spares Container Container
- Customer Switch Gear Container
- CCTV
- Access Gate
- Construction compound
- Substation Construction Compound
- Drains
- River
- Bank
- Public Rights Of Way
- Proposed Permissive Path
- Proposed Permissive path (allowing travel on horses)
- Gas Pipe
- Water Pipe
- Fuel Pipe
- High Voltage Cable
- Low Voltage Cable
- Telecom Cable
- Wind Turbine
- Acoustic Fencing
- DNO Operational Land
- Wildlife Enhancement
- Archaeological Buffers
- Hedge Punch through/ Culvert Crossing/ Cable Direction Drill

RWE

## DETAILS

| | |
|---|---|
| TITLE | Peartree Hill Solar |
| LOCATION | Near Drove Lane, Wawne, East Riding of Yorkshire, England, HU7 5XZ, United Kingdom. |
| DATE | August 24 |
| CONFIGURATION | Typical fixed design |
| REVISION | 6 |

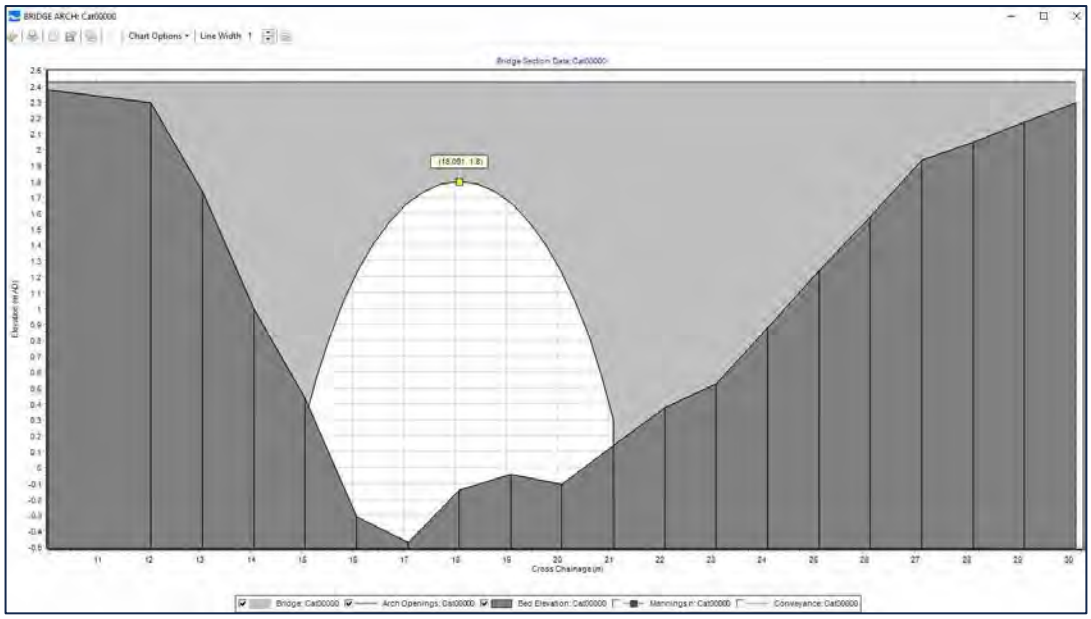
# 1 A1035 BRIDGE OVER MONK DIKE

1.1.1 The arch bridge where the A1035 crosses the Monk Dike is located between node Cat0000 and Mk8550. The deck level is approximately 3.1mAOD.


1.1.2 The bridge dimensions were estimated with reference to the photos above and assumed brick dimensions of 225mm long, 113mm wide and 75mm high with and additional 10mm allowance for mortar. The parapet capping beam was assumed to be 225mm.

- The parapet was calculated to be 4.2mAOD. 1.1m high – ten course of bricks and capping beam (85*10+225)/1000
- The crown was calculated to be 1.8mAOD. 2.35m below parapet – two bricks lengthwise, one width wide, 18 courses and a capping beam (2*(225+10)+113+18*(75+10)+225)/1000
- Springing height was calculated to be 0.3mAOD. 1.5m below crown 18 courses plus mortar 18*85/1000.
- The width of the bridge was estimated to be 6.1m, 26 lengths plus mortar (225+10)*26/1000.

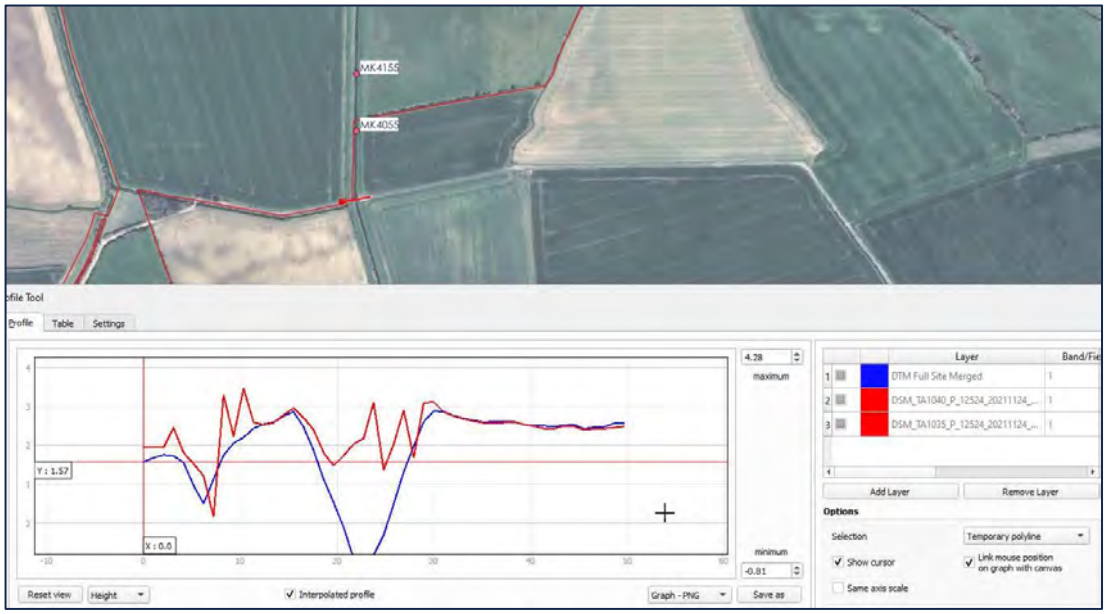
1.1.3 The model definition of the bridge is shown below.




1.1.4 The change to the model results in a reduction in peak flood level in the Monk Dike of 8mm. There is a minor reduction in flooding to the west of Monk Dike and minor increase in flood levels to east of Monk Dike (refer to Drawing 20-206-60-255).

## 2 SWINE ROAD BRIDGE OVER MONK DIKE

2.1.1 Swine Bridge is located between model nodes MK4055 and MK4355 just beyond the southern edge of parcel C7. The deck level is recorded by LiDAR as being approximately 3mAOD as shown below.




2.1.2 The structure dimensions were estimated from the photograph shown below.

2.1.3 The bridge dimensions were estimated with reference to the photos above and assumed brick dimensions of 225mm long, 113mm wide and 75mm high with and additional 10mm allowance for mortar. The parapet capping beam was assumed to be 225mm.

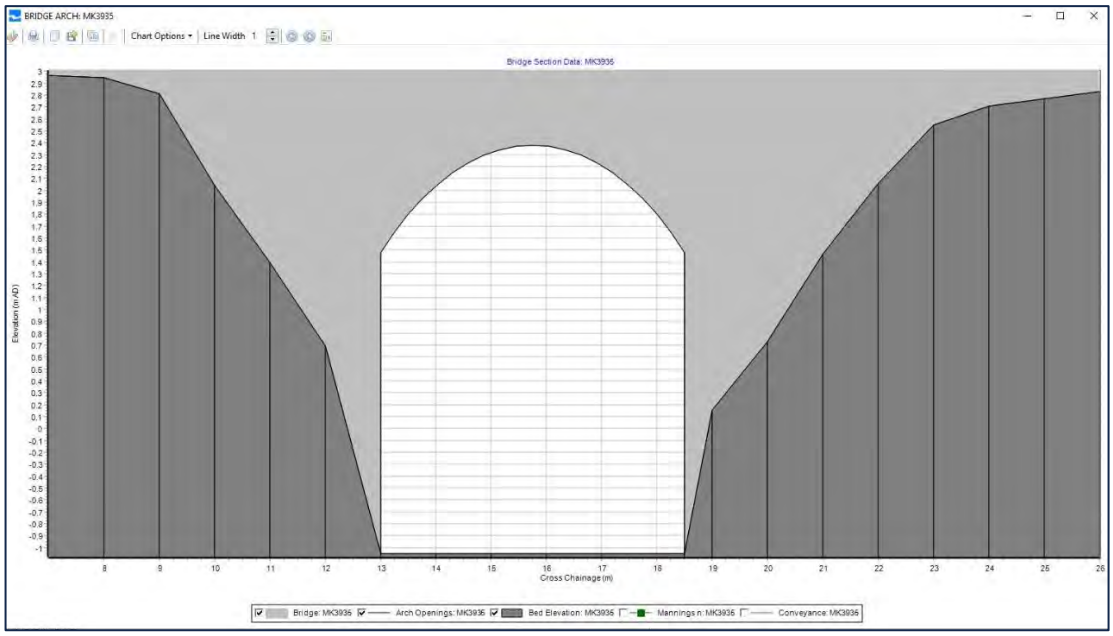
- The parapet was calculated to be 4.1mAOD. 1.1m high – ten course of bricks and capping beam (85*10+225/1000)

- The crown was calculated to be 2.4mAOD. 1.7m below parapet – two bricks lengthwise, one width wide, 10 courses and a capping beam (2*(225+10)+113+18*(75+10)+225)/1000)

- Springing height was calculated to be 1.5mAOD. 0.9m below crown 11 courses plus mortar (11*85/1000).

- The width of the bridge was estimated to be 5.6m, 24 lengths plus mortar 24*(225+10)/1000).

2.1.4 The model definition of the bridge is shown below.



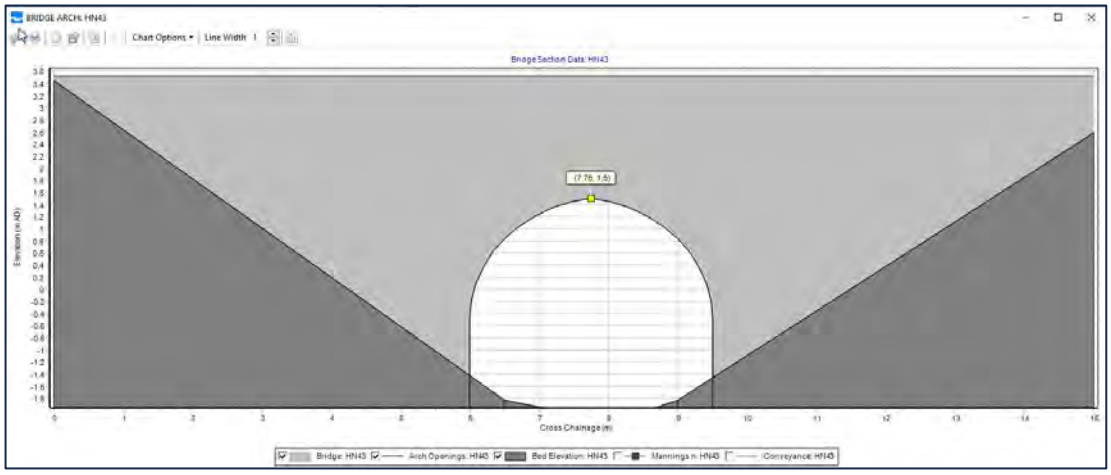

The peak flood level upstream of the bridge is within 1mm of the baseline model and consequently the definition of this bridge is not considered to be significant.

## 3 A1035 TICKTON BRIDGE OVER HOLDERNESS DRAIN

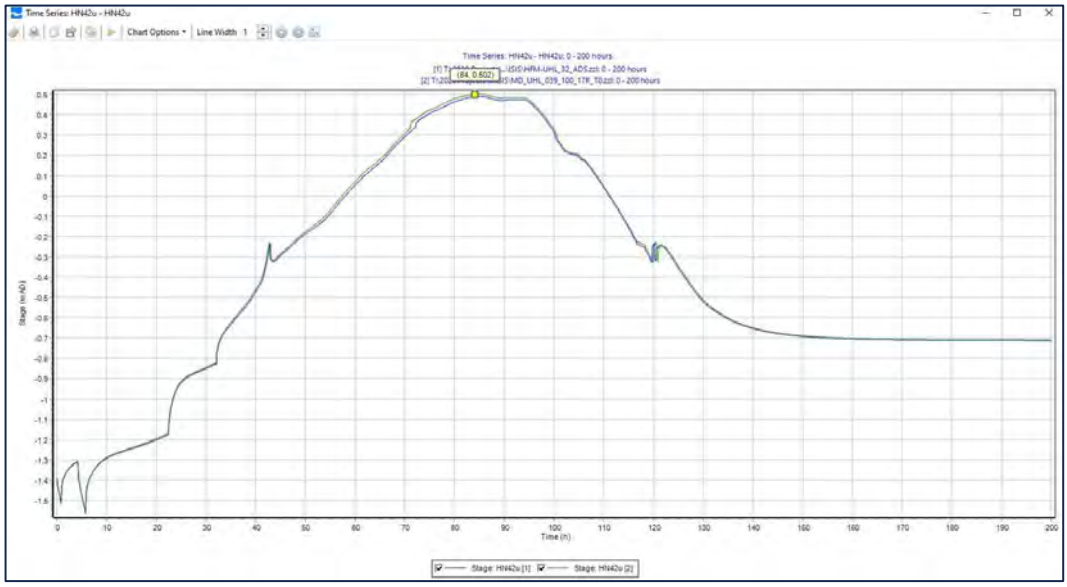
3.1.1 Tickton Bridge is located between model nodes HN43 and HN42. It is upstream of the application site. The deck level as recorded by LiDAR data is approximately 3.25m as shown below.


3.1.2 The only available information for the bridge is a photograph provided by the EA shown below.

3.1.3 It was estimated that the bridge opening is 3.5m wide with a 2m high arch and a total structure height of 3m as shown below.



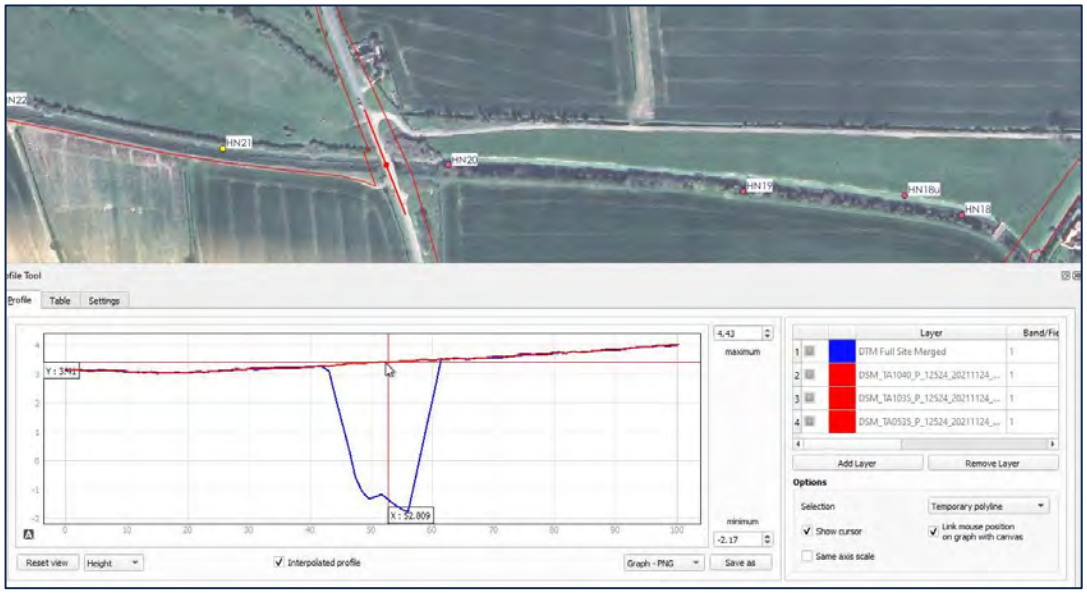

3.1.4 The addition of the bridge results in an 11mm increase in water level just downstream of the structure as shown below and a negligible change in flood outline (refer to Drawing 20-206-60-255).



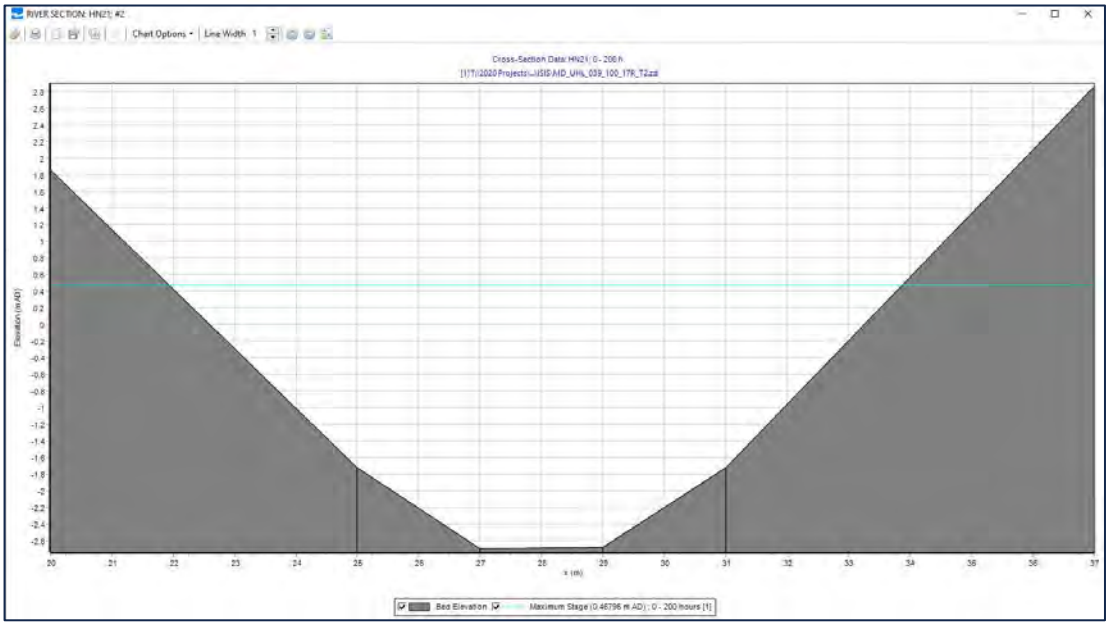

## 4 HN21

4.1.1 There is no bridge in the model between nodes HN21 and HN22 which is located adjacent to Parcel F6. The structure appears to be a flat deck, clear-span bridge as shown below

4.1.2 LiDAR data reports the bridge deck to be 3.25-3.5mAOD as shown below.




4.1.3 The maximum water level during the design event flood at node HN21 just upstream of the structure is 0.5mAOD as shown below. Consequently the soffit is likely to be much higher than the peak water level. The structure would therefore not impede flow and has not been added to the model.


RIVER SECTION: HN21: #2
Chart Options
Line Width: 1
Cross-Section Data: HN21: 0 - 200 h
Elevation (m AD)
x (m)
Bed Elevation
Maximum Stage (0.46796 m AD) : 0 - 200 hours [1]

north

Legend

- Site Boundary

Defences

- Very Poor
- Poor
- Fair
- Good
- Very Good
- Unchecked
- No Data

| REV: | DESCRIPTION: | BY: | DATE: |
|---|---|---|---|
| - | FOR INFORMATION | AB | 23.07.24 |

STATUS: FOR INFORMATION

CLIENT: RWE

SITE: Peartree Hill Solar Farm

TITLE: Inland Defences (1 of 2)

calibro

Transport Planning | Flood Risk & Hydrology | Infrastructure & Drainage
33 Colston Avenue | Bristol | BS1 4AU | T 0117 2441 970
E hello@calibro-consultants.com www.calibro-consultants.com

| SCALE AT A3: | DATE: | DRAWN: | CHECKED: |
|---|---|---|---|
| 1:30,000 | 23.07.24 | AB | PG |
| PROJECT NO: 20-206 | | DRAWING NO: 60-303 | REVISION: - |