# Newcastle-under-Lyme Level 2 Strategic Flood Risk Assessment: NaFRA2 Addendum

## Final report

**A1-C01**

**28 March 2025**

**Prepared for:**

**Newcastle-under-Lyme Borough Council**

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# Contract

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This report describes work commissioned by Newcastle-under-Lyme Borough Council by an instruction dated 18 March 2025. The Client's representative for the contract was Allan Clarke of Newcastle-under-Lyme Borough Council. Sarah Hambling and Dylan Nattrass of JBA Consulting carried out this work.

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## Abbreviations

| | |
|---|---|
| AEP | Annual Exceedance Probability |
| FMfP | Flood Map for Planning |
| FRA | Flood Risk Assessment |
| NaFRA2 | National Flood Risk Assessment 2 |
| NULBC | Newcastle-under-Lyme Borough Council |
| RoFSW | Risk of Flooding from Surface Water |

# 1 Introduction

## 1.1 Context

JBA Consulting were commissioned to produce a Level 2 Strategic Flood Risk Assessment (SFRA) for Newcastle-under-Lyme Borough Council (NULBC) to support their new Local Plan. This Level 2 SFRA was prepared in January 2025 and published in March 2025 following a period of stakeholder review.

During this preparation of this Level 2 SFRA, the Environment Agency published the first outputs of their National Flood Risk Assessment 2 (NaFRA2), updating the national flood mapping for England.

Based on an assessment of the changes in the NULBC administrative area showing generally minimal changes to the sites assessed as part of the Level 2 SFRA and the time and cost implications of updating the Level 2 SFRA work within the Council's tight Local Plan timescales, it was agreed with the Environment Agency that the Level 2 SFRA would be published with the data available at the time of preparation and a short accompanying Addendum would be prepared.

This Addendum aims to provide a short overview of the new NaFRA2 mapping currently available, a summary of the risk shown at the sites assessed within the Level 2 SFRA with the new NaFRA2 mapping, and recommendations for developers.

## 1.2 NaFRA2

The Environment Agency updated their Risk of Flooding from Surface Water (RoFSW) dataset (gov.uk) on the 28 January 2025. This included extents and depths (based on probability bands).

The Environment Agency updated the Flood Map for Planning (FMfP) (gov.uk) on the 25 March 2025. The FMfP now shows updated extents for Flood Zone 2 (0.1% Annual Exceedance Probability (AEP)) and Flood Zone 3 (1% AEP) which incorporate new national modelling as well as local models where appropriate. In addition to the Flood Zones, the following information is now also provided in the FMfP:

- Rivers and sea with defences
  - Mapping for the 3.3% AEP, 1% AEP, and 0.1% AEP events for present day and climate change (using the Central allowance for the 2080s epoch) taking account the presence of flood defences (extents only).
- Rivers and sea without defences
  - Mapping for the 3.3% AEP, 1% AEP, and 0.1% AEP events for present day and climate change (using the Central allowance for the 2080s epoch) which ignores the presence and condition of flood defences (extents only).
- Surface water

- Mapping for the 3.3% AEP, 1% AEP, and 0.1% AEP events for the present day only (extents only).

## 1.3 Recommendations for developers

It is recommended that developers use the Level 2 SFRA and this accompanying addendum as a starting point to assess the flood risk to their sites and identify the requirements for site-specific Flood Risk Assessments (FRAs) and further work that might be required but refer to the Environment Agency online datasets for the latest flood risk data for their site.

It should be noted that the Environment Agency intend to publish further NaFRA2 datasets over time, which are expected to include fluvial and surface water depth information as well as climate change outputs for surface water. Developers should consult with the Environment Agency as early as possible to understand the requirements for their site-specific Flood Risk Assessment (FRA) and additional assessments they may need to undertake in the interim before publication of the full data.

# 2 Overview of implications of NaFRA2

## 2.1 Fluvial risk

The Level 2 SFRA identified four sites that are shown to be at fluvial flood risk based on the previous Environment Agency Flood Map for Planning (FMfP):

- CH13
- TC40
- AB2
- Site 11

It should be noted that several sites are also at risk of fluvial flooding from smaller watercourses, not shown in the FMfP. The flood risk at these sites was assessed using the surface water mapping, which often provides a good representation of the risk from smaller watercourses for the purposes of strategic assessment.

The Environment Agency published the updated FMfP on the 25 March 2025. A screening exercise was undertaken to assess how the percentage of each site at fluvial flood risk changed between the previous FMfP dataset and the new NaFRA2 FMfP. No additional sites were identified to be at fluvial risk. Table 2-1 shows that the percentage of each site within Flood Zone 3 and Flood Zone 2 remains largely unchanged when comparing between the new NaFRA2 release and the previous FMfP. The risk at sites CH13 and AB2 is shown to be unchanged as the Lyme Brook hydraulic model (used within the Level 2 assessment) has been retained within the NaFRA2 FMfP update. At Site TC40, there is a very minimal increase in the area of the site within Flood Zone 2, while the new data shows a small area (<1%) of the site is now within Flood Zone 3. At Site 11, the new NaFRA2 mapping shows the site is no longer to be identified at fluvial risk. This aligns with the findings of the Level 2 assessment which concluded that the site was unlikely to be at fluvial flood risk based on its elevation.

Table 2-1: Difference fluvial extent percentage coverage of sites between the previous FMfP mapping and the new Nafra2 FMfP.

| Site reference | Previous FMfP Flood Zone 3 extent | Previous FMfP Flood Zone 2 extent | NaFRA2 FMfP Flood Zone 3 extent | NaFRA2 FMfP Flood Zone 2 extent |
|---|---|---|---|---|
| CH13 | 2 | 10 | 2 | 10 |
| TC40 | 0 | 1 | <1 | 2 |
| AB2 | 1 | 2 | 1 | 2 |
| Site 11 | 3 | 5 | 0 | 0 |

## 2.2 Surface water risk

The Environment Agency's RoFSW mapping was updated in January 2025 with the publication of NaFRA2. Surface water flood risk is subdivided into the following four categories:

- **High:** An area has a chance of flooding greater than 3.3% AEP (1 in 30) each year.
- **Medium:** An area has a chance of flooding between 1% AEP (1 in 100) and 3.3% AEP (1 in 30) each year.
- **Low:** An area has a chance of flooding between 0.1% AEP (1 in 1,000) and 1% AEP (1 in 100) each year.
- **Very Low:** An area has a chance of flooding of less than 0.1% AEP (1 in 1,000) each year.

There are a number of key differences noted with the Environment Agency's updated NaFRA2 RoFSW mapping compared with the previous RoFSW mapping:

- No velocity and hazard information is currently available within the NaFRA2 RoFSW mapping.
- Within the NaFRA2 RoFSW mapping any areas of surface water risk with a depth of less than 75mm have been removed. In the previous mapping areas of surface water risk with a hazard of less than 0.575 were removed (which is a factor of both depth and velocity).
- In areas where the new NaFRA2 RoFSW mapping overlaps the Risk of Flooding from Rivers and Sea (areas shown to be at fluvial risk) the flood risk extents have been removed from the RoFSW mapping, i.e. it no longer shows flow paths along any watercourses represented within the fluvial mapping.

The local surface water model which covers the main urban area of Newcastle-under-Lyme is noted to have been retained within the updated surface water mapping.

Within the EA's RoFSW a Climate Change dataset was also published with the 'Central' allowance for the 2050s epoch applied to the 3.3%, 1%, and 0.1% AEP events. However, as set out in the EA Climate Change guidance (gov.uk) this allowance is only deemed suitable for development with a lifetime up to 2060, which is beyond the lifetime for residential development. Further assessment of the potential impacts of climate change on surface water will need to be considered at the site-specific FRA stage. It should be noted that should the surface water risk to a site have changed considerably, the surface water climate change extents provided as part of the NULBC Level 2 SFRA may no longer provide a suitable indication of the surface water risk with climate change and the developer may need to undertake further surface water modelling as part of a site-specific FRA.

Table 2-2 provides the extent of each site at risk from the 3.3%, 1%, and 0.1% AEP surface water events using both the previous RoFSW mapping and the new NaFRA2 mapping, with a brief comment on the change in risk shown with the NaFRA2 mapping. This should be used as a starting point to determine areas where the Level 2 SFRA information is likely to be outdated based on the mapping updates. Future assessments should use the updated

surface water mapping as a starting point, as the NaFRA2 mapping supersedes the previous surface water mapping.

Table 2-2: Difference in surface water extent percentage coverage of sites between the previous RoFSW mapping and the new NaFRA2 RoFSW mapping.

| Site reference | Previous RoFSW 3.3% AEP Extent (High) | Previous RoFSW 1% AEP Extent (Medium) | Previous RoFSW 0.1% AEP Extent (Low) | NaFRA2 RoFSW 3.3% AEP Extent (High) | NaFRA2 RoFSW 1% AEP Extent (Medium) | NaFRA2 RoFSW 0.1% AEP Extent (Low) | Comment on change in risk from previous RoFSW to updated NaFRA2 RoFSW |
|---|---|---|---|---|---|---|---|
| BL8 | 4 | 17 | 21 | 15 | 19 | 24 | Minimal change in the low risk extents within the site, but greater proportion of the areas of risk now designated as high risk. |
| KS11 | 0 | 0 | 0 | 0 | 0 | 6 | No change in high risk and medium risk return periods, however a small area of ponding is now present on the site in the low risk return period. |
| KS3 | 2 | 3 | 8 | 5 | 8 | 13 | Areas at risk in the site remain the same, however flood extents are larger across all return periods. |
| KS17 | 1 | 1 | 3 | 1 | 3 | 9 | Flow path through the site has increased in extent, almost bisecting the site in the low risk event. |
| TC22 | 0 | 0 | <1 | 0 | 0 | <1 | No change and minimal surface water risk on site. |
| TK6 | 3 | 3 | 3 | 6 | 7 | 7 | Increase in area at risk for all return periods, however the at-risk areas remain confined to the site boundary. |
| KG6 | 9 | 9 | 9 | 18 | 18 | 18 | Area at risk doubled in each return period, increase in area at risk along |

| Site reference | Previous RoFSW 3.3% AEP Extent (High) | Previous RoFSW 1% AEP Extent (Medium) | Previous RoFSW 0.1% AEP Extent (Low) | NaFRA2 RoFSW 3.3% AEP Extent (High) | NaFRA2 RoFSW 1% AEP Extent (Medium) | NaFRA2 RoFSW 0.1% AEP Extent (Low) | Comment on change in risk from previous RoFSW to updated NaFRA2 RoFSW |
|---|---|---|---|---|---|---|---|
| | | | | | | | the eastern boundary of the site and roads to the north and south of the site. |
| CT20 | <1 | 1 | 3 | 1 | 2 | 9 | Minimal change to areas at high and medium risk, however the flow path affecting the site has increased in extent in the low risk return period. |
| KL13 | 1 | 2 | 3 | 2 | 4 | 8 | Area at risk has increased in all return periods as a result of a new surface water flow path along Innovation Way, covering the length of the site. |
| TB6 | 0 | 0 | <1 | 0 | 0 | 0 | Slight reduction in area at low risk, no surface water risk on site. |
| TB23 | 2 | 4 | 10 | 11 | 14 | 21 | Flow path through the site has increased in extent with a considerably larger area designated as high risk. |
| LW53 | 0 | 0 | 0 | 0 | 0 | 0 | No change, no surface water risk on site. |
| BL32 | 2 | 3 | 3 | 8 | 8 | 8 | Increased areas of high risk surface water ponding but the risk remains confined along the southwestern site boundary. |

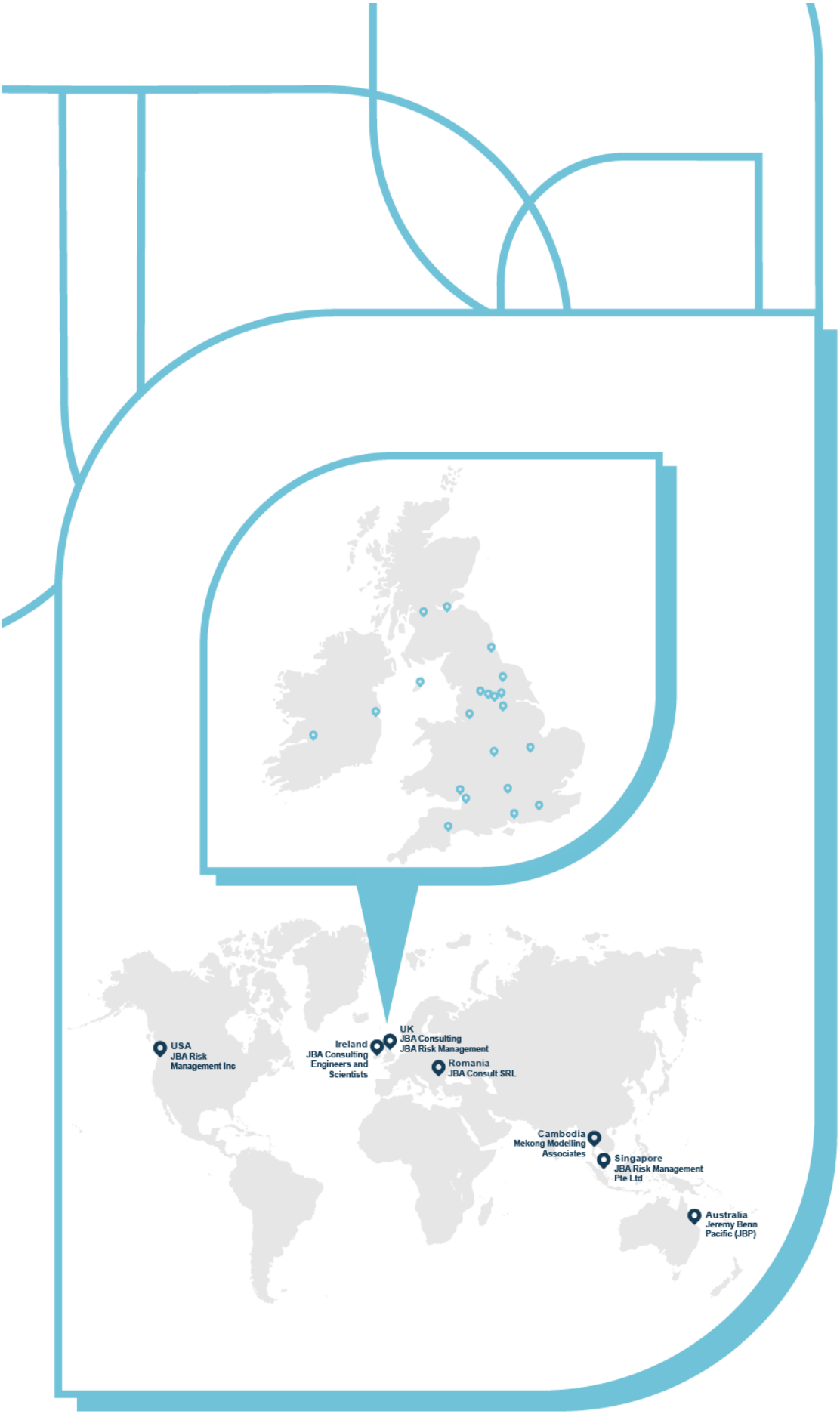
| Site reference | Previous RoFSW 3.3% AEP Extent (High) | Previous RoFSW 1% AEP Extent (Medium) | Previous RoFSW 0.1% AEP Extent (Low) | NaFRA2 RoFSW 3.3% AEP Extent (High) | NaFRA2 RoFSW 1% AEP Extent (Medium) | NaFRA2 RoFSW 0.1% AEP Extent (Low) | Comment on change in risk from previous RoFSW to updated NaFRA2 RoFSW |
|---|---|---|---|---|---|---|---|
| AB15 | 0 | 0 | 1 | 0 | 0 | 0 | Slight reduction in area at low risk, no surface water risk on site. |
| AB12 | <1 | 2 | 17 | 2 | 3 | 6 | Flow path affecting the site now apparent in the high risk return period, however this affects a reduced area of the site in the low risk return period. |
| BL18 | 3 | 4 | 4 | 6 | 7 | 8 | Increased area of site is at high risk, affecting the site perimeter. |
| CT1 | <1 | 1 | 1 | 1 | 1 | 2 | Minimal change in risk. |
| TB19 | 1 | 2 | 6 | 3 | 4 | 9 | Areas at risk in the site remain the same, however flow paths are now wider in the low risk return period. |
| TK17 | 0 | 5 | 13 | 1 | 6 | 12 | Minimal change in risk. |
| TK27 | <1 | 2 | 10 | 1 | 3 | 12 | Slight increase in width of surface water flow path. |
| NC13 | 10 | 12 | 15 | 14 | 17 | 19 | Areas at risk in the site remain the same, however extents are now greater in all return periods. |

| Site reference | Previous RoFSW 3.3% AEP Extent (High) | Previous RoFSW 1% AEP Extent (Medium) | Previous RoFSW 0.1% AEP Extent (Low) | NaFRA2 RoFSW 3.3% AEP Extent (High) | NaFRA2 RoFSW 1% AEP Extent (Medium) | NaFRA2 RoFSW 0.1% AEP Extent (Low) | Comment on change in risk from previous RoFSW to updated NaFRA2 RoFSW |
|---|---|---|---|---|---|---|---|
| AB33 | 5 | 7 | 27 | 8 | 15 | 25 | Total area of the site at risk remains similar although location of ponding has changed. This reflects the findings of the Level 2 detailed site assessment which identified that the surface water risk shown at the site previously was not reflective of the underlying topography. |
| SP23 | 0 | 0 | 0 | 0 | 0 | <1 | Minimal change and risk to site. |
| SP22 | 7 | 21 | 51 | 18 | 35 | 77 | Significant increase in area of the site at risk from surface water flooding across all return periods. |
| CH13 | <1 | 1 | 7 | <1 | 1 | 11 | Slight increase in area of ponding on site in the low risk return period. |
| CH14 | <1 | <1 | 1 | <1 | 1 | 3 | Slight increase in area at low risk due to small area of additional ponding. |
| SB12 | 0 | 0 | <1 | 0 | 0 | 0 | Minimal change, no surface water risk on site. |
| SP2 | 0 | 0 | 0 | 0 | 0 | 0 | No change, no surface water risk on site. |
| TC7 | <1 | 4 | 16 | 3 | 6 | 15 | Minimal changes to areas of site at risk. |

| Site reference | Previous RoFSW 3.3% AEP Extent (High) | Previous RoFSW 1% AEP Extent (Medium) | Previous RoFSW 0.1% AEP Extent (Low) | NaFRA2 RoFSW 3.3% AEP Extent (High) | NaFRA2 RoFSW 1% AEP Extent (Medium) | NaFRA2 RoFSW 0.1% AEP Extent (Low) | Comment on change in risk from previous RoFSW to updated NaFRA2 RoFSW |
|---|---|---|---|---|---|---|---|
| TK10 | <1 | <1 | 1 | <1 | <1 | 1 | Minimal change and minimal surface water risk on site. |
| TC45 | 0 | 0 | 5 | 0 | 5 | 7 | Area of ponding now present in the medium risk return period, minimal change. |
| KS18 | 0 | 0 | 0 | 0 | 0 | 0 | No change and no surface water risk on the site. |
| KS19 | 0 | 0 | 0 | 0 | 0 | 12 | New area of ponding present in the low risk return period. |
| TC52 | 0 | 0 | 7 | 0 | 0 | 0 | Reduction in area of site at low risk, now no surface water risk on site. |
| TC40 | 0 | <1 | <1 | 0 | 0 | 0 | Minimal change, no surface water risk on site. |
| TC19 | 0 | 0 | <1 | <1 | <1 | <1 | Minimal change and risk to site. |
| TC20 | 0 | 0 | 0 | 0 | 0 | <1 | Minimal change and risk to site. |
| KL15 | <1 | <1 | 1 | <1 | <1 | 1 | Minimal change and risk to site. |
| TC71 | <1 | <1 | <1 | <1 | <1 | <1 | Minimal change and risk to site. |
| BW1 | 4 | 7 | 17 | 9 | 13 | 24 | Increase in area of site at risk along the southern boundary. |
| TC50 | 0 | 0 | 0 | 0 | 0 | 0 | No change and no surface water risk on site. |

| Site reference | Previous RoFSW 3.3% AEP Extent (High) | Previous RoFSW 1% AEP Extent (Medium) | Previous RoFSW 0.1% AEP Extent (Low) | NaFRA2 RoFSW 3.3% AEP Extent (High) | NaFRA2 RoFSW 1% AEP Extent (Medium) | NaFRA2 RoFSW 0.1% AEP Extent (Low) | Comment on change in risk from previous RoFSW to updated NaFRA2 RoFSW |
|---|---|---|---|---|---|---|---|
| AB2 | 4 | 4 | 10 | 2 | 3 | 6 | Considerable decrease in extents associated with the flow path across the centre of the site, however some increases in ponding elsewhere on the site. |
| Site 11 | 9 | 9 | 9 | 13 | 14 | 15 | Increase in area of site at risk in all return periods along the site perimeter. |
| SP11 (3) | 0 | 0 | <1 | 1 | 2 | 5 | New surface water flow path intersecting the western side of the site. Overall increase in area affected in all return periods but still minimal area of the site at risk. |
| SP11 (2) | 0 | 1 | 1 | <1 | <1 | 1 | Minimal change and minimal surface water risk on the site. |
| SP11 (4) | 0 | 0 | 0 | 0 | 0 | 0 | No change and no surface water risk on the site. |
| SP11 (1) | 0 | <1 | 2 | 1 | 1 | 3 | Minimal change, flow path on site now present in the high risk return period. |
| Madeley High School Extension | 0 | 1 | 4 | 1 | 2 | 5 | Minimal increase, small area of ponding now present in the high risk return period. |

| Site reference | Previous RoFSW 3.3% AEP Extent (High) | Previous RoFSW 1% AEP Extent (Medium) | Previous RoFSW 0.1% AEP Extent (Low) | NaFRA2 RoFSW 3.3% AEP Extent (High) | NaFRA2 RoFSW 1% AEP Extent (Medium) | NaFRA2 RoFSW 0.1% AEP Extent (Low) | Comment on change in risk from previous RoFSW to updated NaFRA2 RoFSW |
|---|---|---|---|---|---|---|---|
| Site 8 | 0 | 0 | 5 | 1 | 2 | 4 | Minimal change, some small additional areas of ponding in high risk event but reduction in low risk extent. |

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