Risk of Flooding from Rivers and Sea - Properties in Areas at Risk

Product Description   February 2024

RISK OF FLOODING FROM RIVERS AND SEA - PROPERTIES IN AREAS AT RISK DESCRIPTION
• An assessment of flood risk for properties in England undertaken using local data and expertise.   • A Microsoft Access table containing every unique address identified within the floodplain in England, each allocated one of four flood likelihood categories. It shows the chance of flooding from rivers and the sea taking account of flood defences and the condition they are in, and describes the suitable uses of the data.

HOW IT IS PRODUCED	
Modelling Method	• Uses local ground levels, water level and flood defence data to model flood risk across 40 different flood likelihoods. Results are put into categories and checked by local experts. • Assigns a suitability rating, which provides information about how suitable the data is for different uses.
Investment (2005-2017)	• Model development £10m • Local validation • Survey £20m +

DATA CONTENT
A Microsoft Access Database containing every unique address identified within the floodplain in England, each allocated one of four flood likelihood categories.   • High: each year, there is a chance of flooding of greater than 1 in 30 (3.3%).   • Medium: each year, there is a chance of flooding of between 1 in 30 (3.3%) and 1 in 100 (1%).   • Low: each year, there is a chance of flooding of between 1 in 100 (1%) and 1 in 1000 (0.1%).   • Very Low: each year, there is a chance of flooding of less than 1 in 1000 (0.1%).   Each address has been allocated a suitability rating for the cell it is in to show at what scale it is generally appropriate to use the data to assess flood risk, and how suitable the data is for a range of different uses.

USING THE PRODUCT	
Key Strengths	• Local data (defence information including condition, water levels) and expert validation • High quality ground levels • Nationally consistent method for comparing risk in different places • Regularly updated where new data is available.
Key Limitations	• Like many other flood models, it does not take individual property threshold heights into account so the assessment at property level is indicative only.
Companion Datasets	• Risk of Flooding from Rivers and Sea • Risk of Flooding from Rivers and Sea - Postcodes in Areas at Risk • Risk of Flooding from Rivers and Sea - key summary information • Reduction in Risk of Flooding from Rivers and Sea Due to Defences • AIMS Assets Bundle • Flood Map for Planning (Rivers and Sea) • Recorded Flood Outlines

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Description

This product is a Microsoft Access Database which can be used to understand which one of four flood likelihood categories has been assigned to each unique address within the floodplain in England.

It contains the results of a national flood risk assessment for rivers and sea undertaken using modelling and local expertise. The assessment considers flood defences and their condition.

Individual addresses are not provided, but Ordnance Survey referencing is included to enable the data to be linked to their AddressBase products.

This product was formerly known as the NaFRA Property Flood Likelihood Category Database.

Data Specification

Using our Risk of Flooding from Rivers and Sea product with Ordnance Survey's AddressBase® Premium and OS MasterMap® Topography we show which of the four flood likelihood categories applies to each unique address based simply on the category allocated to the area that each property point falls within.

The four flood likelihood categories are:

- o High: each year, there is a chance of flooding of greater than 1 in 30 (3.3%).
- o Medium: each year, there is a chance of flooding of between 1 in 30 (3.3%) and 1 in 100 (1%).
- o Low: each year, there is a chance of flooding of between 1 in 100 (1%) and 1 in 1000 (0.1%).
- o Very Low: each year, there is a chance of flooding of less than 1 in 1000 (0.1%).

Details of the property classifications included in reporting can be requested.

Each address has also been assigned a suitability rating to show at what scale it is generally appropriate to use the data to assess flood risk, and how suitable the data is for a range of different uses.

The product does not provide addressing information but does provide an Ordnance Survey UPRN or Ordnance Survey TOID reference. Ordnance Survey's AddressBase® Premium and OS MasterMap® Topography are therefore required to make use of the data.

The Microsoft Access Table contains:

- • A unique ID for each address copy derived from OS AddressBase® Premium (column name: UPRN).
- • A unique ID for each non-addressable property copy derived from the OS MasterMap® Topography buildings data (column name: AREATOID).
- • The flood likelihood category High, Medium, Low, Very Low; according to the flood risk analysis (column name: NaFRA_FLC).

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- A suitability rating that shows the different scales of suitable use of the information limited to: National to County, County to Town, Town to Street, Street to Parcels of land, Property (including internal) (column name: SUITABILITY).
- An indication of property type (columns names: NumRes, NumNonRes, NumUnclass and Total).

How Risk of Flooding from Rivers and the Sea - Properties in Areas at Risk is produced

1. Our local teams provide modelled river and/or sea water levels alongside information about 175,000 flood defences, such as crest level, defence type and condition, as input data to the model.
2. The model calculates how much water would overtop or breach each defence, considering the defence height, type and condition.
3. The model is run to determine how much water would flood the land for a range of events (frequent but small floods to rare but large floods), and where it would go. We model 40 different scenarios of flooding between a 1 in 1 chance each year and a 1 in 1000 chance each year. For each scenario the model runs many thousands of simulations which consider the possible combinations of defences breaching or overtopping. The results are consolidated to give a single likelihood of flooding.
4. The area of floodplain is split into 50m x 50m grid squares (cells), each with one with a likelihood of flooding. We present the likelihood results in four risk categories.
5. The model also calculates a confidence level for each cell based on how well the model performs at that location and how good the input data is. The result is a suitability rating showing at which spatial scale the results are reliable.
6. Our local staff validate the categorised results from the computer model using their local knowledge and expertise.
7. Each property point (from our latest National Receptor Dataset) that is within the floodplain, is assigned to one of four flood likelihood categories and attributed with a suitability statement. This information is presented in a Microsoft Access database and must be combined with Ordnance Survey products to enable the data to be linked to address information and presented spatially.

How suitable are the Risk of Flooding from Rivers and Sea- Properties in Areas at Risk results for different uses?

The Risk of Flooding from Rivers and Sea - Properties in Areas at Risk is produced from the Risk of Flooding from Rivers and Sea product.

In this, we consider each 50m x 50m cell and using a nationally consistent method and tools, which we developed with input from our local area experts, and assign a suitability rating to each cell.

The suitability rating shows the spatial scale at which we think the results are reliable at, and therefore reflects how confident we are that each cell has been assigned the correct flood likelihood category, based broadly on:

- how well we think the computer flood model performs in that location
- how good the input data, e.g. water levels, defence levels is for the location.

Our local experts review this information and change results where they have better local data.

This is a national flood risk assessment, so suitability is generally in the 'national - county' and 'county - town' categories. We include the "Property (including internal)" scale but do not yet have any data reliable at this scale because the national flood risk assessment does not contain information about property

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thresholds. The data can be combined with other risk information to make it more reliable at smaller scales.

The ratings describing suitability and reliability are set out in the following table:

Suitability: 'it's good enough for...'		Reliability: 'how good is it for...'	
Indicative suitable scale	Indicative suitable use	How reliable is this for a local area?	How reliable is this for an individual property?
National to county - suitable for identifying which parts of countries or counties are at risk, or which countries or counties have the most risk.	Suitable for identifying areas with a natural vulnerability to flood first, deepest or most frequently.	Very unlikely to be reliable for a local area.	Extremely unlikely to be reliable for identifying individual properties at risk.
County to town - suitable for identifying which parts of counties or towns are at risk, or which counties or towns have the most risk.	Suitable for identifying approximate extents, shallower and deeper areas.	Unlikely to be reliable for a local area.	Very unlikely to be reliable for identifying individual properties at risk.
Town to street - suitable for identifying which parts of towns or streets are at risk, or which towns or streets have the most risk.	Suitable for identifying flood extents, approximate depth of flooding, and identifying streets at risk of flooding.	Likely to be reliable for a local area (and so the information is suitable for areas of land, not individual properties).	Unlikely to be reliable for identifying individual properties at risk (and so the information is suitable for areas of land, not individual properties).
Street to parcels of land - suitable for identifying which parts of streets or parcels of land are at risk, or which streets or parcels of land have the most risk.	Suitable for identifying flood extents, depths and approximate velocities.	Very likely to be reliable for a local area (and so the information is suitable for areas of land, not individual properties).	Likely to be reliable for identifying individual properties at risk (though not whether they flood internally, so the information is suitable for areas of land, not individual properties).
Property (including internal) - suitable for identifying which parts of a property are at risk (including internal / external distinction), or which properties have the most risk. **Currently no data in NaFRA has this category.**	Suitable for identifying flood extents, depths, velocities, and distinguishing between street and property flooding.	Extremely likely to be reliable for a local area.	Likely to be very reliable at identifying individual properties at risk, including depths of flooding internally (this provides a genuine property level assessment).

Improvements / Update frequency

There are ongoing improvements to the method and the input data used to produce the Risk of Flooding from Rivers and Sea - Properties in Areas at Risk. Consequently, we publish updates to it regularly (typically every 3 months) and users are strongly advised to ensure they are referring to the most current information.

This year we are pausing the updates to this dataset after December 2023. This is in advance of publishing the first outputs from our new National Flood Risk Assessment. These outputs will be published by the end of 2024 and will include a new version of this dataset. Please visit the "Pause to Updates of Flood Risk Maps" announcement on the Defra Data Services Platform support pages for further information. You can also contact us for the latest information about these changes at fcrm_risk_assessment@environment-agency.gov.uk.

Using the product
Strengths

- Includes local data (defence features including condition, water levels)
- Validated by local experts
- Uses high resolution ground levels where available (~70% of England)
- Nationally consistent method for comparing risk in different places
- Can be updated regularly where new data is available

Limitations

- Flood estimation is not an exact science and any flood risk assessment needs to be understood and used in that context.
- Results are generally not reliable for property level assessment. The method does not provide information relating to when the floodwater may be deep enough to start causing damage or disruption to homes, roads or other infrastructure. Even if suitable depths were available, additional information on properties (including floor levels) would be required to say with any confidence whether flooding of a certain depth would enter into a property and cause damage. It can only provide an indication of the likelihood of flooding and further information is required to determine the actual impact on a specific property.

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Companion datasets

- Risk of Flooding from Rivers and Sea
- Risk of Flooding from Rivers and Sea – Postcodes in Areas at Risk
- Risk of Flooding from Rivers and Sea – key summary information
- Reduction in Risk of Flooding from Rivers and Sea Due to Defences
- AIMS Assets Bundle
- Flood Map for Planning:
    - Flood Zone 3
    - Flood Zone 2
    - Flood Storage Areas
    - Spatial Flood Defences
- Recorded Flood Outlines

Public access to this information

This product can be downloaded from the Defra Data Services Platform under the Open Government Licence.

A zoom restricted map showing the Risk of Flooding from Rivers and Sea is also available on the gov.uk website.

Further information regarding the Defra Data Services Platform can be found on the supporting Forum.

Database fields

Table name	Description	Comments
Properties	NaFRA (National Flood Risk Assessment) Properties	Table name, limited to 10 characters. Where this shortens the field heading the shortened and full field name is given.

Field Name	Field Type	Description	Source
UPRN	String	Unique Property Reference Number for address	from OS AddressBase®
AREATOID	String	A unique ID for each non-addressable property	from OS MasterMap® Topography

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NaFRA_FLC	String	Risk of Flooding from Rivers and Sea Flood Likelihood Category: the likelihood of flooding described as one of the following categories: • High: each year, there is a chance of flooding of greater than 1 in 30 (3.3%). • Medium: each year, there is a chance of flooding of between 1 in 30 (3.3%) and 1 in 100 (1%). • Low: each year, there is a chance of flooding of between 1 in 100 (1%) and 1 in 1000 (0.1%). • Very Low: each year, there is a chance of flooding of less than 1 in 1000 (0.1%).	from National Flood Risk Assessment analysis published in the Risk of Flooding from Rivers and Sea
SUITABILITY (SUITABILITY)	String	Suitability is the scale at which the likelihood information is most reliable, described as one of the following: •National to County •County to Town •Town to Street •Street to Parcels of land •Property (including internal) (currently no data in this category)	from National Flood Risk Assessment analysis published in the Risk of Flooding from Rivers and Sea
NumRes	Number	Number of residential properties	National Receptor Dataset
NumNonRes	Number	Number of non residential properties	National Receptor Dataset
NumUnclass	Number	Number of unclassified properties	National Receptor Dataset
Total	Number	Total number of properties	National Receptor Dataset

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