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Environment Agency

Guidance

Mental health costs of flooding and erosion

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This publication is available at https://www.gov.uk/government/publications/mental-health-costs-of-flooding-and-erosion/mental-health-costs-of-flooding-and-erosion

This guidance is for flood and coastal erosion risk management authorities who need to assess the mental health costs of flooding and erosion scenarios.

You should use this guidance alongside Defra's (the Department for Environment, Food and Rural Affairs) appraisal of human-related intangible costs of flooding (https://webarchive.nationalarchives.gov.uk/20130903160012/http:/archive.defra.gov.uk/environment/flooding/documents/policy/guidance/fcdpag/fcd3update0704.pdf).

This guidance is for project teams who:

- need to carry out an economic appraisal that includes mental health costs due to flooding or erosion
- are seeking government flood defence grant-in-aid (FDGiA) funding for projects or strategies

Risk management authorities (RMA) in England may find this information useful when developing risk management plans and making FCERM investment decisions. It will help RMAs investigate the best way to reduce risk in each location. This guidance may be useful to an RMA even if they do not intend to apply for central government funding.

You should read this guidance alongside the A method for monetising the mental health costs of flooding (https://www.gov.uk/government/publications/a-method-for-monetising-the-mental-health-costs-of-flooding) research report.

Follow transition arrangements

When using this guidance, follow the arrangements for transitioning to the 2020 Flood and Coastal Erosion Resilience Partnership Funding Policy (https://www.gov.uk/government/publications/partnership-funding-supporting-documents).

Understand the appraisal methodology

Find out how to carry out flood and erosion economic assessments where you have the following information:

- flood depth or erosion rates
- property type

This data is normally available for schemes at the outline business case stage.

To work out the cost of flooding impacts:

1. Determine the number of adults in each residential property with above floor level flooding.
2. Multiply that by the mental health costs per adult for each flood event, varying with depth.
3. Convert these damages to an annual average damage.

4. Discount the damages using the Environment Agency supplementary guidance (https://www.gov.uk/government/publications/partnership-funding-supporting-documents).

You cannot apply mental health losses after:

- a residential property is written off
- the present value of the property-based damages equals the property's market value

It is assumed that mental health costs from flooding occur on average for 2 years after each event.

The effects of erosion on mental health are not yet fully understood, and further work in this area is needed. The effects are likely to increase as the risk of erosion to homes increases over time.

The mental health costs of erosion occur before and after the event. The mental health costs of erosion may be triggered by:

- years of greater erosion
- loss of a neighbour's house
- external financial pressures

Apply a single loss value in the year of the erosion of the property. This is a sum of the losses over several years. This is described below.

Calculate the mental health effects of flooding

Public Health England data shows that people experience higher rates of anxiety, depression and post-traumatic stress disorder (PTSD) after a flood. The costs associated with these illnesses include:

- treatment
- loss of employment
- co-morbidity (suffering from more than one condition at the same time)
- the proportion of people seeking treatment
- the assumption that mental health effects will last on average for two years after each flood

Use average household sizes to calculate the number of adults in each residential property.

Mental health costs vary depending on the depth of flooding. The flood depth band above internal floor level table shows the mental health costs of flooding per adult, per flood event, depending on the flood depth. It assumes 2 years of effects for each flood, based on a price date of 2018.

Flood depth band above internal floor level	Mental health losses per adult per flood event
0-30cm	£1,878
30-100cm	£3,028
More than 100cm	£4,136

For sensitivity testing, use ranges of minus 14% to plus 159%. These figures represent the higher and lower values in the research report.

The figure below displays the same data as the table in a graph.

The values in the table and graph apply only to residential properties. There is no valuation approach for the mental health costs for other property types, businesses or specific social groups.

Calculate the mental health effects of erosion

The research into flood-related mental health costs (https://www.gov.uk/government/publications/a-method-for-monetising-the-mental-health-costs-of-flooding) does not include erosion. There are no references in the relevant literature (discussed in the research) to the mental health costs of erosion. However, people whose homes are at risk of erosion are more likely to experience increased depression and anxiety.

The Environment Agency have carried out a high-level assessment and worked out a value to represent the mental health cost of erosion. This is £9,546 per adult (price date 2018). Assume that each adult will incur this loss once, in the same year as the home is eroded. Apply this value to the average number of adults in the properties at risk.

Calculate the number of adults per property

Differentiate residential properties by the number of adults living in each property.

The property type table shows the average number of adults per property type in England. To calculate this number, the Environment Agency used the following data sets from the 2011 census:

- QS402EW - Accommodation type – Households
- QS401EW - Accommodation type – People
- QS103EW - Age by single year

To calculate the average number of residents (of any age) in each type of accommodation in England, the Environment Agency divided the total number of residents for each type of property (QS401EW) by the total number of properties of that type in England (QS401EW).

The Environment Agency adjusted this using age data (QS103EW) to remove residents under 18.

The property type table shows national average values. These may not reflect local demographics. You can apply the national averages as default values but if local census data is available, it will reflect local population characteristics more accurately.

Property type	Average number of adults per property
Average (all categories)	1.85
Detached	2.01
Semi-detached	2.00
Terraced	1.95
Bungalow	1.99
Flat	1.45

Incorporate mental health effects into a flood economic appraisal

This guidance presents mental health effects in a similar format to how the multi-coloured manual for economic appraisal (https://www.mcm-online.co.uk/manual/) presents data about property depth damage.

You should apply these effects to all residential properties at risk of all flood events, based on their internal depth of flooding.

For each property for each flood event, use the formula:

Mental health costs per property per flood = loss per adult per flood x number of adults per property

Use the supporting spreadsheet (https://www.gov.uk/government/publications/flood-and-coastal-erosion-risk-management-appraisal-guidance) to convert these losses to an annual average damage.

Use the Discount Rate guidance (https://www.gov.uk/government/publications/partnership-funding-supporting-documents) to

discount the annual average damages to a present value.

Incorporate mental health effects into an erosion economic appraisal

Apply erosion-based mental health effects as a single loss in the same year as the property is eroded.

Use the following formula:

Mental health costs per eroded property = loss per adult (£9,546) x number of adults per property

Use the Discount rate guidance (https://www.gov.uk/government/publications/partnership-funding-supporting-documents) to discount this loss to a present value.

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