

# **4** *Residential Properties*

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**Table 4.1** Categories of flood water

Category of Water	Description
<b>Major clean/grey</b> (IICRC Category 2)	Water contains significant contamination and can contain potentially unsafe levels of microorganisms or nutrients for microorganisms, as well as other organic or inorganic matter: commonly discharge from washing machines, dishwashers or toilet overflows (not including faeces).
<b>Minor black</b> (IICRC category 3)	Water is grossly contaminated: As 'Major clean/grey', but includes sewage backflow scenarios from an internal source where water may contain faeces, urine and other waste through toilet discharge system.
<b>Major flood/storm</b> (IICRC category 3)	Water is grossly contaminated: This is the most common category for a typical fluvial, surface water or coastal flood scenario. Water may contain: organic matter, pesticides, heavy metals or toxic organic substances.
<b>Major Flood including sewage</b> (IICRC category 3)	Water is grossly contaminated: As 'Major flood/storm', but with the inclusion of animal and human waste materials.
<b>Major Flood 'Contaminated'</b> (IICRC Special situations)	Water may contain regulated hazardous waste (as per Technical Guidance WM2, see: <a href="https://www.gov.uk/how-to-classify-different-types-of-waste">https://www.gov.uk/how-to-classify-different-types-of-waste</a> ), including (but not limited to): asbestos, heavy metals, pesticides, solvents, caustic chemicals etc.

Adapted from: Institute of Inspection, Cleaning and Restoration Certification (IICRC) (2006) S500: Standard and Reference Guide for Professional Water Damage Restoration. 3rd edn, IICRC: Washington DC.

**Table 4.2** The range of possible flood impacts on households (not exhaustive or necessarily mutually exclusive)

Direct Tangible Losses For Flooded Households	Intangible Losses On Flooded Households	Indirect Losses On Flooded Households	Indirect Losses For Non-Flooded Households
➤ Damage to building fabric	➤ Worry about future flooding	➤ Permanent evacuation from area	➤ Increased travel costs
➤ Damage to household inventory items	➤ Loss of memorabilia and irreplaceable items and pets	➤ Disruption to household due to flood damage	➤ Loss of income/earnings
➤ Clean-up costs	➤ Damage to physical and/or mental health, death or injury	➤ Temporary evacuation costs	➤ Loss of utility services
	➤ Loss of community	➤ Disruption due to flood warnings or alarms	➤ Loss of other services
	➤ Loss of confidence in authorities and services	➤ Loss of utility services	➤ Loss of leisure and recreational opportunities
		➤ Loss of income/earnings	➤ Increased cost of shopping and recreational opportunities
		➤ Loss of leisure and recreational opportunities	
		➤ Additional communication costs	
		➤ Loss of services	
		➤ Increased travel costs	
		➤ Increased cost of shopping and recreational opportunities	

**Tables 4.3** Social grade categorisation and weighted factor by occupation

Social Group	Description	Weighted Factor
AB	Upper middle and middle class: higher and intermediate managerial, administrative or professional	0.74
C1	Lower middle class: supervisory or clerical and junior managerial, administrative or professional	1.12
C2	Skilled working class: skilled manual workers	1.22
DE	Working class and those at the lowest level of subsistence: semi-skilled and unskilled manual workers. Unemployed and those with no other earnings (e.g. state pensioners)	1.64

**Table 4.4** Types of project appraisals (2023 values)

Overview, Initial and Full-Scale methods			
Scale of analysis	Overview	Initial	Full-Scale
Guidance	For rapid MDSF and similar desktop type appraisals: first approximations to identify areas where more detailed work is required	For more detailed appraisals where further assessment of household loss potential is warranted	For the detailed study of potential benefits using the most detailed of the standard data sets
Data requirements for the benefitting area	Number of properties at risk	Number, type and age of house at risk	Number, type, age and social class of houses and householders at risk
		Standard of protection (pre and post scheme for intangible values)	Standard of protection (pre and post scheme for intangible values)
			Government Weighting Factors for distributional impact analysis
Direct/tangible method of assessment	Annual average direct damages: sector average	Generalised standard residential depth/damage data for type and age of houses	Additional data for type, age and social grade of houses and householders
	Vehicle Damages: 42% of total properties damaged x £5,600 (2021 value)	Vehicle Damages: number of properties at risk above 0.39m x £6,944 (2022 value)	Vehicle Damages: number of vehicles at risk above 0.39m x £5,600 (2021 value)
Intangible method of assessment	Health: £279 per property per year for intangibles	Health: Defra's intangibles matrix	Health: Defra's intangibles matrix
Indirect method of assessment	Evacuation per household: temporary accommodation costs (£1,370) plus alternative accommodation costs (£3,921)	Evacuation per household: evacuation costs per property type and flood depth	Evacuation per household: survey on percentage of households evacuated and duration of evacuation. Evacuation costs per property type and flood depth
Vulnerability Analysis	Not required	Where feasible	Where feasible

**Table 4.5** Weighted Annual Average Damages (WAAD) (2023 values) assuming variable threshold Standards of Protection (SoP)

Existing SoP	No warning (£)	<8 hour warning (£)	>8 hour warning (£)
No protection	5,269	5,227	5,215
2 years	5,269	5,227	5,215
5 years	3,163	3,136	3,129
10 years	1,615	1,602	1,597
25 years	772	766	764
50 years	326	324	323
100 years	82	81	81
200 years	41	40	40

**Table 4.6** Estimate of the number of properties affected by different floods

Return Period	No. Of properties as % of 200 year No.
100	93
50	80
25	25
10	10
5	5

**Table 4.7** Intangible benefits associated with flood risk management improvements (2023 values)

Standard of protection before – AFP (RP in years)	Standard of Protection After – AFP (RP in years)									
			0.007	0.008	0.01	0.013	0.02	0.033	0.05	0.1
			-150	-125	-100	-75	-50	-30	-20	-10
	1	-1	£348	£343	£319	£244	£117	£40	£19	£8
	0.1	-10	£342	£336	£312	£236	£108	£34	£13	£0
	0.05	-20	£328	£322	£301	£225	£96	£21	£0	-
	0.033	-30	£308	£302	£279	£204	£75	£0	-	-
	0.02	-50	£231	£226	£202	£128	£0	-	-	-
	0.013	-75	£104	£99	£75	£0	-	-	-	-
	0.01	-100	£29	£24	£0	-	-	-	-	-
	0.008	-125	£6	£0	-	-	-	-	-	-

AFP = Annual Flood Probability

RP = Return Period

Annual Benefits = Damages (before) - Damages (after)

Source: Department for Environment, Food and Rural Affairs (Defra) (2004) Flood and Coastal Defence Project Appraisal Guidance. FCDPAG3 Revisions to Economic Appraisal on Reflecting Socio-economic Equity in Appraisal and Appraisal of Human Related Intangible Impacts of Flooding. Supplementary Note to Operating Authorities. July 2004. Defra: London.



**Table 4.8** The probability of evacuation and duration in relation to flood depth

Maximum depth in house (cm)	% who evacuated	Mean duration of evacuation in weeks
0	23	11
1-10	41	12
10-20	55	18
20-30	59	18
30-60	69	21
60-100	76	23
100+	87	33

**Table 4.9** Regional Residential House Prices (2023)

Region/Country	All residential	Detached	Semi detached	Terrace	Flat
England	£306,342	£481,808	£293,476	£250,990	£250,389
Scotland	£187,598	£338,051	£200,118	£159,369	£127,903
Wales	£216,132	£331,598	£209,566	£168,820	£135,457
Northern Ireland	£173,029	£265,704	£166,999	£120,552	£127,697
North East	£158,478	£274,032	£161,714	£128,171	£100,819
North West	£212,796	£371,243	£227,696	£164,421	£144,007
Yorkshire & Humberside	£206,592	£340,102	£207,109	£163,447	£134,167
West Midlands	£249,329	£416,008	£244,947	£197,608	£146,421
East Midlands	£246,949	£365,853	£228,082	£185,934	£133,664
East of England	£353,609	£549,474	£364,658	£297,209	£211,661
South West	£326,572	£521,200	£336,849	£274,487	£193,596
South East	£392,999	£699,874	£427,207	£332,516	£226,265
London	£533,816	£1,092,820	£693,136	£586,323	£441,474

Source: <https://landregistry.data.gov.uk/app/ukhpi/> (March 2022 - February 2023 average value)