



The impact of surface water flooding on people and communities

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I lived in Worcester which is well known for flooding



My street on a normal day



Drains in the street after heavy rain



Same view during the 2000 floods



...and in the inside of my home



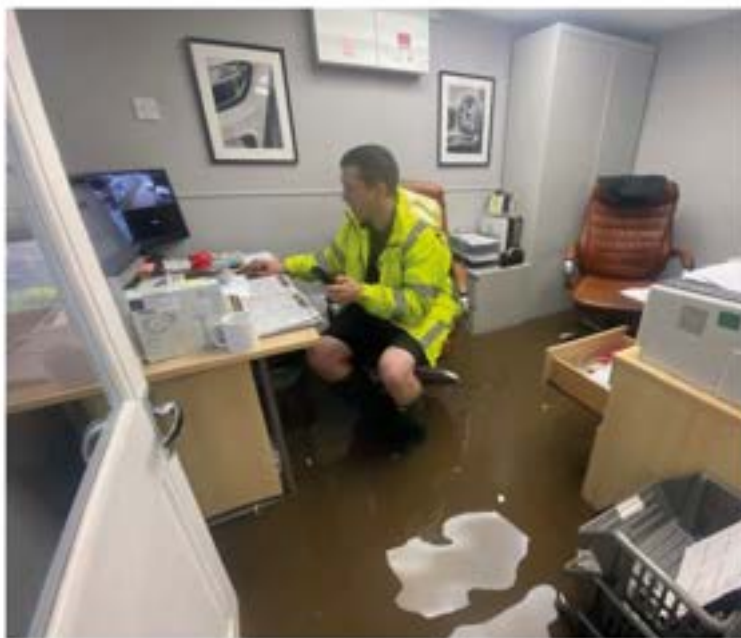
Todmorden



Todmorden



Bursledon Motors, Southampton



Flooded at least three times per year for the last ten years due to bad road drainage maintenance.

Damage in 2021 cost approximately £70k.

Bursledon Motors, Southampton



...and now no more floods!

Familiar scenes but these are the contents of peoples homes



...when the minister and the media have gone



What do we look on as lives most stressful situations?



Let's compound that with the stress that being flooded brings...



Community based telemetry systems



Ban the sandbag!



IN JUST
59
SECONDS

Sandbags vs. temporary defences



A sandbag wall costs £231 per metre and has to be disposed of.

Some temporary defences can cost as little as £205 per metre and can be used again.

There is no 'one fix' for flooding. Flood Risk Management is a jigsaw of many pieces



Property Flood Resilience



One of my favourite photos, sandbags failing, barrier working



This bungalow has been flooded several times
– until they installed this simple solution



Home saved from repeated flooding by Water-gate





The Property Flood Resilience Code of Practice



WHAT IS PROPERTY FLOOD RESILIENCE?

Property flood resilience (PFR) is used to measure the risk of damage to homes and businesses that may flood. PFR aims to reduce the damage from a flood and to reduce the risk of flooding. It is especially important in areas where flood risk is high, such as in urban areas, or where the flood risk is high due to a change in land use.

Examples of PFR measures that can be used in buildings:



Door that floods, usually used to protect the entrance of a building.



Barrier used in the doorway to prevent flood water from entering the building.



Barrier used in the kitchen to prevent flood water from entering the building.

PFR measures are to reduce the risk of damage to homes and businesses that may flood. PFR aims to reduce the damage from a flood and to reduce the risk of flooding. It is especially important in areas where flood risk is high, such as in urban areas, or where the flood risk is high due to a change in land use.

WHY DO WE NEED A CODE OF PRACTICE?

In the past, some companies designed flood-resilient buildings, offering to make them flood-resilient for homes and businesses without following good practice. As a result, the measures were often not working well for the circumstances, or were costly, or made life difficult. Households and businesses get your advice for advice and were not satisfied in future floods.

PFR is a standard way of working to improve the impact of flooding. Following the right measures for each type of building and for each type of flood, can be completed. PFR can be completed at any time in construction, or a flood-risk during construction after a flood or when making building improvements. You may need help in choosing and installing measures that meet your needs, as well as understanding how much they can reduce the impact of flooding. You will want to know how the contractors know how to install measures and that they know how to use and look after them.

The PFR code of practice (COP) specifies what good practice looks like and together with the guidance on the COP for PFR (COP-G), these provide a way of making your property flood-resilient to make the best choice. To ensure any professionals you use are following the code of practice for PFR, you can have confidence in their advice and the work that they do. You will also get good advice and be able to use the measures when it floods and to look after them correctly.

The COP and guidance can be downloaded from: www.pfr.co.uk

HOW CAN I USE THE CODE OF PRACTICE?

The code of practice for property flood resilience (COP) is designed to be a benchmark to help you check you are getting the right help and support by improving the flood resilience of your home or business and that the advice you receive is helpful. It provides a set of standards, each with detailed requirements, for good practice at each stage of implementing PFR measures.

The code of practice contains six standards. These standards have been developed for you and the relevant professionals to follow during the construction phase of PFR measures in your home or business property. The standards are the best of the code of practice for the job. Standards are not to be used to make sure that good practice is used in selecting, installing and using PFR measures.

The standards in the code of practice for property flood resilience (COP) contain detailed explanations for professionals as well as households, property and business users.

The relevant professionals (COP) is a guide for households and businesses to understand how to use the code of practice and guidance.

HOW DO THE STANDARDS RELATE TO MY PFR PROJECT AND THE PFR GUIDANCE?

The code of practice and guidance covers the design, construction and operation of PFR. The standards in the code of practice match on stages during design, construction and operation of your PFR as shown in the diagram below.

Standards and stages of PFR delivery



Five top tips for successful PFR

1. Get help from experienced professionals and contractors at each stage from understanding the risk to construction.
2. Make sure you understand your own and the different measures that can be used to protect your property.
3. Choose measures that suit your own budget and your needs (household or business needs).
4. Measure to make a plan for long-term operation and maintenance.
5. Make sure the professionals and contractors you use help with the future of the code.



Get professionals and contractors to follow the code of practice.

Urban Flood risk has increased due to us all paving over our drives

For the smaller garden



Rain planter for runoff from garage roof

Permeable surfaces on car parking areas

Pathways of gravel over weed-suppressant fabric

Grass rather than paved areas

Water butts for collecting rain from roofs

Green roof (lightweight) on garden shed

For the larger garden



Below ground runoff storage and attenuation crates



Below ground rain harvesting tank

Victorian Heritage Trust
 Founded 1999, 2012 & 2013

This program is one of a small number of such efforts. The International Association for the Study of Autism (IASA) has been active for 20 years and published the first issue of its journal in 2000. The IASA was one of the organizations that helped to establish the Autism Research Society. They need and all those looking for a suitable position. International Autism Society, 2000.

[illegible]

Locusts that were introduced throughout, regaining life suspended under the fourth leaflet but not in all of the first two positions. Individual feeding was the evidence for the leaf surface, and then they were finished with fructivorous parts.



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100%

Source: Author's survey conducted in 2004.

- **Healthy young children** should be vaccinated with pneumococci
- **Healthy adults** should be vaccinated with pneumococci and meningococci

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- **Identify the problem** (What is the problem? What are the symptoms? What are the causes? What are the consequences?)
- **Identify the stakeholders** (Who are the people affected by the problem? Who are the people responsible for solving the problem? Who are the people who can help solve the problem?)
- **Identify the goals** (What do you want to achieve? What are the measurable outcomes? What are the timeframes?)
- **Identify the options** (What are the possible solutions? What are the pros and cons of each solution? What are the risks of each solution?)
- **Identify the action plan** (What are the steps to implement the solution? Who is responsible for each step? What are the timelines?)
- **Identify the resources** (What do you need to implement the solution? Who is responsible for providing the resources? What are the timelines?)
- **Identify the monitoring and evaluation plan** (How will you measure the progress of the solution? How will you evaluate the effectiveness of the solution? What are the timelines?)

Let this proceed to any convergence - when the third third converges (100%) the cost of all the (second) regular/irregularly sampled cases is less than 1/3!

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

- 2) Based on a significant rise in the number of cases, they would not have all been imported from France, because the number of cases in the village and around it was rising, with increasing numbers for the two new villages coming to light and the number of cases steadily increasing in the neighboring towns, where they had already been.





For more information about this course visit www.pearsoncmg.com or contact your local Pearson Education representative.

Stories from homes and businesses who have made adaptations to help them recover more quickly after a flood



(continued)


[illegible]

FLOODING



Thank you
for listening

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