

Water, water everywhere...

In this newsletter we thought it would be useful to discuss flooding on the Isle of Wight—what are the causes and what can the community do help prevent flooding of homes, infrastructure and businesses. The Isle of Wight Council are in the process of producing a report about the specifics of the floods at the end of last year, which we await with interest.

The primary risk of flooding is from rivers and the sea. The Eastern Yar, Monktonmead Brook and Medina are flashy rivers and vulnerable to flooding and also to tides. So when the tides are high, the water cannot escape. We also see flooding on the Island from groundwater and surface water. So even if you are not near the coast or a waterway, you may still experience flooding.

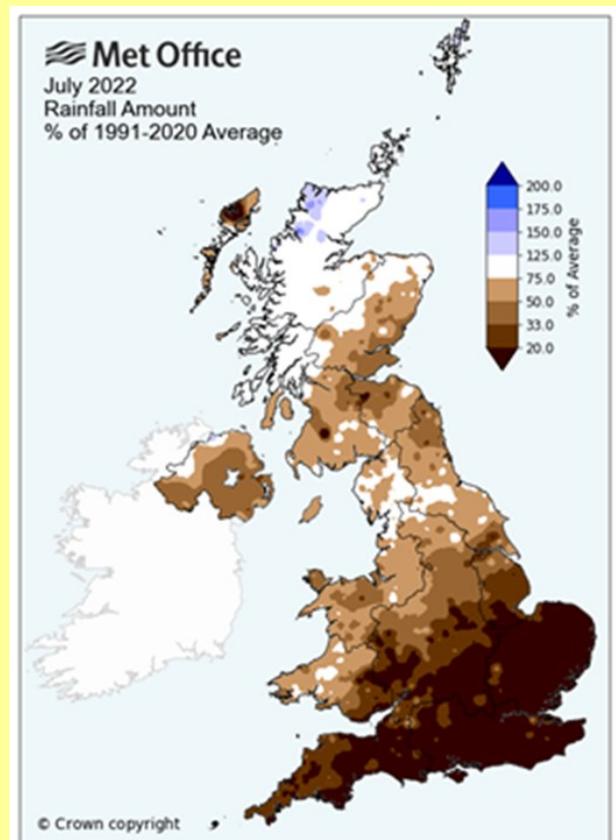
Flooding events are projected to become more frequent and more severe as the climate changes. We will get more rain (see opposite). Climate change affects the Isle of Wight's water courses in a number of ways: Extreme rainfall events, including unseasonal heavy rainfall in summer, already cause flash flooding and also increase soil erosion.

Increasing number and length of spells of prolonged dry weather, and stresses on supply and demand, could lead to a greater risk of water shortages. The Island will be vulnerable to the arrival of new pests, diseases and invasive non-native species, and to fires in forests, heaths and grasslands.

Lower water levels and unnatural flow conditions in rivers threaten the viability of habitats and capacity of wildlife to thrive. Increased water temperatures will affect the ecology of the river.

Some freshwater wetlands may be at risk of saline ingress and rising sea levels can cause coastal squeeze where there is no room for habitats to retreat in land.

We need to find solutions that offer resilience to the Island, and help us with too much water at some times, and not enough at others.



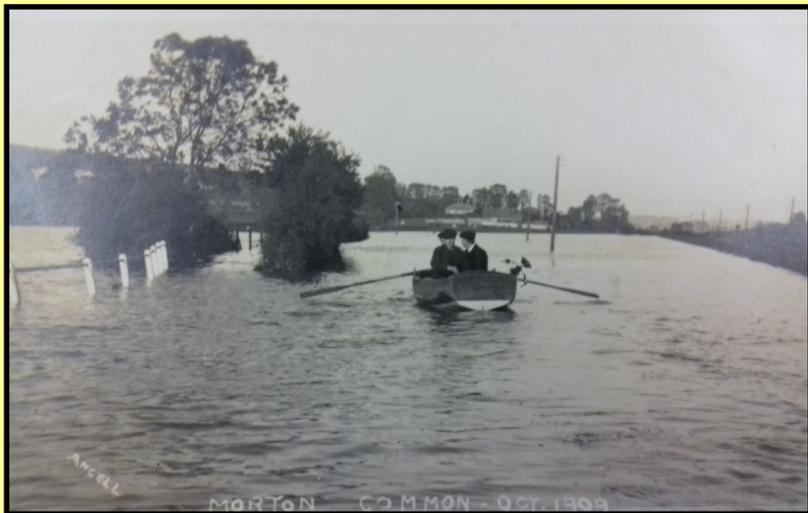
Roads, buildings and other infrastructure

The Island's water-courses worked very well until we started to mess with them!

For centuries people have modified rivers for milling and as far flooding is concerned this is pretty benign. The major problems started with the railways. These favoured the flat river valleys and the water-courses were moved, culverted, or pinned against the sides of fields, becoming disconnected from their floodplains.

And then we built houses on floodplains, and roads across them. These areas have always flooded, so it's no wonder the journey between Brading and Sandown for example is tricky for many winter days. Don't blame the river, it's doing what it is supposed to do.

Additionally, water always wants to head for the lowest point, so roads act as conduits for surface water rushing off the land.



What you can do:

- Campaign against development on floodplains, or at worst make sure any development has flood protection that is much more than adequate. The Isle of Wight Council publishes a list of planning weekly on the website and if you believe a proposed development will cause or exacerbate flooding, then you can object. The planners are really nice people and they care greatly about the Island, but no-one knows the local area like you do. Do back up what you say with evidence.
- Encourage the Isle of Wight Council to look at opportunities to slow the flow along roads. This includes swales and verges—both of which are beneficial to nature.
- If driving along a flooded road—please SLOW DOWN! The wave that your vehicle creates can be the difference between a house flooding or staying dry.

Look in your own back and front garden!

This is something completely in your control and not needing action from the authorities.

Some people have (mainly back) gardens that back on to our lovely water-courses. The best back gardens are those where the banks and margins are native vegetation, including grasses, wild flowers and the occasional shrubs and trees. Flooding can cause bank erosion, which when deposited causes flooding elsewhere. Any vegetation, garden furniture, toys or other infrastructure which get carried away by a flood, will get deposited further downstream by a bridge or grill and cause the water to back up and flood. Additionally, garden waste entering the water courses is really bad for wildlife.

But worse still are impermeably paved front gardens. The extra surface water from a driveway can contribute to local flooding especially when it rains heavily. A driveway measuring 21 square metres can discharge the same amount as 2 baths of water during just 1 hour of normal rainfall.

Where hard (non-permeable) surfacing allows water to run off a driveway and onto the highway, this extra water enters the highway drainage system via the gullies in the road. It is often not designed to cope with lots more water. This could result in flooding to the highway and surrounding area. Driveway surface water can also be contaminated with fluids such as oil, petrol/diesel, coolant and brake dust etc which can make their way into the highway drainage system that often connects to local streams and rivers.



What you can do:

- If your garden borders a water course, make it flood safe permanently. It's no fun going out in a torrential downpour to move that trampoline, its better not to put in there in first place.
- If you must pave over your driveway, use permeable surfacing. But better still don't do it! The bees and bugs will love you, as will your neighbours. And do remember that replacing more than 5 square metres of paving with impermeable surface requires planning permission.

And down the drain!

Southern Water have got the message that you want clean rivers.



We have shown you the above diagram before, but it is useful to illustrate that this is a problem **for all of us to tackle**. Their data has shown that, in general, discharges are over 95% rainwater. Of this, 30% of flow comes from roads, 40% from roofs, and 15% from garden and open spaces. They have calculated that if they can remove 40% of storm water, they can reduce Combined Sewer Overflow discharges by 80%. Southern Water are spending a lot of money to make this happen. But as the diagram shows, it will not be successful unless we stop so much water entering the system.

What you can do:

- Driveway advice, as above.
- Report blocked highway gullies to Island Roads—we find this app easiest www.fixmystreet.com/
- Don't put fat, oil, grease or unflushables into the system. They cause blockages, blockages back up into homes or escape through manholes.
- Prevent water from entering the Combined Sewer system, or reduce the flow in. Adapted water butts and soakaways are good. If possible, disconnect existing drainage from this system.

Rural Land Use

Be nice to a farmer!

The way that farmland is managed makes a huge difference to both the quality of our water, and to the chance of downstream flooding. A range of different sources can contribute to rural diffuse pollution. The main cause is typically when rainwater run-off from land picks up soil, bacteria and nutrients from livestock excreta (including horses!), or fertilisers and pesticides.

The Eastern Yar flows through greensand which is particularly susceptible to run off. The southwest of the Island is also problematic. This pollution is detrimental for wildlife and recreation, and also impacts on drinking water supplies. This greensand is also prone to erosion, so gulying can cause flooding.



Livestock in the river have negative impacts through adding to the nutrient load through waste, but also through poaching of riverbanks causing them to erode. High stock density can compact soils and water runs off quickly, rather than acting as a sponge that water soaks into. This can both increase the flow of water and pollutants entering a river as well as increasing flood risk. Inappropriately placed farm infrastructure also creates a risk to water quality and flooding.

Ideally, farmland would act as a giant sponge, soaking up rainwater and slowing it down on its journey to our rivers. But this won't happen when the soil is compacted, in poor condition, or the groundwater is already mega-high.

On the other hand we don't always have enough water. Unsustainable abstraction from rivers and groundwater can change the natural flow regime and can exaggerate the impacts of barriers such as weirs, hinder fish passage to upstream reaches, slow the flow and increase sedimentation rates and concentrate nutrients making algal blooms become more likely.

What about dredging?

In natural river systems the floodplain temporarily stores, slows and absorbs floodwater. A dredge river will not hold as much water as its floodplain. It is better to allow a river to connect with its floodplain rather than dredge. This has many ecological benefits too. Also silt tends to be deposited on the river banks. This means that the river is deeply incised (think Eastern Yar along the cycletrack at Horringford) and if it ever does top the bank, the water finds it very difficult to get back into the river again, because of the barrier of dredgings. And finally, because a dredged river has faster flow it can cause erosion and also flooding downstream. It's just a quicker way to move the problem from A to B. A better approach is to make space for water.

Natural Flood Management involves implementing measures that help to protect, restore and emulate the natural functions of catchments, floodplains, rivers and the coast. It aims to reduce the maximum water volume of a flood (the peak flood flow) and/or delay the arrival of the flood peak downstream increasing the time available to prepare for floods.

There are key, underlying mechanisms by which this can be achieved including:

1. Increasing storage- creating temporary storage which will fill up during a flood event and empty slowly (e.g. reconnecting functioning floodplains and creating storage ponds)
2. Increasing catchment and channel roughness - this 'slows the flow' by increasing the resistance to surface and in-channel water flow (e.g. planting trees and hedgerows, restoring meandering rivers and installing leaky dams) instead of dredging.
3. Increasing losses - this increases the amount of water that drains (infiltrates) into the ground or is lost back into the atmosphere via evapo-transpiration (e.g. changing agricultural practices to improve soil structure and reduce soil compaction).



This super photo was taken by Keith Marston at Plaish where Southern Water have been trialling the methodology with the landowner.

What you can do (If you are a farmer, and most people reading this won't be!)

- Contact us to talk about Natural Flood Management, Catchment Sensitive Farming, Biodiversity Net Gain opportunities, or anything else. We are always up for a farm visit if a cup of tea is on offer!

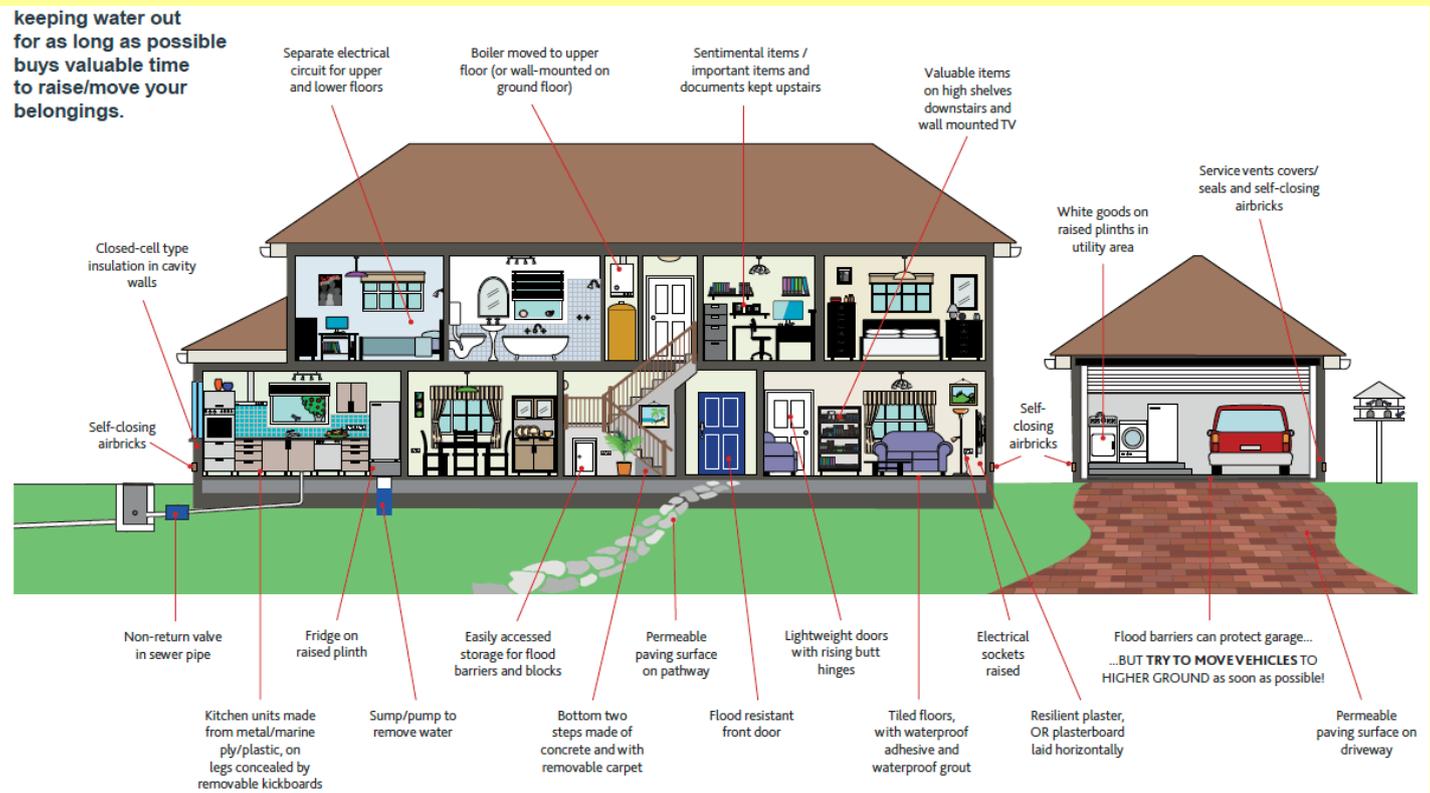
What the rest of you can do

- Support planning applications for farm reservoirs. If well-planned, they are brilliant for wildlife as well water management.
- Don't moan about boggy fields and footpaths—enjoy the mud!
- Buy local produce—we don't want farmers to get rid of livestock, we just need sustainable stocking rates for their land.
- Support Hampshire and Isle of Wight Wildlife Trust who are trying to restore floodplain function on the lower Eastern Yar.

Be prepared!

Be resistant and resilient

Ideally you want to stop your house from flooding in the first place. However, if this is not possible, and your house is prone to flooding, there are measures that can limit the damage. Apologies for the size of the image below, it's online at <https://www.gov.scot/publications/living-flooding-action-plan-delivering-property-flood-resilience-scotland/pages/3/>



Property Flood Resilience helps to make buildings more resilient to the physical impacts of flooding and to lessen the emotional impact for people. Properties will usually require a package of measures, some of which prevent water entering the property (resistance measures) and others that minimise the impact should water enter the house (resilience measures), speeding up the recovery process.

Resistant measures include: flood doors, flood barriers, air brick covers, pointing or waterproofing brickwork, and installing non-return valves.

Resilience measures include: moving vulnerable features, such as sockets, above floor level, replacing carpets with flooring that does not need to be replaced after a flood and using materials for kitchen cupboards that are less likely to need replaced after a flood.

In some circumstances it is better to let water in. For floods over 60cm depth, or of prolonged duration, attempting to keep the water out can cause serious structural damage because of the different water pressures either side of the walls. It is important that property owners understand both the benefits and limitations of Property Flood Resilience to help them decide the best way to protect their property.

Flood Re was launched in 2016 to promote the availability and affordability of flood insurance for eligible homes across the UK.

There's lots online, but this is a useful place to start <https://nationalfloodforum.org.uk/about-flooding/>

