

# Flooding and its causes

For those with a good memory, they may recall that over 30 years ago, scientists were warning that rainfall and flooding would become more common as the warmer atmosphere carrying more water to fall as rain, it was inevitable. The only mistake the scientists made was to underestimate the scale of the predicted effects and the shorter time it would take for them to arrive,

Floods are caused when the soil or drainage system cannot cope for various reasons:

## Natural flood plain

A desirable means of storing and slowly releasing rain water into the sub surface aquifer for long term storage or slow release into waterways. Often built on, as a result of government or commercial pressure, which when the first floods occur demands defences be built thus removing the natural response, making things worse downstream. Beavers are nature's water engineers. Their dams create wetlands with a huge storage capacity and increases the variety and numbers of creatures which our farmers need to protect and fertilise their crops. The natural filtering cleans up run off from farms and even sewage outfalls

## Rivers and drains overtopping defences.

Defences have been built to protect against rainfall on a once in a hundred or thousand years or somewhere between, frequency. When storms occur more frequently and contain more water caused by Global Heating, the defences are overtopped. For example, in one recent case, defences competed in 2015 protecting against a 1 in 200 year risk were overtopped by a metre of water.

## Higher groundwater levels

Heavy rain can penetrate the soil and be absorbed underground leaving a relatively dry area immediately beneath the soil surface and little run off. If soil is already saturated it can come above the soil level as happened in 2001 on the A143 hill towards Great Barton from Ixworth and needed a drain down installed to Ixworth.

## Rising sea levels.

The impact of sea level rise is becoming more obvious. Climate Heating increases sea level in three ways: melting ice, thermal expansion of water and more intense depressions lowering air pressure on the sea raising levels by several metres (leading to the 1953 floods). As sea levels rise it provides a barrier to the flow of rivers especially in areas like East Anglia where rivers have a shallow gradient. The large Denver sluice was installed many years ago to stop the sea entering the southern fens via the Lark, Little Ouse/Blackbourn and the Great Ouse. Recent research has shown that by 2050, Cambridge and Mildenhall will be seaside towns unless huge sums, dwarfing the cost of HS2, are spent to protect homes and Britain's most productive arable land.

## So what do we do?

We know that Global Heating produces more turbulent weather systems bringing a mixture of heavier rain and more drought along with stronger winds and surprisingly potentially more severe winters as a result of the reduction in strength of the North Atlantic Conveyor current normally bringing warm water to Western Europe providing relatively warm winters for our latitude.

A must is to limit and eventually reverse global warming. Citizens and governments at local, national and international levels have to make this a priority. Globally, we have got off to a poor response but things are now slowly improving. Having led the way Britain is however falling back with inconsistent policies promoting and subsidising extraction and use of fossil fuels.

As individuals we should make our very best efforts to keep temperatures down, on our own or working with others in our communities, we can not only cut carbon production but reduce our fuel costs by insulation and zero carbon, heat generation. We **can** act unilaterally which has an impact directly on those who would supply us with products and energy with production high in carbon.

Governments have a responsibility to both help us do our bit but also do what only they can do by setting policies and regulating which prevent others from risking our lives by failing to reduce their carbon profligacy.

## **Mitigation**

This is where we need to introduce mitigation, that is measures to either limit flooding or control it.

Rainwater cannot penetrate hard land surfaces so runs off into the nearest water course, resulting in less water replenishing the aquifers from which we draw our drinking water. Too many new houses still use the sewers to take their rainwater, polluting fresh water so it is no longer safe to drink. National and County wide regulations need to oblige all new properties to save and reuse rain water and clean up grey water, from washing, etc., for domestic use.

To enable rain to penetrate the ground we need to reduce hard surfaces using stones or vegetation cover not impermeable concrete or slabs.

The present government has repeatedly failed to implement rules under schedule 3 of the Flood and Water Management Act 2010, which mandated developers to install sustainable drainage systems in new developments. *Conservative ministers have argued the requirements will be too costly for developers.*

Pressure on local councils from Government has led to development taking place on flood plains. Question: Who believes that land described as a flood plain will not flood? Answer: Housing Ministers.

There are also natural means of water storage and reduction of flooding.

At a time of reduced fresh water supply with greater demand and increased rainfall, getting rid of flood water and then having to find expensive ways of supplying our needs is hardly sensible. Flooding is nature's way of relieving pressure on the rivers. Deepening or widening ditches, streams and rivers is rarely the best answer. Firstly it can simply move the flood water downstream to flood others. When it nears the sea, the higher sea levels act as a dam, so dredging downstream water courses makes no difference unless pumps remove the water, a very expensive process and wasteful. The river valleys take the flooding from higher sea levels well inland. Mitigation is extremely expensive and will require decisions being taken as to what is worth protecting, as you will see from the above it is not just existing coastal towns which are threatened by rising sea levels.

DEFRA, the ministry which includes the Environment, is responsible for funding new flood defences and their maintenance. Funding in real terms has declined from 2010 to 2024 by over 40%. Although DEFRA expenditure on defences has increased it is as a result of reduced funding elsewhere eg. Water quality and defences maintenance. During the recent floods, DEFRA put into the field all its reduced staff whilst Government has wrung its hands in despair sympathising with those who have seen their lives turned upside down. Even worse is that DEFRA has £240 million in its budget for defences unspent because of the lack of staff to do so. Hundreds of thousands of properties have been unprotected as a result of this and failure to properly maintain their systems.

Beyond the DEFRA, and in our case, responsibility at local level for seeking to prevent and dealing with floods, lies with the County Councils.

Any promises of reduced taxation by government can only happen if we accept reduced funding on so many important areas. Climate Action and flood mitigation, among many others, is one we cannot accept. It may look good in the short term but within a short time we should see the devastation it will bring to all of us.