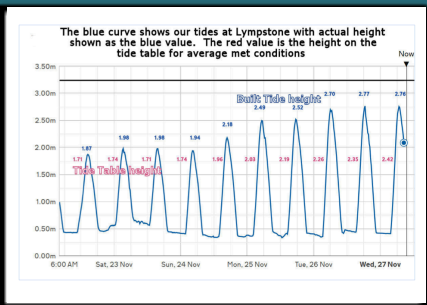


## Our Risks



## Our Conclusions

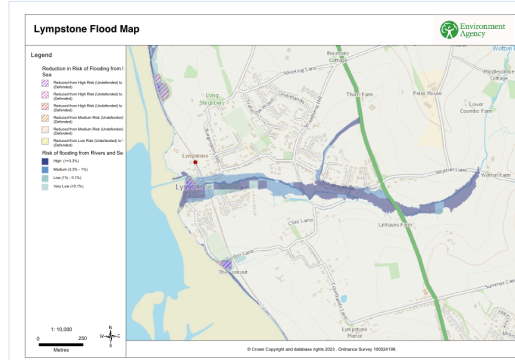
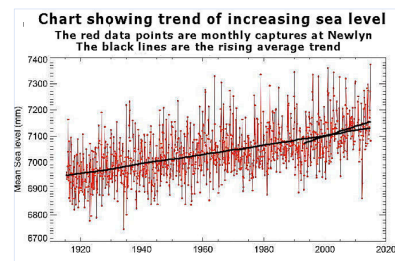
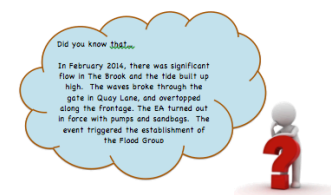


### What is meant by a Perfect Storm Risk?

A severe combination of elements that we see quite frequently might be thought of as our 'Perfect Storm'. This is an aggravated Combined Risk causing the flood risk to increase very dramatically and can affect a very wide area of the Lower Village. The elements of the Perfect Storm are strong sustained winds from South or East of South, a period of low atmospheric pressure, high astronomical tidal prediction and severe rainfall.

An increased danger comes with severe storm conditions, such as a named storm, or a former tropical storm. The Village impact would then be that the floodplain will no longer have capacity to retain the waters while the tide is up, and waters will flow from it, and from rainfall exceeding drainage capacity, and pool widely in the Lower Village until the tide recedes.

Our modelling has shown how Perfect Storm surface waters can cover significant areas and has potential to enter very many properties. Even with the proposed increased flood bank protection for the North part of the floodplain the Village will still flood in a severe event.



## Summary of Resilience

Working in partnership has been of critical importance to arrive at our current preparedness and understanding. Continuing those relationships and maintaining a focus on future threats such as climate impacts, and more locally, new housing and infrastructure developments are a priority.

The risk of flooding comes from heavy rainfall events on our catchment which responds very 'flashily' and waters quickly arrive in the Lower Village and can generally be safely discharged into the Estuary.

The Estuary tidal protection is good, but can allow some waters to build up in poor weather. The main risk is from a coincidence of rainfall and tide. With the preventative maintenance and response from the Flood Warden Teams, through monitoring conditions and with support from, and dialogue with, the Environment Agency all of these situations which we see each year are usually manageable. In most years floodwater can be prevented from entering properties.

We use a wide range of tools to maintain an active assessment of flood risk. We have automatic data transmission and video monitoring of conditions, and use a number of different meteorological forecast models. We have our own weather station located at the Village Hall, and are able to collect live and past data from it online. The EA Flood Warning and Flood Incident duty teams are available for consultation and generate messages to the Estuary Wardens for floodgate operation.

The Flood Warden teams are at strength and fully trained and equipped. We believe that the regular drain clearing and efficient operation and maintenance of all of the protection assets such as the floodgates and trash barrier ensure that many otherwise potential flood events are minimised or avoided.

### Summary of Risk

Our knowledge of the risks to Lymington has increased very considerably through the extensive computer modelling activity, and from combining the findings with everyday experience. We have been fortunate in the Woodland Trust acquiring a very sensitive part of the catchment and they are underway with a wide range of Natural Flood Measures which will reduce peak flows and volumes in Wotton Brook.

We are working on improvements to the floodplain. Activities elsewhere in the catchment will reduce run off, and these are being prioritised for attention, some with help from the Devon Resilience Innovation Project. However the sum total of these improvements will not avoid Village flooding following a major event.

The current climate trends are becoming more of a threat to Lymington, and every year we already see each of the elements, which if they occurred simultaneously, could become a Perfect Storm which would exceed the capabilities of our first response equipment and resources, and we would be reliant on the Environment Agency and or the blue light services to assist to prevent waters entering property and preventing a low risk of threat to life.

The probability of such a severe event is increasing for a number of reasons. Perhaps the most threatening are an event overwhelming Dawlish Warren, the increased tide heights and more intensive localised rainfall and stronger storm action.

Protection from Estuary flood defences will need to be upgraded in the medium term, probably within ten years.

Residents are encouraged to be prepared for flooding, to report any concerns or incidents to the LFRG Flood Wardens and in particular to actively consider investing in property level flood protection such as that already installed on a number of properties around The Strand.

## Our Flood Risk

### What is the Rainfall Based Risk?

Rainfall in the Village and the catchment quickly arrives into the Brook and combined sewer which in high rainfall events may result in the capacities being exceeded, such as in other parts of East Devon in Mid May. Where drains are blocked or their capacity exceeded, localised pooling and threat to property can occur, such as at Pretty Corner in the past. The trash barrier in Chapel Road can become blocked which in an extreme case may cause water to exit the walled channel into the Village. Highway waters may exceed the A37 and cause flooding of the road. These problems may arise from heavy rainfall. Very localised severe downpours would easily overstretch the combined sewer capacity causing widespread short term pooling.

Is it always a risk when raining with the

### What is the Tidal Based Risk ?

When tides are either exceptionally high or generating high waves, waters can top over the defences along the Estuary frontage, causing waters to pool behind the floodgates and walls. Any failures of the defences obviously make the situation more serious, such as in 2014. Tidal risk arises a number of times in a typical year.

### What is the Combined Risk ?

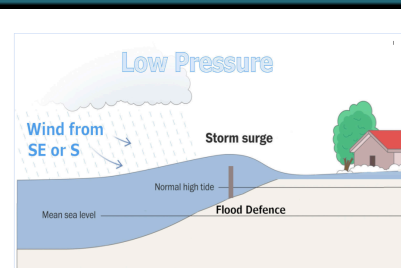
When recent or current heavy rainfall combines with high tides, more waters are arriving in the Brook than can be discharged into the Estuary as the tide flaps are closed to keep the tide out. Very quickly, and not only on the highest tides, rainfall falling in the Lower Village will start pooling, such as we see in Underhill and outside the Village Shop. This rainfall is routed via drains to discharge into the walled channel of the [Brook which](#) is already full. The floodplain fields beside the car park will fill, and waters enter into Underhill. We currently experience this risk on about 10 tides each year, when even moderate rainfall and tidal combinations combine readily to create this risk.

Is it always a risk when raining with the tide in?

It will depend on the intensity and duration of the rainfall, and the timing and duration for which the tide constrains Brook waters from discharging into the Estuary

Tide height is a function of the lunar or astronomical height but varied by meteorological conditions.

conditions. When there is low pressure the atmosphere doesn't push down as hard on the waters arriving with the tide, and its height increases accordingly. When there is strong wind pushing waters into the Estuary the tide also increases in height. These and other more complex effects can cause the tide to be built up to a metre higher than shown on tide tables



### When will it happen and what about the changing climate?

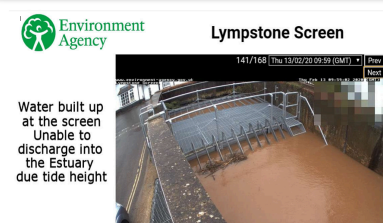
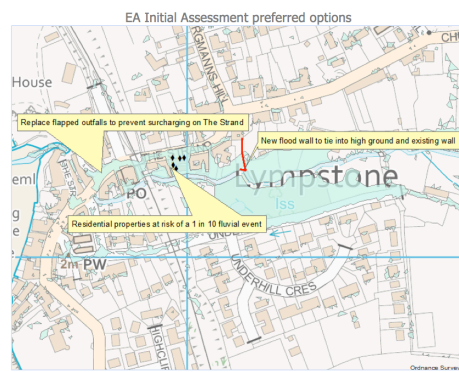
The conditions described above may be considered to become both more severe and perhaps more frequent with our changing climate. We have seen increased tidal height during the last five years. Heavy localised rainfall, usually from occluded systems, has become very much more common.

Water temperatures around our coasts and in the Eastern Atlantic have **risen** very dramatically enabling tropical storm action to develop with higher saturation giving potential for very heavy rainfall, and strong winds. Our Perfect Storm in the evolving climate could well be a tropical storm reaching the South West, which would cause widespread impact that the county is ill prepared for.

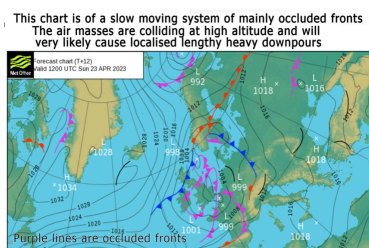
Both of these trends will continue. This means that the Rainfall Risk and the Tidal Risk will have greater impact and are likely to each become a more frequent threat. The undesirable coincidence of them, the Combined Risk and the worst case of our Perfect Storm are each more likely to result in a severe

So when might it happen ?

We see each of the elements a number of times each year and they are currently individually robust enough to result in the Perfect Storm if they arrive together. That means it can happen this year or next but with an increasing probability as the years pass, assuming the current climate and tidal trends. The combined probability of the elements all at maximum impact occurring simultaneously in a particular year is not possible to predict.



Water built up  
at the screen  
Unable to  
discharge into  
the Estuary  
due tide height



Purple lines are occluded fronts