

# Flood Resilience of the Hanley Road in Upton upon Severn



## Introduction

WCC has been investigating the potential for the Hanley Road to be made more resilient to flooding for many years.

When a road is subject to flooding from an adjacent river or watercourse there are broadly two options available to reduce the risk:

1. Construct a barrier which prevents flood water getting onto the road or
2. Raise the road so that it remains above the level of the flood water

## Option 1. Construct a barrier along the Hanley Road

This has been ruled out as an option because:

- Flood water encroaches onto the road not only from the River Severn but also from the Pool Brook on the other side of the road. Therefore, the barrier would need to run along both sides of the road for more than 450m.



**The road floods from both sides and the water flows across it at some pace and volume. Also, the flooding extends for at least 450m beyond the edge of the town.**

- The barrier would block access to the riverside and properties alongside the road either permanently or by the deployment of significant lengths of demountable barrier / gates
- Demountable barriers would need to be stored, maintained, deployed and retrieved after each flood event and gates would need to be maintained and closed / opened
- Significant pumping would be needed to remove surface water from the road and augment the effectiveness of the demountable barriers and gates
- There is a serious risk that the water displaced by the barriers and the resulting restriction of flood water onto the large area of floodplain bordering Pool Brook would 'throttle' the river and lead to increased water levels

elsewhere including potentially overtopping the main town flood defences and / or exacerbating property flooding in the town and across the river at East Waterside

- It is likely that the structure would fail to secure the necessary Environmental Permit from the EA on the grounds of flood impact
- The cost of necessary land purchase, construction of the walls, purchase, storage and deployment of flood gates, barriers and pumps would be extremely high
- Given the relatively short diversion route the BCR would be extremely low
- A shuttle bus is provided for school children when the road is closed during term time
- The likely construction period would equate to dozens of years of disruption from flooding

## **Option 2. Raise the Hanley Road**

This option has been ruled out to date because:

- Raising the road & footpaths by the necessary height would mean widening the whole footprint of the highway along a 450m length and there is not currently sufficient room between the properties and the river to do so. Either the properties would need to be removed or the riverbank significantly built up and reinforced and the road re-aligned
- Any road raising option would require significant land purchase and possibly the purchase and even demolition of the residential properties
- The impact of raising and widening on access to the businesses and particularly the residential properties alongside the road would possibly render them unviable and require compulsory purchase. The properties are sited at the lowest point of the road where the maximum road raising would be required
- The impact of building up the level of the road and footway against the residential properties would possibly render them unviable and might require compulsory purchase and possibly even demolition



**The road would need to be raised to the height of the downstairs windows and vehicular access would no longer be possible**



**The riverbank slopes quickly to the river preventing necessary widening in that direction**

- the bridge over the Pool Brook would need to be dismantled, the culvert extended and the bridge re-built, widened and raised



### **Narrow bridge / culvert**

- Unless constructed on stilts, there is a serious risk that the water displaced from the raised road, along with restricting the large area of floodplain bordering Pool Brook, would `throttle' the river and lead to increased water levels elsewhere. This would potentially include overtopping the main town flood defences and / or exacerbating property flooding along the Hanley Road, in the town and across the river at East Waterside
- It is likely that the structure would fail to secure the necessary Environmental Permit from the EA on the grounds of flood impact
- The cost of necessary land and property purchase and construction of the widened and raised highway footprint would be extremely high – several millions of pounds
- Given the relatively short diversion route the BCR would be extremely low
- A shuttle bus is provided for school children when the road is closed during term time
- The likely construction period would equate to many dozens or more years of disruption from flooding

### **Temporarily deployed solutions**

There are currently no known ways to deploy a temporary raised road and / or footway / cycleway over anything like the distance required.

### **Conclusion**

There is not currently an option to make the Hanley Road more resilient to flooding which is:

- possible from an engineering point of view without the purchase and possible demolition of property
- affordable
- cost beneficial

- permissible from a land drainage / flood impact point of view
- not more disruptive than at least many dozens of years of flood impact