

## **Hambleton District Council**

**Report To:** Cabinet

**Date:** 7 July 2020

**Subject:** **Dalton Bridge and Highway Flood Alleviation Scheme**

**Portfolio Holder:** Economic Development and Finance  
Councillor P R Wilkinson

**Wards Affected:** Sowerby and Topcliffe

---

### **1.0 Purpose and Background**

- 1.1 In June 2018 the Dalton Bridge Flood Alleviation Scheme was completed. The scheme was designed to provide a secure access to Dalton Industrial Estate during flood events caused by the Cod and Thacker Becks. The scheme was designed to withstand a 1 in 100 year flood event.
- 1.2 Despite the scheme Dalton Lane flooded on three occasions in February 2020; from 9 – 13 February, from 16 – 19 February and from 23 – 27 February. During the first of these events there was about 500mm of flood water on Dalton Lane and vehicles became stuck. During the other two events a pump was deployed and the road was passable. The estimated extent of flooding is shown in Annex 'A'. There had been an earlier less severe flooding event in March 2019.
- 1.3 The alleviation scheme was a partnership scheme between North Yorkshire County Council (NYCC), Hambleton District Council, Dalton Industrial Estate Businesses and the Local Enterprise Partnership. All parties agreed that NYCC should undertake an investigation into the reasons why the road flooded and the investigation should include recommendations to solve the problem.

### **2.0 Investigation**

- 2.1 The investigation comprised post flood inspections, a review of the Flood Risk Assessment, a review of the design of the scheme, a CCTV survey of the scheme drainage and consideration of observations made at the time.
- 2.2 Although Environment Agency data on the flood event is not yet available the wrack marks on the flood banks indicate that the highest the flood waters reached was 300mm from the top of the banks. From this it has been estimated that the flooding in February 2020 was a 1 in 75 year event. There was no evidence of flood water having come over the top of the banks, neither was there evidence of seepage through the banks.

- 2.3 The scheme was designed to protect against river water from the Cod and Thacker Becks. Flooding from other sources such as surface water, groundwater and from sewers was not thought to be a significant risk and the new highway drainage was not designed to cope with additional drainage inputs.
- 2.4 The CCTV survey revealed various defects with the new highway drainage pipes due to poor workmanship such as unsealed connections, open joints and sections of crushed pipe. These defects enabled groundwater to enter the highway drainage system but alone this does not account for the flooding.
- 2.5 The drainage scheme as built differs from the design, this is due to the discovery during construction of a previously covered chamber for a 450mm Yorkshire Water surface water sewer from Topcliffe, and a 225mm land drain from the north. These were reconfigured during construction. The Yorkshire Water surface water sewer and the land drain now meet at a Yorkshire Water manhole adjacent to the highway manhole at the lowest point of Dalton Lane within the flood banks. Water leaves this manhole through a 300mm pipe. The reduction in volume from a combined input of a 450mm pipe and a 225mm pipe down to a 300m pipe forms a choke point and water is likely to flood from the manhole when the system is surcharged and this was observed during the flood event. This water would have entered the highway drainage system.
- 2.6 The possibility of flood water “piping” beneath the flood banks cannot be ruled out as another contributory cause of the flooding.
- 2.7 The presence of the additional drainage inputs described above which were not accounted for in the design, together with defects in drainage construction, the extremely high levels of groundwater and the possible “piping” of flood water, taken together, explain the flooding experienced on Dalton Lane in February.

### 3.0 Solution

- 3.1 NYCC has identified and costed a range of options to remedy the situation. The options cover each of the potential sources of flooding identified above.

Option	Cost	Comment
Rectify defects in drainage system	£40k	Rectifying defects represents a minimum without improvements to the new highway system as designed.
Divert Yorkshire Water sewer and land drainage	£91k + land	Taking the additional drainage inputs outside of the scheme will reduce the risk of future flooding from existing infrastructure. Costs are for provision of a basic drainage system not to adoptable standards.

Option	Cost	Comment
Both of the above	£131k + land	Doing both of the above would reduce the frequency of flooding to the road but would not address potential seepage through the ground.
Provision of grout curtain	£1.8m	Eliminates the potential for groundwater to pass under the banks when fields are surcharged with floodwater. Cost estimate is for a curtain extending down to bedrock alongside 275m of bank.
Raising the road	£250k - £300k	Raising the road to the level of the flood banks would address all of the above issues and protect the access to the same standard of protection as offered by the embankments.
Impermeable resin injection	£450k - £1.7m	Minimal disruption to access on Dalton Lane. Addresses groundwater issues only. High degree of cost uncertainty. Impossible to test effectiveness until next flood.

3.2 Raising Dalton Lane to the same level as the embankments would cost between £250k and £300k. This is more than the cost of diverting the additional drainage inputs and rectifying the defects in the new highway drainage system, but it would also address the potential piping of floodwater under the embankments and eliminate the potential of groundwater to contribute to flooding. This option should therefore give confidence that it covers all potential sources of flooding and is therefore a robust and comprehensive solution.

3.3 The standard of protection to Dalton Lane would be increased to the same level as offered by the flood embankments ie 1 in 100 years and the road would flood only in events where river flooding levels exceeded the levels of the embankments.

#### **4.0 Link to Council Priorities**

4.1 The scheme relates to the Council Plan priority of Driving Economic Vitality and specifically to a Key Project under the priority of securing improvements at Dalton Industrial Estate.

#### **5.0 Risk Assessment**

5.1 There are no risks in approving the recommendation.

5.2 The risks in not approving the recommendation are set out below.

<b>Risk</b>	<b>Implication</b>	<b>Gross Prob</b>	<b>Gross Imp</b>	<b>Gross Total</b>	<b>Preventative action</b>	<b>Net Prob</b>	<b>Net Imp</b>	<b>Net Total</b>
Dalton Lane continues to be affected by regular flood events.	<ul style="list-style-type: none"> <li>• Adverse impact on the Council's reputation.</li> <li>• Adverse impact on businesses, possibly causing some to relocate out of the District.</li> </ul>	5	5	25	Implement the remedial improvements.	2	2	4

## **6.0 Financial Implications**

- 6.1 NYCC has estimated the cost of the remedial works to be between £250k to £300k. It is proposed that the Council pays 50% of the costs so the Council's contribution would be up to £150k.
- 6.2 The works constitute capital expenditure and the Council's contribution would be paid from the "One-off Fund".

## **7.0 Legal Implications**

- 7.1 The scheme would be designed and procured by NYCC and therefore there are no legal implications for the Council.

## **8.0 Equality/Diversity Issues**

- 8.1 Equality and Diversity Issues have been considered however there are no issues associated with this report.

## **9.0 Recommendation**

- 9.1 That Cabinet approves the joint funding with North Yorkshire County Council of remedial works to the Dalton Bridge and Highway Flood Alleviation Scheme as set out in paragraphs 6.1 and 6.2 of the report.

Mick Jewitt  
Deputy Chief Executive

**Background papers:** Dalton Bridge and Highway Flooding Report – NYCC May 2020

**Author ref:** MAJ

**Contact:** Mick Jewitt  
Deputy Chief Executive  
Direct Line No (01609) 767053