Low Crosby Flood Management

Low Crosby flood risk management scheme

1. The aerial photo below shows flooding following Storm Desmond in 2015. The map alongside shows the flood defences that existed before the 2015 event.

Image: Cumbria County Council

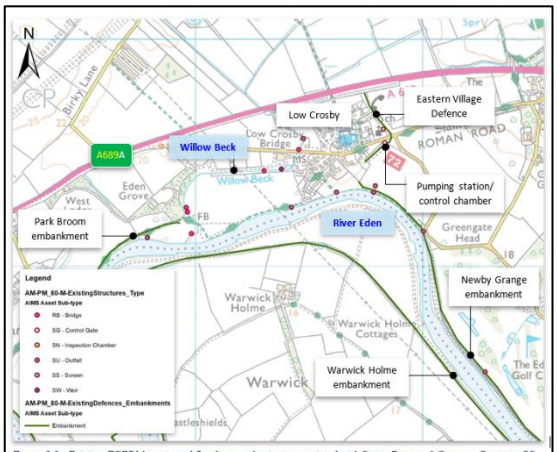

Figure 2.3: Existing FCERM assets and flooding mechanisms associated with Storm Desmond (Source: Contains OS data © Crown copyright and database right (2021). Derived from Environment Agency Asset Information Management System (AIMS) data (2016).

Source: Environment Agency

(a) In which direction is the photo looking? _____

(b) What is the evidence that Low Crosby's Eastern Village Defence failed to protect the village?

(c) Locate the Warwick Holme embankment. Using evidence from the photo, assess the effectiveness of the embankment in protecting agricultural land at Warwick Holmes?

(d) The level of protection afforded by the existing defences at Low Crosby was 2% AEP. The flooding resulting from Storm Desmond was estimated to be equivalent to a 0.6 AEP event. Explain why this resulted in the flood defences being breached.

(e) Annotate the map below to describe the existing flood defences at Low Crosby.

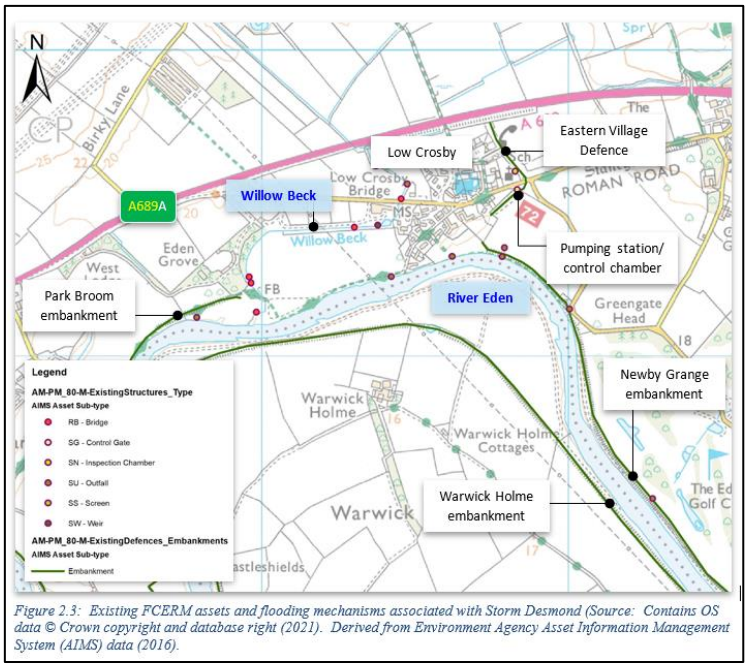

Figure 2.3: Existing FCERM assets and flooding mechanisms associated with Storm Desmond (Source: Contains OS data © Crown copyright and database right (2021). Derived from Environment Agency Asset Information Management System (AIMS) data (2016).

Source: Environment Agency

(f) Explain why the flood embankments increased the risk of flooding in Low Crosby.

(g) Explain why the post-2015 flood management at Low Crosby had to take account of potential impacts downstream at Carlisle.

Source: Environment Agency

2. Following the flooding in 2015, the government allocated £25m to reduce the risk of flooding in the area.

(a) Suggest why increasing the level of flood protection in Low Crosby will increase employment and economic activity.

(b) Explain why improved flood protection will improve peoples' mental health and well-being.

(c) Complete the table below to summarise the economic benefits of each option.

	Do-Nothing	Do-Minimum	Do-Something (Option 1)	Do-Something (Option 2)
Construction details	Cease maintenance of existing assets; no emergency responses.	Maintain existing assets; implement emergency responses.	Construct a raised embankment to the west of the village to prevent flow-back along Willow Beck. This would link up with the eastern embankment, which itself would be raised at the High Street crossing.	Lowering the existing embankment on the south side of the river (Warwick Holmes), reconnecting 185ha of natural floodplain. At high flow, water would overtop the embankment and would not reach the height at which it floods Low Crosby.
Number of homes protected by new scheme	-	-		
Projected % AEP adjusted for climate change (current village protection:2% AEP)	-	10% AEP		
Cost (£)	-	73,000		
Benefits (£)	-	982,000		
Cost-benefit analysis (benefits – cost in £)	-	909,000		

(d) The table below is an assessment of benefits that are **not** economically quantifiable. Complete the table by calculating the Total value for each option. *[Each option was assessed against the objective with values awarded between -3 (poor) and +3 (good) and then weighted by importance agreed by the project team.]*

Option	Flood risk management	Protect and enhance the environment	Promote health and well-being	Sustainable low carbon solution	Total
Do-Nothing	-15	-3	-4	-9	
Do-Minimum	-10	0	-4	-9	-23
Do-Something (Option 1)	5	-3	2	-3	
Do-Something (Option 2)	15	9	6	9	

(e) Suggest why the 'do-nothing' and 'do-minimum' options were dismissed.

(f) The chosen option was Do-Something (Option 2). Using evidence from the map below and the summary tables above, suggest why Option 2 was the preferred choice.

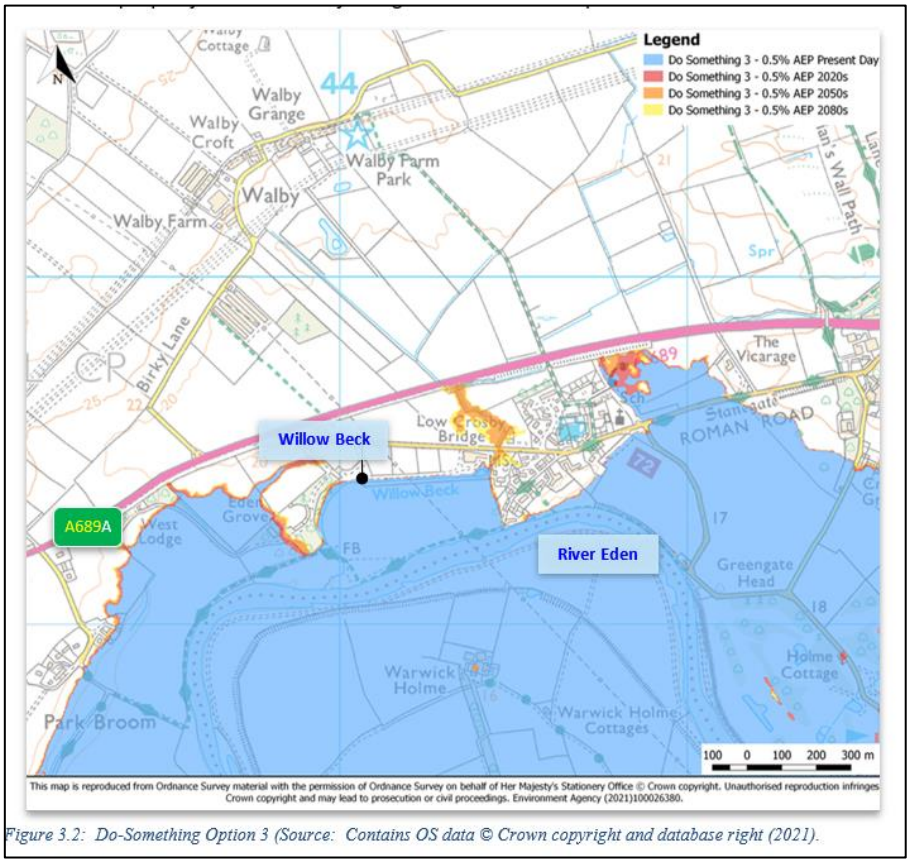

Figure 3.2: Do-Something Option 3 (Source: Contains OS data © Crown copyright and database right (2021).

Source: Environment Agency
