

# Mytholmroyd Flood Alleviation Scheme

## Action Plan for reducing flood risk in Mytholmroyd

May 2016

### Summary

The Mytholmroyd Action Plan sets out the proposed actions to reduce flood risk in Mytholmroyd. The proposals involve local engineered interventions in conjunction with catchment wide measures such as upstream storage and natural flood risk management, which will be investigated further through the Calderdale Catchment Plan.

Over £10 million has been allocated from the wider Calderdale programme to reduce flood risk in Mytholmroyd. The outline plan includes proposals to:

- construct new and raise existing walls on both banks of the River Calder and Cragg Brook to up to maximum height of approximately 1.8m
- strengthen buildings on both banks of the River Calder and Cragg Brook
- make improvements to the culvert on White Lee Clough
- widen the channel on the River Calder including improvements to bridge structures

The main works will start by the end of 2016. This is constrained by a challenging design programme and the statutory consultation period for planning of up to 16 weeks. However, where opportunities present themselves to deliver individual elements early these will be taken.

In addition to a Catchment Plan for Calderdale, an Action Plan for Mytholmroyd was commissioned by the Secretary of State for the Department of Environment, Flood and Rural Affairs following the flooding experienced throughout the Calder Valley on Boxing Day 2015.

Due to the devastating impact of the flooding in Mytholmroyd and the extensive damage to both formal and informal defences, there is a need to move at pace to implement permanent measures to reduce flood risk, in addition to the temporary measures already in place.

The Government has allocated an additional £35 million to reduce flood risk in Calderdale taking the overall investment programme to £52 million. Within this programme over £10 million has been allocated to Mytholmroyd. This work will be funded from the Recovery Fund, established by the Government to repair damaged flood defence assets, Flood and Coastal Risk Management Grant in Aid and additional funding allocated to the Calder Valley in the budget.

### Background

The Upper Calder Valley is a steep sided narrow valley consisting of a series of linear settlements along the valley floor, with the main towns of Todmorden, Hebden Bridge and Mytholmroyd all connected by one main arterial highway route.

The valley is particularly vulnerable to flash flooding, typically caused by intense downpours, turning roads, railways and hillsides into fast flowing channels for flood waters. River levels also respond rapidly and can quickly spill out of the river channel and combine with the surface water drainage network inundating hundreds of homes and businesses in a matter of hours.

The rapid onset and force of flood waters pose a significant risk to life, with recent floods ripping up roads, carrying away vehicles, destroying buildings and depositing significant volumes of gravel and rock debris on highways and private premises.

The river channel through Mytholmroyd is constrained as a result of development dating back to the 18th century and has a low standard of protection provided by a combination of formal and informal defences.

There is a detailed record of flooding in Mytholmroyd dating back to the 1800s including significant events in 2008 and 2012. In December 2015 approximately 300 properties and 70 businesses were flooded as well as the church, church hall, two schools and the community centre. Communications into the valley were cut off, impacting blue light services and emergency response and support. There was significant damage to gas and electricity supply to properties.

## Progress to date

Since the Boxing Day 2015 floods we have repaired damaged assets, removed blockages from the channel and implemented temporary defences. We have worked with Calderdale MBC to build on our existing Catchment Partnership, and have used this to strengthen links with Yorkshire Water, Canal and River Trust and other partners. We have met with the local community through a series of roadshows and have invited people to share their knowledge of the flooding, and their ideas for how flood risk can be reduced. This is being fed into our development of options for Mytholmroyd and the Calderdale Catchment Plan.

We have also updated our modelling of the flood risk to Mytholmroyd in light of the December 2015 flooding and work has commenced on refining the options available for a flood alleviation scheme.

## Direct actions to reduce flood risk

There are a number of mechanisms which lead to flooding in Mytholmroyd, including flooding from the River Calder, Cragg Brook, White Lee Clough, surface water flooding, highway flooding, sewer flooding and flooding from the Rochdale Canal. Flood risk from the River Calder and its tributaries is the most significant in terms of its destructive force and risk to life.

The proposed scheme for Mytholmroyd will involve local engineered interventions complemented by catchment wide measures such as upstream storage and natural flood risk management, which will be investigated further through the Calderdale Catchment Plan. It should be noted that while it will be possible to reduce flood risk in Mytholmroyd it will not be possible to fully prevent flooding in the future. As a consequence complementary work to further improve flood resilience, emergency planning and coordination of incident management will be required.

Options for engineered measures through Mytholmroyd are limited. The most effective solution to deliver a meaningful reduction in flood risk is to increase conveyance through a combination of raised walls, strengthening existing buildings, channel widening and improvements to bridges and culverts. A plan showing the flooding mechanisms and proposed design options are appended to this document.

The extent, height and appearance of any walls will be developed as the outline design is progressed in consultation with partners and the local community and will depend on other viable measures to reduce flood risk. Raised walls will be required on both banks of the river Calder and Cragg Brook with maximum wall heights of approximately 1.8m. Measures to soften the visual impact of walls will include the use of glass panels, raised footpaths and landscaping.

Channel widening on the River Calder has a significant impact on reducing flood risk in Mytholmroyd, with key locations at Caldene Bridge and the Greenhill Industrial Estate Bridge. Options to widen the channel will clearly have a direct impact on a small number of landowners and these discussions will be progressed in parallel to the engagement with the wider community. The cost of widening the channel will also be significant and any proposed improvements will need to be weighed against the benefits provided.

Works on White Lee Clough will include lining works to the culvert, sealing manholes and installation of new trash screens.

## Complementary actions to reduce flood risk

In conjunction with developing options to reduce the risk of flooding from the Calder and its tributaries, we are working with partners to develop our understanding of surface water flood risk, and the links with flooding from the highways, sewers and the Rochdale Canal. We will carry out local works identified to mitigate flood risk from these sources as part of the main construction works in Mytholmroyd. Further mitigation and action by partners may be identified and delivered through the Calderdale Catchment Plan.

Natural flood management measures aim to work with natural processes, features and characteristics to manage the sources and pathways of flood water. Measures to be explored further will include such things as tree and hedgerow planting, woody debris dams, land use and drainage. While there is a growing body of evidence to suggest that natural flood management measures can have a positive impact on reducing flood risk, it is often difficult to quantify this and due to the large scale nature of measures required, can take many years to implement and establish. We are also working with Yorkshire Water to understand if there is potential to store water in the upper catchment. Storage and natural flood management measures for the entire catchment will be identified, explored and progressed through the Calderdale Catchment Plan and will complement the proposed engineered measures through the town.

Channel maintenance is an issue which has been raised by the community in Mytholmroyd for many years. This has been investigated by the Environment Agency and a study was completed in 2014. This concluded that due to the existing geometry of the river through Mytholmroyd the benefits of dredging are very limited. Vegetation clearance and management were identified as having a more significant benefit and a maintenance programme has been developed accordingly. However, if through the proposed works it is possible to widen the channel then the benefits of further channel maintenance activities will be looked at again.

## Engagement

We are developing an engagement plan that will support the implementation of the Mytholmroyd Action Plan. It will be informed by consultation with the community during April and May.

Working with Calderdale, a community liaison group will be established in June. This group will include representation from community groups, and will help the project team to develop a design that complements community aspirations for Mytholmroyd.

A project office has now opened in Mytholmroyd where Environment Agency and Calderdale staff will be available on a weekly basis for local residents and businesses to call in and find out information about the scheme, and our other projects across Calderdale.

## Programme

An outline programme is shown in table 1 below. The immediate actions to develop the design are to finalise the updated modelling so that wall heights and widening options can be confirmed. To maintain pace on delivery of the Mytholmroyd scheme consultation with affected landowners has already commenced, in advance of wider public consultation. Following agreement of main scheme proposals the design will be developed over the summer and the required approvals and consents sought to enable construction to commence as soon as possible. It is anticipated work will commence late 2016 with a two year construction period. Key constraints to the programme will be the statutory consultation period required to secure planning approval and land owner negotiations. However, where opportunities present themselves to deliver individual elements early these will be taken.

Task Name	May '16	June '16	July '16	Aug '16	Sept '16	Oct '16	Nov '16	Dec '16
<b>Fluvial Elements</b>								
<i>Develop outline proposals</i>								
<i>Impacted landowner consultations and agreements</i>								
<i>Site Investigation &amp; Outline Design</i>								
<i>Public Consultation</i>								
<i>Finalise business case for construction spend approval</i>								
<i>Prepare, submit and planning approvals</i>								
<i>Detailed design</i>								
<i>Commence construction</i>								
<b>Non-Fluvial Elements</b>								
<i>Confirm flood risk issues &amp; scope</i>								
<i>Develop &amp; carry out consultation on outline proposals</i>								
<i>Consultation, business case development, detailed design</i>								
<b>Catchment Elements</b>								
<i>Input to Calderdale Catchment Plan</i>								

Table 1: Outline programme for Mytholmroyd Flood Alleviation Scheme

## Action Plan for reducing flood risk in Mytholmroyd

The appended action plan sets out the proposed actions to manage the risk of flooding in Mytholmroyd against the themes of:

- Reducing Flood Risk
- Raising Awareness
- Increasing Resilience

This document will remain live and be update in consultation with partners and the community liaison group.

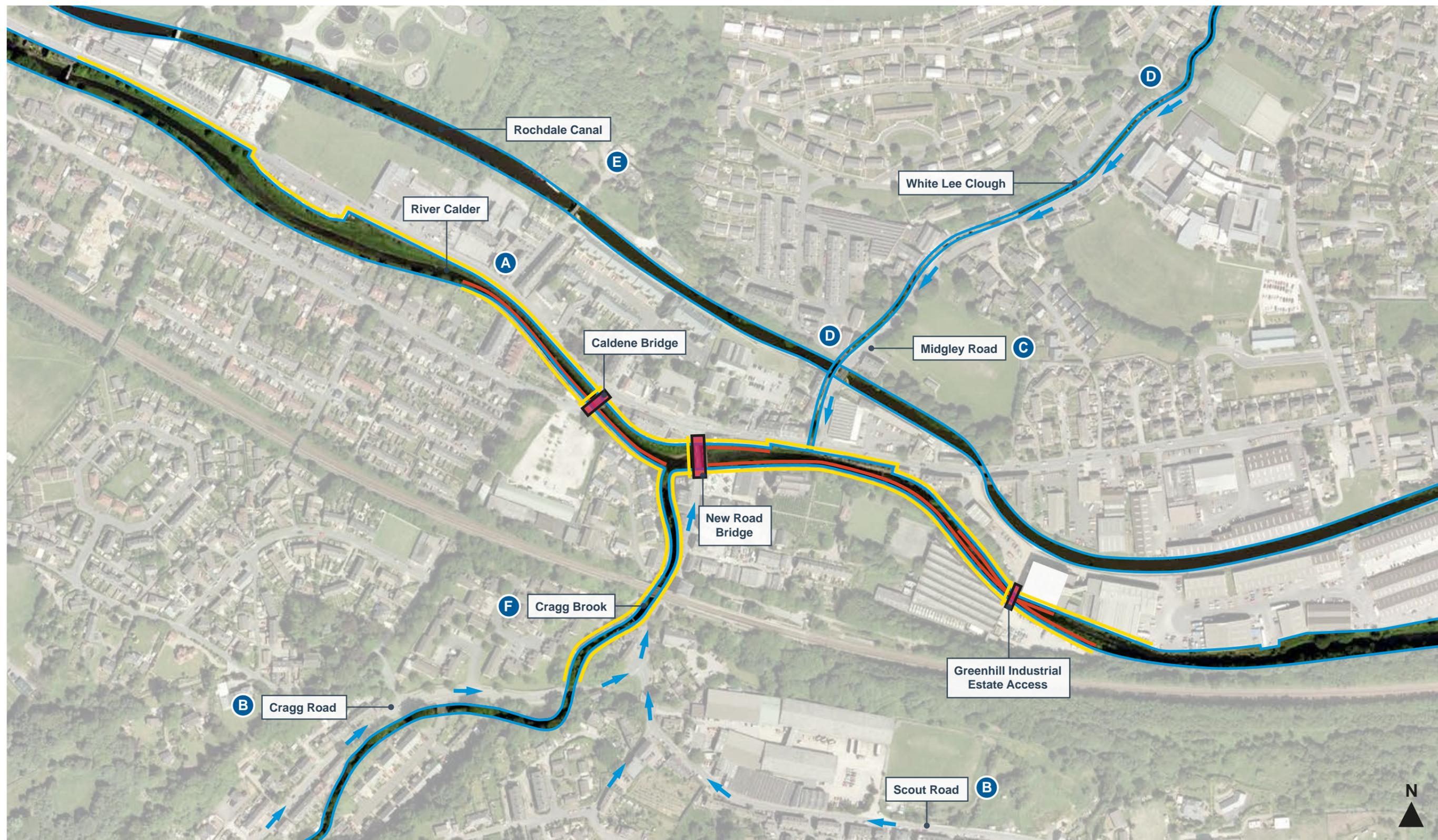
## Action Plan for reducing flood risk in Mytholmroyd

Ref	Action	Description	Location	Timescale	Lead
	<b>Reducing Flood Risk</b>				
A1	Inspect, manage and maintain temporary flood defences	Damaged walls are being reviewed and inspected with temporary repairs to be carried out ahead of main scheme works. Where more permanent repairs are carried out these will be done with reference to the permanent scheme design.	Various	Ongoing	EA
A2	Manage channel vegetation	Earlier studies carried out have shown the benefits in reducing flood risk through management of channel vegetation. Ongoing channel vegetation maintenance will continue during the design development and construction phase of the scheme.	Various	Ongoing	EA
A3	Establish community liaison group to inform options	As the scheme options develop there is a need to link these to the aspirations of the local community. This will include looking at landscaping to mitigate any potential impact of the proposed works and place making.	Various	Commencing June 2016	EA/CMBC
A4	Finalise proposals for reducing the risk of fluvial flooding	Work is ongoing to identify works that provide the greatest benefit in terms of reduced flood risk that can be achieved within budgets and that can be constructed with acceptable impact to the local community. This involves reviewing modelling results, cost development, engineering feasibility and working alongside the community through groups such as the community liaison group. To reduce fluvial flood risk we need to increase conveyance (flow of water) through the town.	Various	July 2016	EA

A5	Construction of raised walls & strengthen existing buildings	<p>Construction of new and improved defences in Mytholmroyd. The programme for construction will be developed and shared with the community as more information on the final options becomes available.</p> <p>The extent, height and appearance of any walls and localised widening will be developed in consultation with partners and the local community and will depend on other viable measures to reduce flood risk.</p>	River Calder and Cragg Brook	Dec 2016	EA
A6	Construction works to widen channel and improve structures	<p>Channel widening on the River Calder has a significant impact on reducing flood risk in Mytholmroyd, with key locations at Caldene Bridge and the Greenhill Industrial Estate Bridge. Programme for construction of widening works will be developed to minimise impact to the local community. The works are expected to extend over approximately a 2 year period.</p>	River Calder	Commencing Dec 2016	EA
A7	Culvert improvements	<p>Works to reduce flood risk from White Lee Clough culvert will include lining works, works to the screen and surface water management. It is expected that these works will be completed within the first year of the construction programme.</p>	White Lee Clough	Commencing Dec 2016	EA
A8	Finalise proposals for reducing the risk of flooding from other mechanisms	<p>Risk of flooding from other mechanisms include flooding from the canal and surface water runoff from hill sides and surface water management within the town. Main options being considered to address these sources of flooding include:</p> <p>Capture and management of surface water runoff from Scout Road and Cragg Road.</p> <p>Construction of overflow from the canal into the river to manage the flow path of water through the town</p>		Sept 2016	EA

A9	Identify catchment wide measures to be implemented or investigated further	Catchment wide measures including potential Natural Flood Management and upstream storage will be reviewed as part of the Calderdale Catchment Plan.		Oct 2016	EA and Partners
	<b>Raising Awareness</b>				
B1	Actions to raise awareness of flood risk.	Work with communities to raise awareness of flood risk, and to increase sign up to Flood Warning Direct. Build resilience of Mytholmroyd through work with flood warden groups to complement the reduced risk of flooding once the scheme is constructed.	Whole community	Ongoing	EA/CMBC
B2	Work with local schools to promote flood resilience messages	Raise awareness with younger community members. Make schools more resilient with better flood plans to enable them to operate safely, and to open more quickly if flooding does occur.	Whole community	Sept 2016	EA/CMBC
	<b>Increasing Resilience</b>				
C1	Establish evacuation hubs in the area.	Be better prepared with partners to provide support in the event of flooding.	Whole community	Sept 2016	EA/CMBC
C2	Identify vulnerable locations and review emergency plans.	Reduce the risk to life by developing better plans to inform and evacuate vulnerable areas of the community if flooding occurs.	Whole community	Oct 2016	EA/CMBC
C3	Work with Mytholmroyd Flood Group to produce Community Flood Plan	Work with new flood wardens to develop a community flood plan to raise awareness and increase resilience of the community to future flooding. Use new flood group to communicate development of the FAS.	Whole Community	June 2016	EA/CMBC

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30  
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**LEGEND:**

- Watercourse
- Potential channel widening
- Potential raising of walls

- Bridge modifications
- Common surface water flow route

**KEY FLOODING MECHANISMS:**

- A** Overtopping from the River Calder
- B** Surface water from Cragg Road and Scout Road
- C** Surface water from Midgley Road
- D** Risk of culvert failure at White Lee Clough
- E** Canal overflow
- F** River Calder backing up and overtopping Cragg Brook

<p><b>PUBLISHED CONCEPT FILES</b></p> <p>Chadwick House Birchwood Park Warrington WA3 6AE</p> <p>Tel: +44 (0)1454 662000 Fax: +44 (0)1454 663333</p> <p>Copyright © VBA Joint Venture Limited (2016)</p>		<p><b>A3</b></p>	<p><b>MYTHOLMROYD FAS</b></p>																								
<p><b>Environment Agency</b></p>		<p><b>DESIGN OPTION DEVELOPMENT</b></p>																									
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