

Calderdale Flood Recovery and Resilience Partnership Board

Date of Meeting: Friday 15th June 2018

Report: Mytholmroyd Flood Alleviation Scheme Phase 2 Update

**Joint Report of: Adrian Gill – Area Flood and Coastal Risk Manager,
Environment Agency**

**Mark Thompson, Director – Economy and Environment,
Calderdale Metropolitan Borough Council**

RECOMMENDATIONS

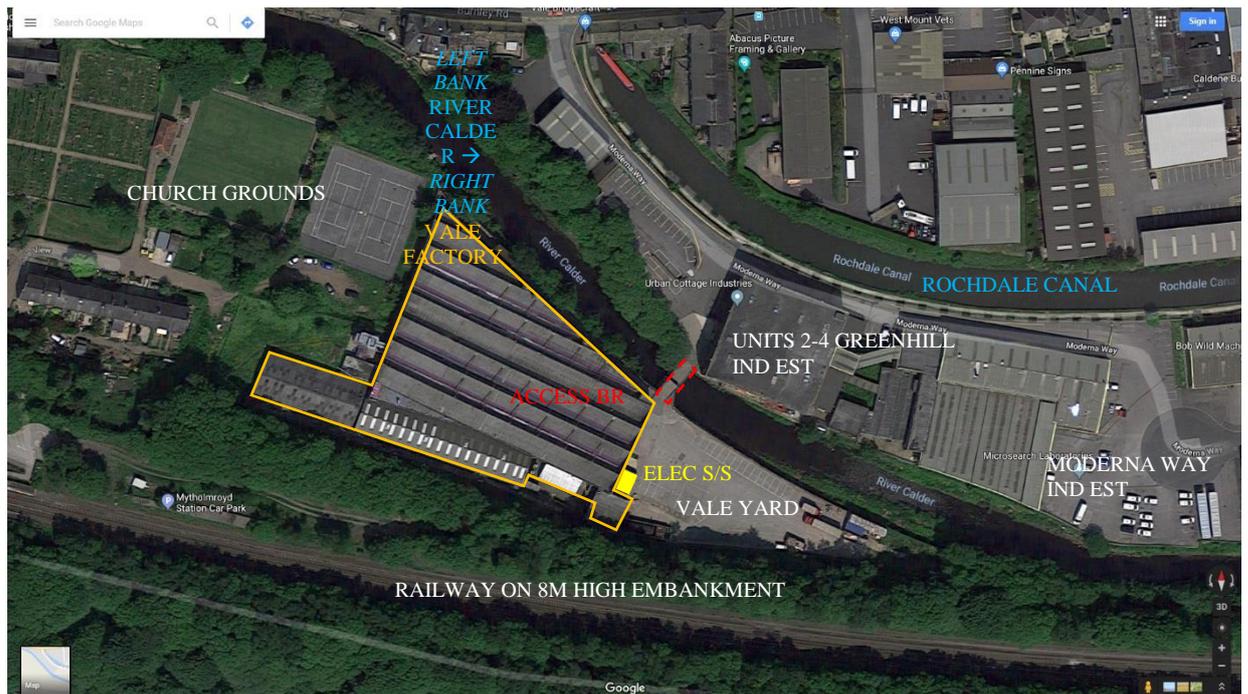
It is recommended that Calderdale Flood Recovery and Resilience Partnership Board:

1. Note the progress made in exploring options to deliver Mytholmroyd Flood Alleviation Scheme Phase 2.
2. Support the project team to continue to progress the construction of permanent walls at Greenhill Industrial Estate as the most cost effective and affordable way of reducing flood risk to Mytholmroyd with the least impact on programme.
3. Note that the commitment of the Board remains to deliver the best possible standard of protection for Mytholmroyd, which includes pursuing opportunities to widen the channel at Greenhill Industrial Estate, as well as other measures including reservoir management and natural flood management. Additional funding will continue to be sought to support the wider Calderdale programme and dialogue maintained with Government on progress.

1. INTRODUCTION

- 1.1 At the July 2017 meeting of the Calderdale Flood Recovery and Resilience Partnership Board it was agreed to take a phased approach to the Mytholmroyd Flood Alleviation Scheme (FAS). This was necessary due to complications with widening the channel at Greenhill Industrial Estate, the increased understanding and associated cost estimate of delivering all potential elements of the scheme and the pressure on the available funding for the wider programme.
- 1.2 Mytholmroyd FAS Phase 1 provides a comprehensive scheme to reduce the risk of flooding to 2% (1 in 50) chance of occurring in any given year without taking into account climate change. It requires raised defences, consisting of new walls, raised walls, as well as strengthening and waterproofing of existing structures, on the River Calder and Cragg (Elphin) Brook. The channel will be widened at Caldene Bridge and on the right bank in front of St Michael's Church. Work will be carried out to reduce flooding from the canal, culverts and Burnley Road. It also includes a provision for raised walls at Greenhill Industrial Estate.
- 1.3 The delivery of Mytholmroyd FAS Phase 2 would reduce the risk of flooding to 1.3% (1 in 75) chance of occurring in any given year without taking into account climate change by implementing channel widening at Greenhill Industrial Estate.

- 1.4 In agreeing to adopt a phased approach and allocating the funding necessary to progress phase 1 the Partnership Board confirmed its commitment to delivering phase 2. It asked the Environment Agency, as lead partner on the scheme, to investigate all options to enable the delivery of channel widening at Greenhill Industrial Estate and seek to secure additional funding. This report summarises the work done to explore alternative options and our current position.
- 1.5 For reference the existing site layout is shown in the aerial image below. A small selection of other photographs are provided in Appendix A for information. Both the left and right bank factories suffered major flood damage in 2015. Unit 2 on the right bank is being converted to smaller industrial units which will rely on the FAS to enable them to be let.



2. BACKGROUND TO DEVELOPMENT OF PHASE 2

- 2.1 During the concept design stage for Greenhill Industrial Estate a number of options were considered including widening the channel on both the left and right bank, construction of large culverts under Vale as well as a number of alternative locations and alignments for maintaining access to the right bank.
- 2.2 Ultimately channel widening on the right bank requiring the partial demolition of the Vale site was selected as the most viable option, with provision of a new bridge between Units 2&4.
- 2.3 One of the key issues in developing this option further was the statutory requirement for any new works to adhere to the current building regulations and design standards. The existing provision has developed over a period of years, with aspects of the existing buildings not meeting current design regulations. It was therefore not practical to provide comparable building and external accommodation within the reduced site footprint, following channel widening works.
- 2.4 As a consequence in March 2017, the Environment Agency agreed with all parties that it would not be possible to avoid significant disruption during construction due to the extent of works that would be required. It was therefore agreed that Vale Bridgecraft would need to relocate to new premises and the scheme design was altered to include full demolition of the Vale factory.

- 2.5 By June 2017, further work carried out included preliminary contaminated land assessments, construction cost estimates and “what-if” hydraulic model runs. Together, these contributed to the decision that widening at Vale was not affordable within the available programme funding at that time.

3. OPTIONS APPRAISAL

- 3.1 Following the decision to take a phased approach to the scheme the project team has focused on developing the permanent wall option included in phase 1, but also on challenging the costs associated with widening the channel at Greenhill Industrial Estate. In addition two further options incorporating the provision of temporary concrete lego block walls were also explored, which were deemed feasible to support the delivery of phase 2.
- 3.2 The four options are summarised below. A proposed layout for each is included in Appendix B. Those for Options 1 & 2 are taken from the outline design drawings; those for Options 3 & 4 are simple sketch plans. All options were assessed against cost, risk and programme to allow an indicative comparison to be made by the Partnership Board.

3.3 Option 1: widen the channel and relocate Vale

The project team did further work to challenge the estimated cost for this element, however there has not been a significant change in the original forecast and the total cost including allowances for risk is £10.3m. The funding gap based on the current allocation of funding is £7.7m.

The implementation of a flood defence solution at Vale is required to complete the wider Mytholmroyd FAS and deliver the improved standard of protection for the wider community. The project team estimate that Option 1 would take 23 months to complete from a decision being taken to proceed. Therefore, if the funding was to become available now and the decision taken to widen at Vale, this would delay the forecast completion date for the whole scheme from December 2019 to May 2020 based on the current programme. If funding became available at a later date completion of the full scheme would be further delayed and the forecast cost would increase. The increase in cost of this option would depend on the delay to the overall programme, inflation and extent of abortive work done.

There remain a number of significant risks associated with this option which could impact on cost and programme. Option 1 would require Vale to relocate to another site. Discussions with Vale Upholstery have been positive and constructive. An alternative site has not currently been identified, however, Vale have indicated they are willing to fully cooperate with the Partnership to facilitate a swift relocation.

Another important consideration is that the benefit/cost ratio for Option 1 as a stand-alone element is less than 1. Therefore it would not be possible to support this in the future without private contributions or linking with other projects to deliver additional benefits, such as future transport improvement or regeneration schemes.

Assessment of Option

Option 1 provides the highest standard of protection reducing the risk of flooding to 1.3% (1 in 75) chance of occurring in any given year without taking into account climate change. However, it is significantly more expensive than Option 2, with a later potential completion date and greater associated risks for programme and cost. A decision on committing to Option 1 is now critical path for the overall programme meaning that further delays to making a decision will result in additional programme delay and cost. Option 1 is currently not affordable with the

current allocation of funding.

3.4 Option 2: construct permanent walls and Vale to remain on the site.

The funding to deliver this option was approved by the Board at the July 2017 meeting. The project team has been working closely with Vale Upholstery to agree a methodology for constructing flood defence walls which causes the minimum of disruption to business activity both during and after construction.

This option would deliver an improved standard of protection reducing the risk of flooding to 2% (1 in 50) chance of occurring in any given year without taking into account climate change.

This option would involve the construction of permanent concrete walls on both the right and left banks without modifying the channel, removing the fencing and gates from the bridge, installing flood gates at each end of the bridge, and modifying fire escape routes.

Assessment of Option

This option can be delivered within the allocation and timescales of the current programme and delivers a comprehensive scheme at the earliest possible opportunity. It is the lowest cost option with the least amount of cost and programme risk. There are some abortive costs associated with channel widening at a later date, but these are comparable to options 3 and 4.

3.5 Option 3: construct temporary walls, relocate Vale and demolish the factory

The project team investigated the feasibility of taking a phased approach to channel widening, so if the necessary funding became available in the future this option could still be realised. This would include the construction of temporary lego block walls which would provide the 1:50 standard of protection to Greenhill Industrial Estate and the village, but could also be dismantled and reused to enable widening to take place at some point in the future. Two versions of this approach were investigated as Option 3 and Option 4.

Option 3 included the relocation of Vale to enable the demolition of the factory as a first step towards widening the channel at a later date. Temporary concrete walls would then be constructed tying existing high ground as shown in Appendix B.

The cost of delivering Option 3 is estimated to be £6.6m. The funding gap to deliver Option 3 based on the current allocation of funding is £4m.

If a decision was taken now to proceed with Option 3 the delivery of this option is not forecast to delay the completion of the full FAS. However, there remains a number of significant risks associated with this option which could impact on cost and programme. Option 3 would require Vale to relocate to another site. Discussions with Vale Upholstery have been positive and constructive. An alternative site has not currently been identified, however, Vale have indicated they are willing to fully cooperate with the Partnership to facilitate a swift relocation.

Assessment of Option

Option 3 provides some flexibility and progress towards channel widening in the future, but for no additional flood risk benefit above Option 2 at this time. It is significantly more expensive than Option 2, with greater associated risks for

programme and cost.

3.6 Option 4: construct temporary walls and Vale to remain on site.

Option 4 is effectively the same as Option 2, but using temporary concrete lego blocks which could be dismantled and reused elsewhere if the funding became available to enable channel widening.

Following further assessment the cost of constructing temporary walls is very similar to the cost of constructing the proposed precast 'L' shaped permanent walls. This is due to the installation process for both types of wall being broadly the same as both would be lifted into prepared beds and concreted in. Due to this, the forecast costs for removing both types of walls, if required to facilitate widening, would also be very similar.

The temporary lego walls would also incur an ongoing maintenance cost as the joints between the blocks would require maintaining. Visually the temporary lego blocks have a less attractive appearance, which may be an issue with planning if they were utilised in the long term. In addition they would have a larger footprint than the permanent precast walls, which may cause operational issues for Vale.

If a decision was taken up to October 2018 to proceed with Option 3 the delivery of this option is not forecast to delay the completion of the full FAS.

Assessment of Option

Option 4 provides no additional benefit to Option 2, with the disadvantage that it would require ongoing maintenance. There are also additional risks around planning and Vale's operational activity.

3.7 The table below compares the costs, risks and programme of the options detailed above.

	Option 1	Option 2	Option 3	Option 4
Standard of protection	1.3% (1/75)	2% (1/50)	2% (1/50)	2% (1/50)
Cost (£m)	10.3	2.6	6.6	2.6
Additional funding required above current allocation (£m)	7.7+	-	4.0+	-
Estimated scheme completion date	May 2020+	Dec 2019	Dec 2019+	Dec 2019+
Risk to cost	High	Low	High	Medium
Risk to programme	High	Low	High	Medium

4. FUNDING

4.1 While the partnership has been successful in securing additional funding across the investment programme overall there remains a funding pressure, with cost uncertainty associated with a number of schemes in development. The following section outlines a number of possibilities which are being explored for Mytholmroyd and the wider programme.

4.2 Following the Autumn Budget DEFRA invited applications for funding to support flood defence schemes in areas where they would demonstrate economic benefits for deprived communities. A funding pot of £40m is available nationwide and the Yorkshire team submitted several bids including £7m to support channel widening at Vale. The outcome of this bid is still awaited. However, early indications are that

this is a highly competitive process and an outcome may not be announced in the near future.

- 4.3 It may be possible to link channel widening at Vale to future transport improvement and regeneration schemes for the area. CMBC is currently in the early stages of developing a range of options which could be submitted as part of a bid to the WYCA Transport Fund for the A646 Corridor Improvement Scheme, which includes Greenhill Industrial Estate. As outlined previously in this report, the benefit/cost ratio for Option 1 as a stand-alone element is less than 1, however if additional benefits could be delivered through a wider programme then widening the channel at this location could become cost beneficial.
- 4.4 The Partnership has not ruled out the possibility of approaching Government for additional funding to support the wider programme and continues to update Defra on progress. No additional request has been made to date as we continue to focus on delivery, securing contributions and better understanding the requirements of future schemes. However, work to understand a potential additional ask of Government has been started and will report to the Partnership Board at a future date.

5. SUMMARY

- 5.1 Of the additional options investigated by the project team since the July Partnership Board Option 2 (permanent walls) offers the best solution to provide a comprehensive scheme to Mytholmroyd within the allocation and timescales of the current programme.
- 5.2 This option would deliver an improved standard of protection to Mytholmroyd, including Greenhill Industrial Estate, reducing the risk of flooding to 2% (1 in 50) chance of occurring in any given year without taking into account climate change.
- 5.3 Option 1 (channel widening) provides the highest standard of protection reducing the risk of flooding to 1.3% (1 in 75) chance of occurring in any given year without taking into account climate change. However, it would require an additional allocation of £7.7m and carries greater cost and programme risk.
- 5.4 Funding remains a challenge for delivering phase 2 of the Mytholmroyd scheme and the wider Calderdale Partnership Investment Programme. As detailed in Section 4 above the partnership continues to look for additional opportunities for contributions and to align work with other programmes.
- 5.5 In Mytholmroyd it should also be noted there may be alternatives to channel widening, such as reservoir management or natural flood management, which may provide better value for money. These options are not covered in this report, but are the subject of ongoing investigation.

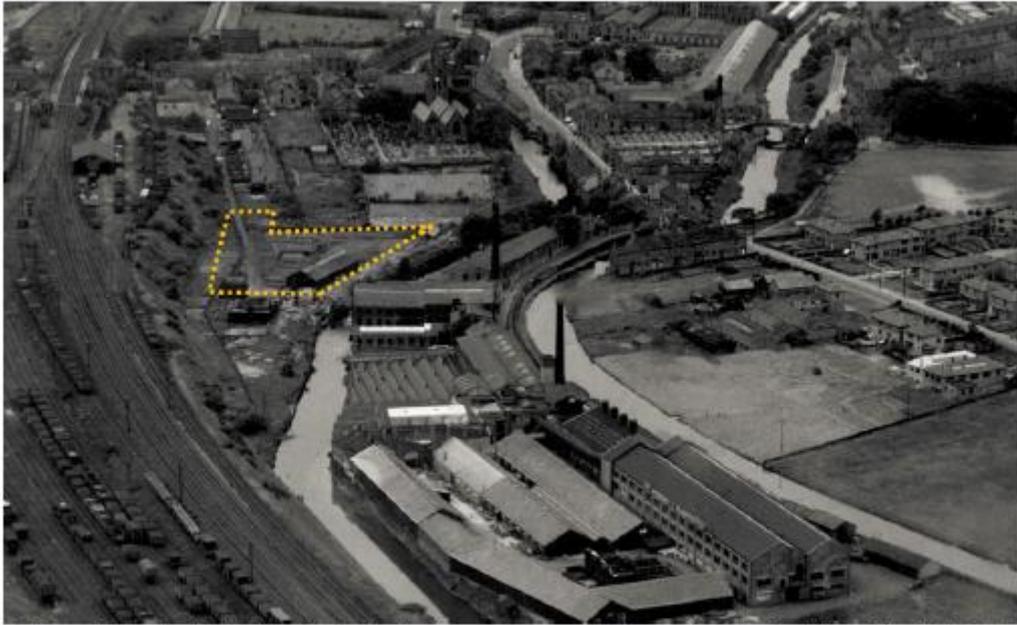
6. RECOMMENDATION

- 5.6 It is recommended that Calderdale Flood Recovery and Resilience Partnership Board note the progress made exploring options to deliver Mytholmroyd Flood Alleviation Scheme Phase 2.
- 5.7 It is recommended that Calderdale Flood Recovery and Resilience Partnership Board support the project team to progress the construction of permanent walls at Greenhill Industrial Estate as the most cost effective and affordable way of reducing flood risk to Mytholmroyd with the least impact on programme.

- 5.8 It is recommended that Calderdale Flood Recovery and Resilience Partnership Board note that the commitment of the Board remains to deliver the best possible standard of protection for Mytholmroyd, which includes pursuing opportunities to widen the channel at Greenhill Industrial Estate, as well as other measures including reservoir management and natural flood management. Additional funding will continue to be sought to support the wider Calderdale programme and dialogue maintained with Government on progress.

Adrian Gill
Chair of the Investment Operational Group

Appendix A - Photographs



1948 aerial photo. North is to the right; the river flows top to bottom. Approx. footprint of the Vale factory is outlined orange. The access bridge appears to be in the same location as existing.



Boxing Day 2015 flood, looking upstream from Unit 2 Greenhill Ind Est. Note the effect of the bridge on flood levels and the depth of flooding in the downstream yard; the upstream end of the factory was under around 1.2m of floodwater. Also note fences & gates blocking overtopping flow.



Interior of Vale factory. Note the wide span of the north-light roof structure and the thin structural members.

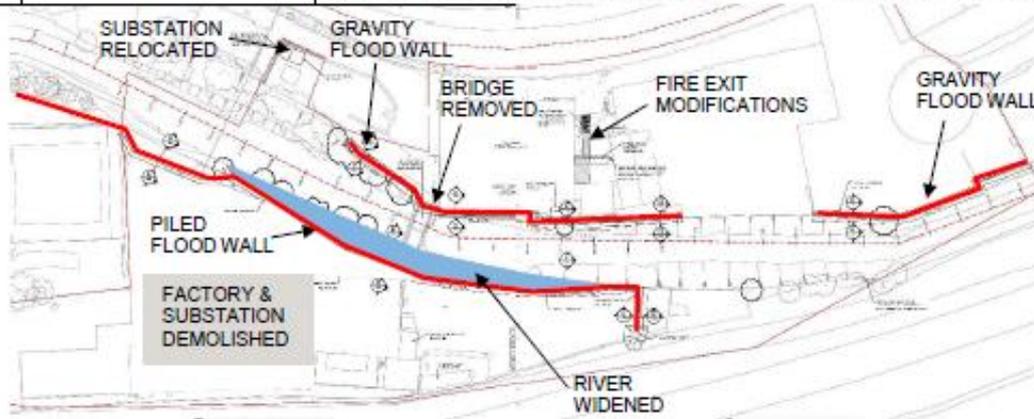


Preferred (but rejected) bridge location, between Units 2&4 Greenhill Ind Est. The green office/walkway and the single-storey pitch-roofed buildings would be demolished.

Appendix B – Option Layout Plans

Formally issued drawings for the scheme are all pre-fixed with "ENV0000385C-VBA-XX-"

1	1:75 SoP Permanent with widening (Vale vacate)	-BB-DR-C-5501-P01 – plan 1 of 2 -BB-DR-C-5502-P01 – plan 2 of 2 -BB-DR-C-5504-P01 – sections 1 of 2 -BB-DR-C-5505-P01 – sections 2 of 2 All issued 19-7-2017
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2	1:50 SoP Permanent without widening (Vale remain)	-BB-DR-C-5501-P02 – plan 1 of 2 -BB-DR-C-5502-P02 – plan 2 of 2 -BB-DR-C-5504-P02 – sections 1 of 3 -BB-DR-C-5505-P02 – sections 2 of 3 -BB-DR-C-5506-P02 – sections 2 of 3 All issued 19-7-2017
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