

Northamptonshire Small Schemes Pathfinder Project Helmdon Flood Risk Management Summary Report

Station Road, Helmdon was chosen as one of eight communities to participate in the Defra-funded Small Schemes Pathfinder Project, which aims to investigate ways to improve the development of Flood and Coastal Risk Management (FCRM) schemes in small rural communities. Northamptonshire County Council (NCC) has been working with technical experts WSP | Parsons Brinckerhoff (WSP|PB) who have undertaken a technical analysis of why the community floods and what could be done to reduce the impact of flooding, and David Smith Associates who undertook the original [Flood Investigation Report](#).

This report is a summary of the Northamptonshire Small Schemes Pathfinder Technical Report and provides an overview of the work undertaken as part of the Pathfinder project.

The aims of this report are to:

- provide a summary of the work to inform community members of the outcomes of the project; and
- to be used as a basis for further consultation, discussion, acceptance and agreement of the proposed way forward.

Summary of Flood Risk Issues in Helmdon

Section 19 of the Flood and Water Management Act 2010 states that Lead Local Flood Authorities (LLFAs) (in this case NCC) should investigate flood incidents that they consider necessary. NCC investigates when a specific threshold is met. NCC publishes all Flood Investigation Reports on the Flood Toolkit at www.floodtoolkit.com/risk/investigations, which:

- Identify and explain the likely cause/s of flooding;
- Identify which authorities, communities and individuals have relevant flood risk management powers and responsibilities;
- Provide recommendations for each of those authorities, communities and individuals;
- Outline whether those authorities, communities or individuals have or will exercise their powers or responsibilities in response to the flooding incident.

The Flood Investigation Report undertaken for Helmdon investigated the flooding that occurred at Station Road on 21st November 2012, after 35mm of rain fell in the Helmdon area. The water level in the centre of the village was well above property thresholds and at least three properties were flooded internally. In places, the depth of the flooding during the event reached approximately 325mm, resulting in the closure of the highway. There have been many recorded incidents of flooding within Helmdon, with internal flooding to properties recorded in April 1998, July 2007, and November 2012. Several other flood incidents, including most recently on 9th March 2016, have been recorded however these only resulted in flooding of the highway.

Helmdon is vulnerable to overland flood flow which channels from Grange Lane in the west. It has been reported that during flood events large volumes and a high velocity of surface water can flow south to north along the base of the west side of the (disused) Great Central Railway embankment. The flow then overtops the ditches and field boundaries and passes through the Grange Lane road tunnel onto the public highway, then east onto Station Road. In addition, surface water flowing along the eastern side of the railway embankment often overtops the ditches on Grange Lane. The surface water exceeds the capacity of road gullies and the public sewerage system, resulting in flooding. A separate flooding issue also occurs as a result of overland flow arriving from the fields to the west of Church Street. As a result, one property on Church Street has been subjected to flooding from runoff which exceeds the capacity of the drainage on the highway.

The Flood Investigation Report concluded that the flooding that occurred in Helmdon in November 2012 was primarily a reflection of the intense rainfall that fell onto a saturated area over a short period of time. However, existing drainage systems and watercourses were unable to cope with the large volume of water experienced, a result of being in a poor state of maintenance. Runoff from privately owned land therefore overtopped onto the public highway to be drained by highway drainage and public sewerage systems which are not designed for this purpose and were not able to manage the additional quantity of water experienced.

Full details of the investigation can be found in the Flood Investigation Report, available at <http://www.floodtoolkit.com/wp-content/uploads/2015/01/Helmdon-FIR.pdf>

Helmdon Small Schemes Pathfinder Project

The sections below summarise the work undertaken for the Small Schemes Pathfinder Project in Helmdon and provides an overview of the outcomes.

1. Developing outline options

The project team developed a range of options that could help alleviate the flooding to the community, informed by a site visit and the Flood Investigation Report. Many of the options initially identified were considered to be unfeasible due to technical difficulties or overriding costs, but were not ruled out at this stage. Only an outline analysis was undertaken and therefore no costs or benefits were assessed at this stage.

Seven options were developed for Helmdon. These were:

1. Diversion of water from the top end of Station Road, into the ditch on the eastern side of the railway embankment, to the west of the properties along Station Road.
2. Diversion of water off Grange Lane (directly east of the railway embankment) via the fields before it reaches Station Road.
3. Improvements to the public drainage system along Station Road.
4. Installation of raised section of road and associated drains to maximise the volume of water leaving Church Street.
5. Property Level Resilience.
6. Create a formalised storage area at The Green.
7. Increase the capacity of the river culvert running under the bridge to the north of The Green.

2. Community engagement – visit to the community and formal consultation on the outline options

The project team arranged for a community outreach vehicle (COV) to visit the village and invited all those who may be affected by or benefit from the project to come along. The purpose of the session was to meet with the community members to get initial feedback on the project. This was followed up by a formal consultation to get written feedback. A total of three residents and landowners attended the COV.

The aims of this engagement were to ensure that the project team had a full understanding of the issues that needed to be addressed, to get feedback from the community on the seven outline options presented (and in particular whether any of the options posed issues or additional benefits) and whether the community had any other options they would like to be considered.

During this community engagement session on the COV, discussions were had around funding limitations to the project, including the potential funding sources and whether the community would consider contributing towards the project (either financially or in-kind i.e. through offers to provide land, equipment or help with maintenance in the future). These discussions were extremely important to ensure the expectations were not unreasonably raised within the community in relation to delivery of any scheme.

A follow-up letter was then sent to all residents, affected landowners and the Parish Council in order to provide the details of proposed options and request any formal feedback to the options presented. A total of four formal responses were received.

3. Refinement of options

The outline options, plus others recommended by the community, were refined into four options. These options were deemed to have no significant constraints, determined through the consideration of additional information such as CCTV surveys, further assessments of topography and further drainage information. The designs of the four options were then refined, and the costs of construction and maintenance of each option estimated and compared to the financial value of the benefits that may be realised if the option was to go ahead.

The four refined options for Helmdon were:

Option A – Improvements to the highway drainage infrastructure along Station Road

Option B – Raised section of road (on Church Street) in conjunction with improvements to overland flow routes.

Option C – Property Level Resilience in the vicinity of Station Road.

Option D – Raised section of Grange Lane and improvements to the drainage ditches to the west.

4. Cost/Benefit analysis

A comparison of the costs and benefits of each option provides an assessment of the viability of each option. The financial value of any contributions offered by the community during the engagement was calculated based on the discussion had on the COV and provided in the formal consultation and was included in the analysis. This determined which of the options would be most viable, and how much additional contributions would be

required to make the other options viable, in terms of obtaining Flood and Coastal Risk Management Grant in Aid (FCRM GiA) (the funding mechanism available to NCC to secure funding for flood alleviation schemes).

The costs were calculated based on the Spon's Civil Engineering and Highway Works Price Book 2014¹ and the Environment Agency's Long Term Costing Tool for Flood and Coastal Risk Management². These mechanisms allow for:

- construction costs;
- overheads and other costs including general site prelims, temporary works etc.;
- professional fees/associated costs (assumed to be 50% of construction costs);
- maintenance costs (over 100 years); and
- optimism bias (assumed to be 30% of the construction cost)³.

A 50% uncertainty allowance has also been given for unknown costs such as site investigations, archaeology, compensation etc.

The costs have been calculated assuming that contractors would undertake the works in line with the current guidance for funding applications. However, if some of the proposed works are undertaken by the landowner/Parish Council then the costs would be reduced as they may already have the appropriate machinery on site or could, for example, provide labour at a much reduced rate compared to a contractor. The relative costs of the works offered to be undertaken by the community members have been included as a 'contribution in kind'.

The benefits are calculated by assessing the difference in the financial value of damages that would occur as a result of a flood before the works are in place and after the solution has been implemented. The method used is called the Weighted Average Annual Damages approach as outlined by the Multi-Coloured Handbook 2015⁴.

A comparison of the costs, benefits and contributions provides a 'Partnership Funding score', which is a measure of the viability of the scheme to obtain FCRM GiA funding. Table 1 below outlines the option, associated cost and Partnership Funding (PF) score:

Table 1: Option Summary

OPTION	Cost	PF Score
Option A (Highway drainage improvements)	£316,000	19%
Option B (Raise section of Church Street)	£70,000	-
Option C (Property Level Resilience)	£123,000	44%
Option D (Raise section of Grange Lane)	£59,000	130%

¹ <http://www.pricebooks.co.uk/>

² <https://www.gov.uk/government/publications/long-term-costing-tool-for-flood-and-coastal-risk-management>

³

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/191507/Optimism_bias.pdf

⁴ <http://www.mcm-online.co.uk/handbook/>

5. Preferred option

The preferred option is based on the results of the cost/benefit analysis. Option D is shown to be most economically viable i.e. has a Partnership Funding score of over 100% and therefore may be suitable for funding.

The preferred option involves the construction of a raised section or drainage cut-off channel across Grange Lane (at the tunnel underneath the disused railway track) in order to encourage overland flow into the drainage ditches running north to Helmdon Brook. These drainage ditches are situated along the base of the disused railway embankment, and would also benefit from formalisation and maintenance.

It should be noted however that blocking off this route would only equate to approximately 35% reduction in the volume of water getting into the centre of the village. Therefore while it will reduce the risk of flooding, it will not entirely remove the risk. It is estimated that only a 10% (1 in 10 year) standard of protection will be provided by this option, whereas the less-economically viable options A and C could provide a 4% annual probability (1 in 25 year) standard of protection.

The total cost of the preferred option has been assessed to be **£59,000**.

The value of contributions offered has been estimated to be **£26,000**.

The Partnership Funding score is therefore **130%**.

6. Technical Report and Lessons Learnt Report

The outputs required by Defra for the Pathfinder Project are a Lessons Learnt report summarising the project and the lessons learnt in terms of the process, and any accompanying tools that other authorities can use should they wish to repeat the process for other communities. These outputs are now available online at <http://www.floodtoolkit.com/how-to-guides/run-partnership-scheme/> > How to run a small scheme pathfinder project.

The Technical Report covering the options analysis process is not a required output, but has been prepared by the project team in order to provide a suitable business case for potential funding bids.

Next Steps for Helmdon

The next phase for Helmdon involves re-engaging with the community with the results of the project and consulting with those who were not involved or did not engage in the previous round of consultation (such as any additional landowners).

The 2016 deadline for submitting bids for FCRM GiA funding was June 2016. Therefore to ensure the momentum of this project, NCC submitted a bid to the Environment Agency based on the preferred option and the contributions offered to date. There will be opportunities to refine the bid as costs are developed or if landowner constraints limit the feasibility of the option put forward.

The project has received approval in principle to receive funding in-year i.e. within the financial year of April 2016-March 2017. The value of grant that would be provided is £27,000. The remaining £32,000 would need to be sought as a combination of contributions

in kind (i.e. savings from offers of work to be undertaken by landowners, and for the community and/or Parish Council to undertake maintenance) and/or financial contributions. The community may need to consider the alternative funding options set out below, in order to fill any gap in the funding.

Engineers at Northamptonshire Highways are now assessing the preferred option of raising a section of Grange Lane, to determine whether there are any barriers to the implementation of this solution, and will proceed to detailed design and cost analysis.

Further discussions are also ongoing with Northamptonshire Highways and Anglian Water Services to determine if further contributions from these authorities can be secured in order to enhance the solution. Once a more detailed solution has been agreed, further community engagement is likely to be required to confirm contributions and maintenance agreements, before works can be implemented on the ground.

It is considered likely that the works would be implemented in Spring 2017.

Potential Funding Options

The following section provides further information about the various funding options that may be available to support a scheme in Helmdon. It should be noted that the main mechanism for funding these projects is Flood and Coastal Risk Management Grant in Aid, however as this may not cover the full costs, the community may need to partially fund the project through alternative means.

Flood and Coastal Risk Management Grant in Aid (FCRM GiA)

Defra has the national policy responsibility for Flood and Coastal Risk Management (FCRM) and provides funding through Grant in Aid (GiA) to the Environment Agency, who then administers grants for capital projects.

The approach to funding capital projects aims to encourage communities to take more responsibility for the flood risk that they face, and aims to deliver more benefit by encouraging total investment to increase beyond the levels that Defra alone can afford.

The level of funding available through FCRM GiA is related directly to benefits (in terms of the number of households protected), the damages being prevented, plus other scheme benefits such as environmental enhancements, amenity improvement, agricultural productivity and benefits to business.

Local contributions raised towards a project will help release the FCRM GiA by demonstrating community ownership of the project. These contributions can be either money towards the scheme, or a benefit-in-kind e.g. a landowner offering to undertake part of the works.

Under this system some schemes may receive complete funding, if the benefits significantly outweigh the costs, however for most schemes only partial funding would be available, with the gap needing to be filled by other sources.

The Partnership Funding score gives an indication as to whether the option has met the threshold for potential FCRM GiA funding. A score of less than 100% means that further contributions will be required or revisions made to the scheme to reduce the costs. A score of greater than 100% means that the scheme could go onto the list of potential schemes for funding, but it does not guarantee funding. Schemes on the funding list then require approval from the Environment Agency. The greater the additional contributions that can be secured, the greater the resulting PF score, and therefore the greater the scheme's chances of obtaining an FCRM GiA allocation.

Local Levy

Local Levy funding is a locally-raised source of income, gathered by way of a levy on Local Authorities and collected via the council tax. The levy is used to support (with the approval of the Regional Flood and Coastal Committee) flood risk management projects that are not considered to be national priorities and hence do not attract national funding through FCRM GiA. Local Levy funding can also be applied to FCRM GiA projects, at the discretion of the Regional Flood and Coastal Committee, to meet the partnership funding requirements.

Section 106

This is a contribution from developers, linked to specific developments and the infrastructure required to make them acceptable in planning terms. Its use is very specific to the issue being addressed and is negotiated separately for each development. It can be used to pay for flood defences that specific developments need in order to be safe and so acceptable in planning terms. These flood defences can however be designed to also benefit the local area and therefore become part of a wider mitigation scheme.

Community Infrastructure Levy (CIL)

This is a locally agreed sum levied upon developers. Once combined over time, large sums of money could potentially be raised. It is flexible in its approach as local authorities can adjust spending plans to meet priorities. Local authorities are required to use this funding for infrastructure needed to support the development. It can be used to construct new infrastructure, increase the capacity of existing infrastructure or repair failing existing infrastructure including flood defences.

Parish Precept

Parish precept can be raised for projects that improve the quality of the area. Parish precepts are typically used for maintenance of playing fields, recreation grounds, village halls, car parks, footpaths, etc. The Parish Council can also spend money on anything that they consider would be a benefit to the community that is not covered by their specific responsibilities. This could include raising funds for flood risk management purposes.

Northamptonshire – Empowering Councillors and Communities Scheme

Northamptonshire County Council grants a small amount of funding a year to each councillor to spend within their electoral division. Councillors can fund large or small schemes or activities of benefit to local people and the local community, as well as supporting local voluntary and community organisations.

Riparian Owner/Landowner Funding

Landowners in some circumstances may be willing to contribute funds to FCRM maintenance where they can see a direct benefit to reducing their flood risk or improving

their land drainage. In certain circumstances local interest groups may step in to fund FCRM where there is no available funding from public bodies.

People's Postcode Lottery – Dream Fund

Grants are available for local voluntary and community organisations for projects and activities that benefit local people and the local community. Projects must be innovative and applications must meet one or more of the following funding themes:

- Early child development;
- Helping refugees in our community;
- Conserving our marine environment;
- Reconnecting with the natural world; and,
- Engaging people with arts' culture and heritage

Reaching Communities England

Reaching Communities funding is for projects that help people and communities. The fund can cover salaries, running costs, a contribution towards core costs and equipment, or up to £100,000 for land, buildings or refurbishment capital costs. Grants are available from £10,000, upwards and funding can last for up to 5 years.