Evaluation of the Defra Property-level Flood Protection Scheme: 25918

Summary Report

March 2012

Dr Stephen Merrett
Environment Agency
Tyneside House
Skinneburn Road
Newcastle upon Tyne
NE4 7AR
JBA Office

JBA Consulting
Nelson House
Langstone Park
Priory Drive
Newport NP18 2LH
South Wales

JBA Project Manager

Peter May

Revision History

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Contract

This report summarises work commissioned by Jenny Warren, on behalf of the Environment Agency, by a letter dated 26th September 2011. The Environment Agency's project manager for the contract was Dr Stephen Merrett. Peter May, Beth Jones and Janet Spence of JBA Consulting, together with Dr John Chatterton and Dr Mervyn Bramley carried out this work. A Full Report is also available.

Prepared by ..............................................Peter May BSc FGS CGeol
   Project Manager

Reviewed by ..............................................Marc Pinnell BSc MSc MCIWEM C.WEM
   Project Director

Purpose

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Acknowledgements

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Property-level Protection: Key Scheme Facts

- £5.2m of Defra Grant awarded to Local Authorities
- Delivered in 2 phases from 2009 to 2011
- 1,109 properties were protected in 63 communities

This evaluation used:
- 40 Local Authority post-scheme evaluation reports
- 80 attendees at 2 Stakeholder Workshops
- 9 Scheme Case Studies for more detailed assessment
- Flood Group meetings and one to one meetings with residents
- 56 Telephone interviews with residents

Costs and Benefits

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Cost Benefit ratio of case studies: 4.8 to 1

- Local flood warning critical
- Some excellent examples of community emergency plans
- More positive response from insurers will help uptake
- Measures installed have yet to be tested by a flood event

- High levels of participation: 93% scheme uptake
- Effective engagement is key; initial awareness low
- 92.5% of Local Authorities used independent surveyors
- Schemes need more time

- Some residents need more support with installation and maintenance
- Evidence of good practice with cooperation between suppliers
- Communities working together supporting each other
- Tight deadlines during winter months caused some delays

- Over 60% of Local Authorities appointed a single supplier
- Householders however prefer a choice of products
- Excellent products, including ‘fit and forget’ now available
- Scheme administration was time consuming; frameworks can help

TAKING PROPERTY PROTECTION FORWARD

1. More time for Engagement to raise awareness
2. Further Examples will maintain impetus
3. These will provide Evidence in future floods
4. This will help to Encourage wider take-up
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1 Introduction

1.1 Summary Report

The overall objective of the two year Defra Property-level Flood Protection Grant Scheme was to demonstrate on a large scale the use of flood protection measures in cases where flooding occurs frequently and other flood management solutions are not viable. By the close of the 2 year programme in March 2011, over £5.2 million had been awarded to 63 individual property-level flood protection schemes across England. The location and distribution of all the property-level flood protection schemes is illustrated in Figure 1-1 below. These have offered practical flood protection solutions and support to residents in communities at high flood risk, using a variety of flood barriers, non-return valves and airbrick covers or replacements for 1,109 properties.

This report summarises the findings of an independent assessment and evaluation of the Property-level Flood Protection Scheme. Post-scheme evaluation reports from 40 local authorities involved in scheme delivery have been assessed, while workshops gave stakeholders the opportunity to identify the elements that went well and those areas where improvements can be made. The vital opinions of individual recipients were obtained through a series of telephone interviews from case studies, as well as from a facilitated conversation at a meeting of a flood group. More detailed evaluation and findings are contained within the Full Report.

Individual property-level flood protection schemes have been reviewed, identifying success factors along with those areas where problems, difficulties and barriers were encountered. The costs and benefits of the case study schemes have also been compared with the new Partnership Funding arrangements which will be used to fund schemes in the future. The evidence is drawn together to identify the key findings to help inform future policy, with recommendations made for actions which will help successful future delivery of property-level protection measures in the new Partnership Funding arrangements.

Figure 1-1 Distribution of the Property-level Flood Protection Schemes in England
2 Scheme Aims

2.1 Background

Many property owners and operating authorities continue to rely on sandbags despite the wide range of effective flood protection products now available. Following the extensive damage and distress caused by the 2007 summer floods in England, Defra commissioned research to assess why there wasn't greater uptake and use of individual property-level flood protection measures. This explored approaches to implementation using 6 pilot locations: Bleasby, Nottingham; Sandside, Kirkby-in-Furness, Cumbria; Sunderland Point, Morecambe Lancashire; The Dunhill Estate, Halton, Leeds; The Sands, Appleby, Cumbria; and Uckfield, East Sussex. The research (Resilience Grants Pilot Projects - Defra, 2008) found there were three key barriers to the wider uptake of property protection measures:

- public funding;
- insurance response; and
- a lack of awareness.

As a result, Defra announced a £5 million Property-level Flood Protection Grant Scheme in December 2008 as part of the Government’s response to Sir Michael Pitt’s review of the 2007 summer floods. This recognised the need for a wider portfolio of flood risk management measures identified by the Making Space for Water strategy.

Funding support was targeted to provide help to those communities where traditional flood defence schemes were uneconomic.

2.2 Aims and Objectives

Property-level Flood Protection Scheme aims:

- To create demonstration areas that will promote the benefits of property-level flood risk mitigation, encouraging further take-up
- To stimulate the supply of high quality flood risk mitigation surveys by competent and independent surveyors
- To encourage the development of new and innovative flood protection measures

The Scheme was implemented in England in two phases, between 2009 and 2011. Local authorities were invited to apply for funding to identify and subsidise measures to provide property flood protection for high risk communities in their areas. In the first round of funding, £3 million was made available to 25 local authorities in June 2009, to protect up to 593 properties. In the second round, a further £2.6 million was awarded to 28 local authorities in March 2010, to protect an additional 532 properties.

The property-level flood protection schemes targeted residential properties. It did not include commercial and business properties unless they were integral to protecting households, as for example in a terraced street. Homeowners were provided with flood risk surveys that identified the main points where water can enter their property and then highlighted suitable flood protection measures that could be adopted.

Four main types of flood resistance products were routinely used in combination, according to the specific requirements of each property in a scheme:
- Barriers for doorways and airbricks
- Non-return valves for domestic and foul drainage systems
- De-watering pumps
- Waterproofing and sealants

Figure 2-1 illustrates the typical routes by which water can enter a property and the various factors that need consideration as part of a flood resistance scheme.

The most common product types used were the removable door and airbrick barriers, designed to fit across openings to prevent the ingress of floodwater. Most have some type of fixing system fitted directly to the property itself with closure dependent upon timely and correct manual installation by the homeowner. The product market is however constantly evolving, with manufacturers developing new and innovative products. In particular, there has been a recent move towards passive flood doors and automatically operating airbrick replacements which have the added benefit of requiring little or no manual intervention by the homeowner.

To provide reassurance to homeowners over product quality and effectiveness, there was a requirement to use flood protection products that have been awarded the British Standards Institution Kitemark standard for flood protection wherever possible.
The schemes were managed and delivered by local authorities working in partnership with community groups and the Area Environment Agency teams. Delivery typically adopted three distinct phases:

- **Community engagement** - to help people understand their flood risk and the options available under the scheme to mitigate the risk
- **Property surveys** - by independent professionals to assess individual property flood risk and recommend ways of mitigating that risk
- **Product procurement and installation** - using, as far as possible, proprietary Kitemarked flood protection products.

The overall Scheme was deliberately kept as flexible as possible, to avoid creating onerous demands on local authorities and to encourage authorities to develop local schemes with interventions appropriate to the locality. The £5.2m funding to local authorities was ring-fenced to property-level protection and eligibility criteria were established within the overall scheme guidance (“Government grants to local authorities for household-level flood mitigation - Guidance” (October 2009)). Local authorities applied for the grant, on the basis of known flooding hotspots that could also meet these criteria, while the Environment Agency managed the application and allocation process on behalf of Defra. The guidance established how schemes should be delivered and also set individual property funding limits of £5,700. This was further broken down by survey (£500); administration (£700); and measures (£4,500). The Environment Agency supported local authority project managers with guidance and advice and monitored scheme progress and reported this regularly back to Defra.

![Figure 2-2: The case for property-level flood protection support](photo by kind permission of Nicolas Delerue)
3 Evaluation of the Defra Grant Scheme

3.1 Methods of Evaluation

A variety of methods and reference sources have been used in this evaluation of the Property-level Flood Protection Grant Scheme, in order to inform future policy:

- **Post-scheme Evaluation Reports** - Local authorities were required to complete an individual post-scheme evaluation report using the template provided by Defra. Of the 63 schemes awarded grant assistance, 38 reports had been submitted at the start and a further 2 reports were obtained during the evaluation.

- **Regional Workshops** - The Environment Agency and Defra hosted two Stakeholder Workshops in Leeds and in London on 7th November and 23rd November 2011 respectively. Over 80 representatives from local authorities, surveyors, product suppliers, the Environment Agency and Defra attended both events.

- **Steering Group** – A draft evaluation report was presented for review in January 2012 to an expert Steering Group, comprising representatives from community groups, local authorities, suppliers, the insurance industry, academia and the National Flood Forum.

- **Case Studies** - Nine schemes were chosen for more detailed assessment, to exemplify a range of location types, size, means of engagement and outcome. Feedback was also obtained directly from the residents in these local schemes, through discussion at a community Flood Group meeting, telephone questionnaires and one-to-one interviews.

### Case Studies

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<th>Scheme Location</th>
<th>No. of Participants</th>
<th>No. Interviewed</th>
<th>Key Features of Scheme</th>
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<td>Three schemes in Leeds (Thorner, West Garforth and Old Close)</td>
<td>42</td>
<td>16</td>
<td>Effects and benefits of flood groups and good local knowledge of property-level flood protection</td>
</tr>
<tr>
<td>Ashdon, ( Uttlesford District Council)</td>
<td>15</td>
<td>7</td>
<td>Excellent local authority leadership</td>
</tr>
<tr>
<td>Bampton, (West Oxford District Council)</td>
<td>22</td>
<td>4</td>
<td>Good engagement and insurance survey</td>
</tr>
<tr>
<td>Wallington ( Fareham Borough Council)</td>
<td>47</td>
<td>19</td>
<td>Excellent community engagement preparedness and emergency planning</td>
</tr>
<tr>
<td>Marsh Road, Cowley (Oxford City Council)</td>
<td>22</td>
<td>5</td>
<td>Example of passive systems</td>
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<tr>
<td>Toll Bar ( Doncaster Metropolitan Borough Council)</td>
<td>20</td>
<td>5</td>
<td>Scheme in socially deprived area for vulnerable people</td>
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<tr>
<td>Cumnor Road, Wootton (Vale of White Horse District Council)</td>
<td>9</td>
<td>0</td>
<td>Scheme with the lowest rate of residents taking up flood protection measures</td>
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3.2 Evaluation Methodology

Property-level protection is a lengthy and involved process requiring a range of technical and communication skills throughout the appraisal, engagement, procurement, installation and aftercare stages. People and organisations with a range of skills all have a role to play in delivering the various stages of schemes. The issues and factors that need to be considered in developing a scheme are illustrated in Figure 3-1.
Figure 3-1 Property-level Flood Protection – a complex issue
For the purposes of this evaluation, the issues have been grouped into simplified themes as illustrated in Figure 3-2:

![Diagram of the Four Stages of Property-level Protection]

**Figure 3-2** The Four Stages of Property-level Protection

The evaluation highlighted many examples of good practice in property-level flood protection scheme delivery. Figure 3-3 illustrates one such example, of excellent community engagement and emergency planning seen in the Wallington Village scheme in Fareham, Hampshire.

**Wallington Village Scheme Summary**

Scheme success was achieved through extensive stakeholder engagement, fully utilising the Wallington Village Community Association (WVCA), ‘Local Champions’ and Local Councillors to instil trust and early scheme buy-in.

Cost saving measures, such as the appointment of a single product manufacturer improved efficiency and allowed the scheme to be extended to a greater proportion of the community. This also ensured that residents were familiar with each other’s products, better enabling them to assist others in the event of a flood.

A community wide exercise provided an opportunity to test the equipment supplied under the scheme. Further advice and guidance for residents was provided in the ‘Flood Emergency Plan’, developed by the WVCA in conjunction with Fareham Borough Council and the Environment Agency.
4 Evaluation Findings

4.1 Overview

By the close of the 2 year programme in March 2011, over £5.2 million had been awarded to 63 individual property-level flood protection schemes, offering practical flood protection solutions to 1,109 properties, using a variety of flood barriers, non-return valves and airbrick covers or replacements.

The total cost of the schemes and the contribution of the grant awards towards these is illustrated in Figure 4-1, for the 40 schemes for which local authority post-scheme evaluation reports were received.

Figure 4-1 Grant Awards and Scheme Costs

Scheme costs have been analysed and are compared in Figure 4-2 and Figure 4-3 and summarised in the box below. These illustrate the distribution of scheme costs between the survey, the protection measures and the scheme administration. It should be noted that 2 schemes (Wildboarclough Nos. 26 & 27) are excluded from the analysis due to the high cost of bespoke measures required in the National Park conservation area.

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<td>Average Survey Costs</td>
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<td>Average Measures Costs</td>
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<td>Average Admin Costs</td>
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<td>£734</td>
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The overall costs were very close to the limits prescribed in the Scheme guidance. Opportunities were taken on some schemes to enhance budgets (e.g. through Local Levy) allowing more properties to be included. Scheme administration proved more time consuming and costly than envisaged although there was some confusion amongst local authorities over what elements were rechargeable. Many absorbed these extra costs.
4.2 Key Findings
The key findings from the evaluation are summarised below for each of the four main stages of scheme delivery highlighted in Figure 3.2 and summarised below. The Full Report contains the detailed evidence and evaluation and a cost benefit analysis of scheme case studies.

- Stage 1: Appraisal, engagement and survey
- Stage 2: Product selection and procurement
- Stage 3: Installation and handover
- Stage 4: Aftercare, operation and insurance

Six case studies were also identified for a more detailed assessment of the learning. From 2012 all flood schemes will be funded through Partnership Funding and the analysis also considered how these schemes would have been funded now. The outturn costs and present values of benefits were entered into the flood defence grant-in-aid calculator, to determine the Partnership Funding scores. The main findings are summarised in Section 4.3.

4.2.1 Stage 1: Appraisal, Engagement and Survey

Key Findings

1.1 Effective and ongoing engagement with the residents is the key to successful delivery of schemes. This is made easier when coordinated through a Flood Group leader.

1.2 Overall timescales for appraisal, engagement and flood risk survey have been too tight.

1.3 Early involvement of community groups helps to progress the project, providing a forum for discussion and helping to build trust.

1.4 Resident’s awareness of property-level flood protection was varied, with most unaware but some having installed their own measures.

1.5 The resident’s agreement is an important means to confirm participation and explain objectives and responsibilities.

1.6 37 of the 40 Local Authorities contracted an external survey company with independence from suppliers and trust seen as vital factors by residents.

1.7 Surveyor capacity and technical competence are important issues highlighted by residents and local authority scheme managers alike.

1.8 The level of pre- and post-scheme flood risk often appear to have been informed estimates.

1.9 There is confusion amongst stakeholders and residents over the survey process and the differences between the Appraisal Survey and the Suppliers Survey.

1.10 A lack of Local Authority staff resources has been a barrier in some cases. Capacity and skills are progressively being developed so that Local Authority resources are not seen as constraint in the long term.
4.2.2 Stage 2: Product Selection and Procurement

2.1 Procurement affected by resource issues and tight timescales.
2.2 Local Authority procurement rules sometimes caused problems and delays.
2.3 Twenty five of the forty Local Authorities chose to go to a single supplier to simplify procurement ...BUT
2.4 Residents want an input to the choice of product - seen as important.
2.5 Residents were sometimes confused by wide product range and needed support and advice on appropriate product or measure.
2.6 Rivalry between product suppliers evident and in some cases resulted in exposing residents and local authorities to a hostile environment.
2.7 High proportion of Local Authorities absorbed administrative costs which were often not fully recorded.
2.8 Scheme administration was often much more time consuming than initially anticipated with a significant commitment needed.
2.9 Wide range of excellent flood protection products and innovative solutions, including the introduction of some of the new passive ‘fit and forget’ measures at some locations.

4.2.3 Stage 3: Installation and Handover

3.1 Scheme managers, surveyors and suppliers worked hard and met tight timescales.
3.2 With schemes often not starting until late summer, installation was squeezed to meet end of March deadline during the winter months, which caused delays due to bad weather.
3.3 The Kitemark Scheme helps provide residents and project managers with reassurance of product performance.
3.4 There is evidence of good practice with cooperation between product manufacturers.
3.5 A mixed picture on handover instructions with many residents unclear how to use, maintain and store their products: the level of information provided on product handover has been varied and understanding of product operation and maintenance sometimes low.
3.6 Some residents found that they are unable to lift or install the products they received without help from others in their community.
3.7 Additional benefits seen as communities have been drawn together, working to deliver schemes and provide assistance and support to vulnerable residents.
4.2.4 Stage 4: Aftercare, Operation and Insurance

4.1 Schemes prompted communities into helping to look after vulnerable neighbours via flood warden and barrier buddy schemes.

4.2 Local flood warning arrangements are a concern where rapidly rising streams and surface water flooding can occur, regardless of main river flood warnings.

4.3 Examples of annual exercises and dry-run tests represent good practice and have been established for some schemes (e.g. Wallington, Chew Magna, South Zeal, Cross Keys, Toll Bar) as a way of testing emergency plans and identifying vulnerable residents in need of assistance.

4.4 Many other schemes have no community emergency plans or exercises and their preparedness for future floods is of concern.

4.5 Residents confused over insurer response to property-level protection and seen by residents as a significant barrier to the wider up-take of protection measures.

4.6 A key motivation for residents is to obtain insurance to preserve property value and to meet mortgage conditions, as well as to reduce damages.

4.7 Some early evidence found of insurer response suggesting emergence of specialist cover with improved terms.

4.3 Benefit Cost Assessment

Defra provided £5,700 per property to schemes which met the eligibility criteria from a ring-fenced grant of £5.2 million.

In May 2011, Defra introduced a new system of funding flood and coastal risk management schemes, known as “flood and coastal resilience partnership funding”. Property-level flood protection schemes are now funded using this system and are considered for funding alongside community scale projects.

The amount of central government funding eligible (known as Flood Defence Grant in Aid) for each project is calculated by multiplying the value of benefits for householders as a result of flood or coastal erosion risks being reduced by a set of payment rates. Payment rates for protecting households are higher in deprived areas, so that schemes in these areas are more likely to be fully funded by Government. Deprived areas are identified using the Social Deprivation Index, which is published by the Department for Communities and Local Government.

Six case studies were used to understand whether the projects in the Defra scheme would have:

- been funded under the Partnership Funding approach now used; and
- delivered value for money in terms of cost benefit ratio and in context with the Environment Agency’s Flood and Coastal Erosion Risk Management capital programme.

The findings are summarised below in Table 4-1.
Table 4-1: Summary of Case Study Cost Benefit and Partnership Funding Analysis.

* PF score = 100% scheme eligible for Flood Defence Grant in Aid.
PF score = <100% scheme can still go ahead if costs are reduced, contribution is available, or a combination of the two.

Under the Partnership Funding approach, 3 of the case study projects achieved a Partnership Funding score of more than 100% and would have been eligible for Flood Defence Grant in Aid. The other case study projects would have had to reduce costs, find contributions or a combination of the two. The average cost benefit ratio from the case study projects was 4.8 to 1, which is just below the target figure. This means that for every pound spent, estimated flood damages of £4.80 are avoided, representing good value for money.

Put into context of the flood and coastal risk management capital programme (community scale schemes), between 2008/09 to 2010/11, the cost benefit ratio was 8.2 to 1 which is double that achieved by the case study projects. Defra sets a cost benefit target to ensure flood and coastal risk management projects provide value for money. Projects funded by Flood Defence Grant in Aid must achieve a cost benefit ratio of 5 to 1. This means for every £1 spent, £5 of benefits (money saved in flood damages) must be achieved.

Although community scale projects have a higher benefit cost ratio, the property level schemes still represents good overall value for money, achieving reductions in flood risk and generating other intangible benefits which are not included in the cost benefit analysis. These include reducing stress and anxiety for those living in fear of flooding, bringing communities together to decide how to manage their flood risk (one of the aims of Partnership Funding) and raising the general level of flood awareness and preparedness in communities.
5 Recommendations

5.1 Overview

Recommendations are made based upon the findings from this evaluation. These are discussed below categorised under the following headings:

- Awareness and Partnership Working
- Scheme Planning
- The Kitemark Scheme
- Standards of Protection and Appraisal
- Improved Data
- Links to Partnership Funding
- Insurance

Key recommendations are then consolidated and summarised in Section 5.2

5.1.1 Awareness and Partnership Working

Whilst the scheme has successfully delivered property-level flood protection measures to many communities, there remains more to be done before there is a much wider and more general uptake of property-level flood protection. There is more to be done to raise awareness of and confidence in property-level flood protection. The existing flood awareness work of the Lead Local Flood Authorities and the Environment Agency should now integrate property-level flood protection options and benefits, accompanied by national policy and clear guidance, to explain to stakeholders and communities the options and benefits provided by property-level flood protection. This should also aim to describe the hierarchical relationship of property-level protection to community-level schemes and/or other strategic flood or surface water management measures. Emphasis is also needed on the importance and need for ongoing long-term maintenance and routine testing of the measures provided under a scheme. This could for example involve suppliers offering annual maintenance agreements to home-owners which might then become a requirement of future insurance policy renewals.

A better understanding is also needed among all authorities on using Local Levy funding to complement national funding, as well as the role of the Regional Flood & Coastal Committees in bringing forward property-level flood protection schemes within the Medium Term Plan. This in turn links into the improving understanding of spatial flood risk and desirable measures within the Regional Flood & Coastal Committees, informed by recent and on-going planning work on Catchment Flood Management Plans, Strategic Flood Risk Assessments, Surface Water Management Plans and the National and emerging Local Flood and Coastal Risk Management Strategies. These are initiatives best delivered through partnership working between the risk management authorities and communities, making best use of available resources. Property-level flood protection goes to the heart of achieving many of the objectives and local actions to manage flood risk.

The Environment Agency should continue to promote, provide advice and encourage the use of property-level flood protection using its strategic overview role to best achieve these aims. It is recommended that thought also be given to establishing a web forum, perhaps under the Local Government Association ‘FlowNet’ banner or within the Environment Agency’s own website, to share best practice and answer technical or operational queries.

5.1.2 Scheme Planning

The key ingredient for scheme success is to ensure sufficient time and resource is provided for effective community engagement. To help achieve this aim, schemes should be allowed if needed to be delivered over a longer time period. This can be achieved by spreading schemes over say two years and separating the initial appraisal and approval phases from subsequent delivery, to give more time for both elements. This will also emphasise the distinctions between the appraisal survey and the follow-on detailed installation surveys undertaken by product suppliers.
It should also be highlighted that schemes have currently excluded small businesses yet these are often critical to the sustainability of local communities. It is therefore recommended that future delivery consider their inclusion.

5.1.3 Kitemark Scheme

The Kitemark scheme provides residents with a very important means of assessing confidence about likely product performance under flood conditions and should be continued and further developed. It is recommended that a review of the costs and scope of the current Kitemark scheme is carried out and then kept continually updated to ensure it is keeping pace with the rapidly emerging property-level flood protection market. Some concerns have been expressed that it can stifle innovation due to the high costs and that products such as non-return valves are not included. There is also confusion around the maximum advisable height of protection (300mm, 600mm, 900mm etc) and it is therefore recommended to carry out further assessment to confirm clearer guidance. This is particularly important as direct property protection measures become integrated within schemes that may also include free-standing temporary barriers. These issues should be explored further jointly by the Flood Protection Agency and the Environment Agency.

5.1.4 Standards of Protection and Appraisal

A quantitative assessment of pre-scheme flooding thresholds and post-scheme standards of protection for each property is required if the Weighted Annual Average Damages methodology is to be used in future benefit cost appraisals. However, these assessments must be proportionate to the scale of investment in property-level flood protection. A ‘fit for purpose’ method of modelling or assessment should be investigated or more money will be spent investigating and appraising potential schemes than the generally modest value of the products required in the first place. Property-level flood protection schemes are typically an order of magnitude lower in cost than traditional flood defence schemes and this important factor should be remembered in scheme appraisal. A tiered approach is advocated where the costs and level of detail of investigation and assessment are kept proportionate to the scale of the costs of the proposed works.

Scheme appraisal should also take full account of the intangible benefits provided by property-level flood protection in the form of reduced levels of stress and improved health and well-being. The previous models have only allocated a sum of £200 per person in respect of such benefits. The costs of relationship strain and disruption to family life should be accurately reflected and factored into the benefit cost analyses and so further investigation and sensitivity testing should be carried out for increasing levels of intangible benefit values from reduced stress and ill-health.

Previous financial and economic models also need extending to create individual depth and damage data for each of the four residential types (detached, semi-detached, terraced and flats). Social Deprivation is another important factor that is recommended for further sensitivity checking since the Partnership Funding score heavily favours socially deprived areas. The methodology should be reviewed to ensure fully informed decisions are made in the assessment of property-level flood protection funding bids. This will be further tested and examined by the ongoing Defra cost effectiveness project FD2657.

5.1.5 Improved Data

For property-level flood protection schemes, the appraisal should specifically address (a) quantified risk reduction (i.e. risk band change); and (b) costs of public emergency response avoided (e.g. sand bags; services). Better records of flood history are required to inform any benefit cost analysis. A meta-database approach is recommended as part of the development of Local Flood Risk Management Strategies. This should collate the available local flood risk information, with distinction made between anecdotal and surveyed data and provenance.

5.1.6 Links to Partnership Funding

Evidence from the workshops indicates a need for a better understanding of future delivery through Partnership Funding arrangements, with simpler guidance for property-level flood protection schemes. The analysis of case studies presented here shows 3 of the 6 schemes would have scored above the threshold level and received full funding, the other schemes
could still have proceeded with an appropriate level of contributions from residents, local
councils, Local Levy and others. Indeed a 2 year project length provides more opportunities
for property-level flood protection in many locations, bringing significant benefits to individual
property owners and the Partnership Funding model allows contributions from the community
and individuals benefitting, giving more choice to communities over whether schemes go
ahead. Contributions are often raised through local authorities. Whilst this approach increases
the overall funding available for investment in flood management, the evidence here highlights
that individuals are currently reluctant to contribute, despite the fact that there several
thousand pounds of government funding available per property for property level protection.
There is therefore a risk that there will be a significant drop-off in the number of property level
protection schemes coming forward without action and behaviour change in this area. Raising
the awareness of property-level flood protection benefits and partnership funding opportunities
should help promote uptake as the approach becomes embedded in normal flood
management practices. It will however require a shift in opinion and an acceptance of some
responsibility for managing one’s own flood risk. The future availability of insurance for high
flood risk properties may well serve as the prime motivator for homeowners to act and as the
necessary incentive to take action, in order to preserve property value, marketability and a
continued eligibility for mortgage financing.

Suggestions have been made to simplify things and make funding available via a block-grant
each year for property-level flood protection. However there has to be adequate justification,
technical assessment of the need and suitability and clear demonstration of the benefits to
support funding bids. Partnership Funding seeks to provide the means to achieve this. Clearly
future property-level flood protection schemes must satisfy Partnership Funding requirements.
Further work is required to examine and clarify how property-level flood protection schemes sit
alongside community-level schemes. We consider that a case can logically be made for ring-
fencing a tranche of property-level flood protection funding in the Medium Term Plan. The risk
is the impetus achieved by the Scheme could now be lost without continued government
support: indeed it is apparent relatively few schemes have so far been included in the 2012-13
programme.

The funding levels for the two rounds of the Defra Property-level Flood Protection Grant
Scheme were just about sufficient given a degree of flexibility between individual property
costs within a single scheme. Greater clarity over what local authority administrative costs can
be included will also help as these should only factor in additional costs not existing staff time.
This should leave additional budget for measures. However the Environment Agency’s
subsequent 2011-12 funding threshold levels have been reduced and should be reviewed as
they are probably insufficient, with evidence from this current year of schemes being tailored
to fit, with the risk that levels of protection may be compromised. This is requiring a balance to
be made between the number of properties included and the level of protection afforded,
particularly when the survey reveals additional eligible properties and the need to treat the
community equitably.

5.1.7 Insurance

It is recommended that better quantification of risk reduction can be tailored to provide the
information needed by existing or potential insurers. This will help inform the assessment of
risk and conditions and hence help make the decisions on whether or not to offer cover, or
whether to reduce premiums, for property-level flood protected homes. This will enable
insurers to be clear on how such protected homes stand alongside the cover given to those
protected by community-level schemes in terms of risk and premium. Documents and survey
reports can then be supplied to underwriters and insurers as proof that risk reduction
measures have been installed to an acceptable standard. Evidence of how these property
level flood protection schemes and measures actually perform during a flood event will also
prove very important and influence residents’ and insurers’ confidence levels alike.

The outputs from the work of the Defra Insurance Working Groups will help take this forward,
including the study looking at standards of protection. It is recommended that the British
Insurance Brokers Association, in conjunction with the Association of British Insurers, help
residents in property-level flood protection scheme areas by compiling lists of companies who
are already, or are likely to consider, recognising the local benefits of property-level flood
protection through the provision of specialist insurance cover. The further cost-effectiveness
Defra project already underway should help provide a matrix of benefit cost assessment
figures for differing property types in a quick look-up table. Whether it will be possible to automate a rapid appraisal system remains to be seen and will be examined by the ongoing research. This may help mainstream insurers make quicker and consistent appraisals of risk when considering new policies. It will certainly be of benefit to specialist insurers.

5.2 Summary of Key Recommendations

Recommendations are made that are drawn from the key messages, findings and evidence collected from the post-scheme evaluation reports, the workshops and feedback from the resident’s. They are evidence-based as far as possible supported by discussion of what is reasonable and logical for this emerging flood risk management sector. The key recommendations are categorised as follows:

A. Scheme Delivery
B. Property-level flood protection Market
C. Insurance and wider uptake
D. Policy and Funding

**KEY RECOMMENDATIONS: SCHEME DELIVERY**

A.1. Allow more time and resource for effective community engagement with groups benefitting from having critical mass (ideally 10 or more) as this offers financial incentives and helps with local community support.
A.2. Encourage communities to form a flood group that also includes small businesses as this helps to focus communications.
A.3. Ensure participation and roles in scheme are confirmed in a resident participation agreement using a consistent template.
A.4. Ensure Local Authority support is ongoing as part of Duty of Care, not ending after installation.
A.5. Spread schemes over a longer time period and separate the initial Appraisal stage from scheme Delivery: a 2 stage process.
A.6. The initial Appraisal Survey and the Suppliers’ Survey have different purposes and require different skill sets. There is evidence that residents favour independence between the surveyor and supplier, to be confident that the appropriate choice of measures is installed in their property.
A.7. Better data are needed on levels of flood risk before and after schemes to allow more informed judgements on cost and benefit of measures.
A.8. Residents and business owners should have a choice about the product used for their property – but this should be an informed choice based on expert advice.
A.9. Local Authorities should identify administrative support options and streamline procurement via frameworks.
A.10. The measures provided must be suitable for the resident to lift and install.
A.11. Property owners should always be provided with clear instructions for all equipment operation, installation, storage and maintenance requirements.
A.12. Scheme flood warning and Community Emergency Plans should be developed, rehearsed and integrated into County Emergency Plans.
A.13. Raise awareness amongst local authorities of property-level flood protection as a key part of managing local flood risk - prioritise and support delivery and ongoing aftercare.
KEY RECOMMENDATIONS: PROPERTY-LEVEL FLOOD PROTECTION MARKET

B.1. Flood Protection Association to encourage further improvements in scheme delivery, support to residents with product operation instructions and ongoing aftercare maintenance.

B.2. Suppliers should continue to innovate and develop new measures, including passive “fit and forget” measures, to widen customer choice and help match the most appropriate product for each individual property and resident’s needs.

B.3. All product suppliers and manufacturers should aim to expand their sales and markets through partnership working and a greater willingness to cooperate.

B.4. Ensure the Kitemark scheme keeps pace with innovative new products and agreed performance standards set for non-return valves.

B.5. The property-level flood protection market is still an emerging sector that would benefit from continued government support, to provide more time to raise awareness and demonstrate the benefits of the approach.

KEY RECOMMENDATIONS: INSURANCE AND WIDER UPTAKE

C.1. Follow up the work of the Defra Insurance Working Groups and investigate attitudes and response to property-level flood protection schemes.

C.2. The Association of British Insurers and British Insurance Brokers Association should clarify insurance industry position on property-level flood protection and potential recognition of benefits by emerging specialist insurance providers.

C.3. Residents recommend that better insurance terms and conditions would help mortgage provision and property value, acting to incentivise wider take-up of property-level flood protection and contributions from individual property owners.

C.4. Agree what additional information insurers might require – e.g. improved data on levels of pre- and post-scheme flood risk; greater confidence in property-level flood protection with evidence of performance in a flood.

C.5. Consider option of insurers requiring annual maintenance checks and tests as a condition of insurance renewal, reassuring residents and insurers alike.

C.6. Knowledge of property-level flood protection options is low. More property-level flood protection awareness-raising is needed for residents and local authorities, to explain what property-level flood protection is and how schemes can be commissioned and by whom.

C.7. Reports should be provided by local authorities to the Environment Agency of property-level flood protection scheme performance in a flood, to increase confidence levels and raise wider awareness.

C.8. Property-level flood protection awareness-raising should be an integral part of the existing flood risk work of Lead Local Flood Authorities and the Environment Agency.
KEY RECOMMENDATIONS: POLICY & FUNDING

D.1. Property-level flood protection provides value for money and would benefit from continued government support. The impetus achieved by the Property-level Flood Protection Scheme should be continued and consideration given to maintaining ring-fenced grant support for longer:

- More time is needed to raise awareness and demonstrate potential of property-level flood protection schemes to residents and local authorities alike
- Still an emerging industry and insurance response is unclear
- Need a better understanding of future delivery through Partnership Funding arrangements

D.2. The property-level flood protection sector would benefit from continued government support but on a 'property-level flood protection playing field' that is logically positioned in the hierarchy between:

- protection by community-level measures (the preferred option for public funding in any locality provided capital investment can be justified; and
- unprotected property ('doing nothing' as regards capital schemes).

D.3. Continued property-level flood protection support would:

- help address the significant number of homes at frequent flood risk
- sustain innovation and this small industry sector
- provide the time for insurers to clarify policy
- raise awareness and encourage effective action and contributions from householders to reduce flood damage
- support localism and community flood awareness and action
- reduce public costs of emergency response

D.4. Further benefit cost assessment is needed under Partnership Funding to assess impacts of pre- and post-scheme flood risk assumptions and impacts of Social Deprivation Index on scheme appraisal

D.5. A better understanding is needed among local authorities on using Local Levy funding for, and the role of the Regional Flood and Coastal Committees in, property-level flood protection promotion

D.6. Local authorities should assess the savings from reduced levels of sandbag deployment and subsequent disposal as additional benefits

Taking Property-level Flood Protection Forward

- More time for Engagement to raise awareness
- Further Examples will maintain impetus
- These will provide Evidence in future floods
- This will help to Encourage wider take-up
6 Conclusion

6.1 Overview

The evaluation of all the feedback provided highlight that the overall scheme objectives have been achieved, namely:

- Demonstration areas have been created that promote the benefits of property-level flood protection;
- There is now a supply of competent and independent flood risk assessment surveyors;
- The Defra Property-level Flood Protection Scheme has encouraged the implementation of new and innovative flood protection measures based on the current consensus of good practice and scientific evidence that now exists.

The schemes have provided improved levels of flood protection and the prospect of additional peace-of-mind for 1,109 families who until now have been undefended and experienced frequent and repeated flooding. Properties in communities that have previously been uneconomic to defend using traditional methods now benefit from protection, achieved at an average cost per property of £4,700. The case study analysis shows this to have provided good value for money, with an average benefit cost ratio of 4.8 for locations that have previously been prohibitive and uneconomic. The schemes have helped to raise flood awareness, promote fairness and to bring communities closer together, reducing stress levels and anxiety over future flood risk and thereby raising levels of well-being. This reflects Government policy on sustainable development in relation to flood risk management. The property-level flood protection schemes have been warmly welcomed and residents are very grateful to see this new option being made available.

The very high levels of demand were far in excess of the available grant support, clear evidence of the future potential of property-level flood protection to help meet people’s primary objective to reduce the damages and stress from frequent flooding. The grant scheme certainly prompted the installation of protection measures that would not have otherwise taken place. The risk is the impetus achieved by the Scheme could now be lost without continued government support: indeed it is apparent only a very few schemes have so far been included in the 2012-13 programme. It is evident that general awareness levels of property-level flood protection are low and more time and work will be needed to encourage a wider uptake and establish this approach.

It is evident that the schemes have served to bring local communities together, encouraging people to look out for their neighbours and those who need more support. The schemes have been widely praised in feedback questionnaires and telephone interviews by the grateful communities who have benefitted and many state that they now feel safer in their homes as a result. The schemes have been well implemented to reduce the assessed flood risk and participants are hopeful that future flood events will be less traumatic. The fact that the schemes have still to prove themselves in an actual flood has however limited the wider confidence levels of homeowners and insurers alike. It has also limited the extent of this evaluation since it has not been possible to calculate actual damage losses. It will be important for local authorities to highlight and report on all future flood events, to assess the response and impacts following scheme completion.

The evidence highlights that the key to achieving high up-take of measures amongst homeowners is the degree of community engagement. Residents have been very keen to take up the offer of assistance but awareness of property protection measures before the Scheme was low and independent guidance and advice was needed to help people make informed judgements over suitable products. The majority of residents stated that they would not have paid for such products on their own, despite the clear benefits in terms of reducing the damage and stress from repeated flooding. It is often only those who have suffered repeated flooding who have installed measures of their own or might be prepared to contribute towards the cost. Others maintain it is the responsibility of government or the local authorities.

It seems whilst residents recognise that implementation of property-level protection is in its early days, with issues still to resolve or improve, they are very appreciative of the assistance and now feel included rather than excluded. Feedback and discussions with residents show
they recognise that levels of protection are inevitably lower than would have been achieved from a conventional flood alleviation scheme, but are relieved and grateful for the assistance given to help combat the risk of frequent flooding. The approach provides a logical and welcome addition to the available suite of publicly funded flood risk management measures. There is now a credible and effective option between the “Do Nothing” option and the highly expensive and often uneconomic flood defence scheme option.

### 6.2 Next Steps

This evaluation has examined the evidence and identified the risks and issues that have emerged through the use of property-level protection, to enable recommendations to be made for improved delivery in the future. Although the high-level objectives have indeed been met, there are many factors and recommendations to be considered to ensure wider uptake of property-level protection. It is also important to emphasise two important factors that set the context for this evaluation:

- **There is currently no actual evidence of performance of property-level flood protection delivered in these schemes under flood conditions.** Only the Appleby pilot scheme has so far been tested in a flood, which performed well and illustrated the potential of these schemes. It will be important to record performance and experiences under flood conditions at these new scheme locations so that further improvements can be made to the current understanding of good practice.

- **The standards of flood protection must be emphasised.** At some point the measures will be overwhelmed by a big flood. Damage will still occur in the future in extreme events, affecting properties within property-level flood protection scheme locations. There are additional risks arising from the need for property owners to correctly install products in a timely manner. It will also be important to guard against resident complacency and ensure emergency plans are developed and rehearsed and that equipment is maintained and operable.

The property-level flood protection approach now offers many people an effective alternative approach to managing their flood risk. The property-level flood protection market has developed significantly in light of the experiences of these initial schemes and is maturing rapidly. Excellent products are now available and manufacturers are responding with innovative solutions to challenging problems. Communities now have a viable option for reducing the impacts of the most frequent floods. However it is considered that the approach would benefit from more time and a further period of direct government support, to further promote and embed this technique. This will help improve delivery of these measures alongside the new Partnership Funding arrangements, raise wider awareness and provide the evidence needed by insurers and residents alike to encourage wider uptake. Following on from the work of the Flood Insurance Working Groups, Defra is working closely with the insurance industry to ensure that insurance remains widely available after 2013, when the agreement with the insurance industry, called the ‘Statement of Principles’ expires. Part of this work is focusing on improving the provision of information on flood risk, and ensuring that individual flood risk is better reflected in insurance policy terms and considering ways in which local information, at a scale beneath that of the Environment Agency flood maps, can be taken into account by insurers.

An Action Plan is being prepared that seeks to address the findings from this evaluation and take the recommendations forward. This identifies a range of actions for various stakeholders and is intended to ensure the momentum gained from the Defra Grant Scheme is maintained. Overall, the Defra Property-level Flood Protection Grant Scheme has been very successful in meeting its original objectives. Wider uptake of property-level flood protection measures by homeowners is now needed though and it remains to be seen how the measures installed in the Grant Scheme and the communities respond during an actual flood event. It does appear though that a way forward has been established that helps reduce flood risk for the many who have felt excluded in the past and for a significant sector of the nation’s housing stock.
### Appendix - List of Schemes

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<th>ID</th>
<th>Scheme Name</th>
<th>Local Authority</th>
<th>No of Properties</th>
<th>Reported Costs</th>
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<td>Girton Village, Newark</td>
<td>Newark and Sherwood District Council</td>
<td>24</td>
<td>£104,000</td>
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<td>White Bridge Park, Newcastle</td>
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<td>35</td>
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<td>Hele</td>
<td>North Devon Council</td>
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<td>Hepscott</td>
<td>Northumberland County Council</td>
<td>9</td>
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<td>Bungalow at Poplars caravan park, Haydon Bridge</td>
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<td>Underdale Road</td>
<td>Shropshire Council</td>
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<td>Council</td>
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<tr>
<td>Barrow on Trent, Willington, Shardlow and Harshorne</td>
<td>South Derbyshire DC</td>
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<td>South Ulverston</td>
<td>South Lakeland District Council</td>
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<td>Burneside</td>
<td>South Lakeland District Council</td>
<td>£11,400</td>
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<tr>
<td>Boddington and Maismore (Previously Walton Cardiff)</td>
<td>Tewkesbury Borough Council</td>
<td>£119,400</td>
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<td>Rufford Street, Flanshaw, Wakefield</td>
<td>Wakefield MDC</td>
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<td>River Wey at Godalming – Catteshall Road</td>
<td>Waverley Borough Council</td>
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<tr>
<td>South Zeal</td>
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<td>Witney, Oxford</td>
<td>West Oxfordshire DC</td>
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<td>Sylvester Close, Wokingham</td>
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<tr>
<td>Beckford Village, Worcestershire</td>
<td>Wychavon DC</td>
<td>£121,000</td>
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</tbody>
</table>

*No scheme costs provided. Cost identifies the amount Defra Grant money awarded.*
Offices at

Atherstone
Doncaster
Edinburgh
Haywards Heath
Limerick
Newcastle upon Tyne
Newport
Northallerton
Saltaire
Skipton
Tadcaster
Wallingford
Warrington

Registered Office
South Barn
Broughton Hall
Skipton
North Yorkshire
BD23 3AE

t:+44(0)1756 799919
e:info@jbaconsulting.com

Jeremy Benn Associates Ltd
Registered in England 3246693

Visit our website
www.jbaconsulting.com