

Cornwall Flood Resilience Pathfinder

Final Project Report March 2015



Department
for Environment
Food & Rural Affairs



Cornwall Community
Flood Forum



one and all
CORNWALL
COUNCIL

The Flood Resilience Pathfinder in Cornwall set out to increase community resilience to flooding across Cornwall by building upon, and spreading the projects and learning that have taken place locally through the Cornwall Community Flood Forum and the 2010 flood recovery process.

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Foreword / Raglavar

Councillor Joyce Duffin Cornwall Council Portfolio Holder for Housing and Environment

Cornwall is at risk of flooding. This can be from intense rainfall overwhelming our drainage systems and sewers, from our rivers overflowing, or high tides and stormy seas battering our coastline. Cornwall Council was therefore delighted to be one of only thirteen local authorities across the country to be funded to deliver a Flood Resilience Pathfinder project. As a Lead Local Flood Authority we recognise that we cannot eliminate these risks so we must try to manage them as best we can. This means we all need to be prepared for whatever the weather throws at us in the future. This challenge calls for a greater emphasis on partnerships with organisations such as the Cornwall Community Flood Forum as well as building resilience within communities themselves. Through the work of this Pathfinder we have seen some fantastic examples of community spirit as people work together to make their neighbourhoods more resilient to flooding. By publishing this report we hope to showcase some excellent examples of 'best practice' for other local authorities and communities to emulate.

Konselores Joyce Duffin Synsyades Portfolio Konsel Kernow rag Anedhans ha Kerghynnedh

Yma peryl dhe Gernow hi bos livys. Y hyll bos hemma dhyworth glawas tynn hag a overset agan kevreythyow karthkleudhyans ha pibennow-karth, dhyworth agan avenow ow fenna, po morlanowyow ha morow tewedhek hag a fust agan morlann. Rakhenna pes da o Konsel Kernow bos onan a dredhek awtorita leel yn unnik dres an vro hag a vydh arghesys dhe dhelivra ragdres Hwilervownder Gwedhynder Liv. Avel Penn-awtorita Liv Leel, ni a aswon na yllyn ni dilea an peryllyow ma, ytho y tal dhyn assaya aga dyghtya gwella gyllyn. Hemma a styr bos edhom dhyn ni oll bos parys rag pyth pynag a vo tewlys orthyn gans an gewer y'n termyn a dheu. An chalenj ma a elow rag poslev brassa war geskowethyansow gans kowethasow kepar an Forum Liv Kemeneth Kernow, keffrys ha drehevel gwedhynder a-ji dhe gemenethow aga honan. Der ober an Hwilervownder re welsyn nebes ensamplow gorwiw a spyrts kemenethel ha tus ow kesoberi dhe wul orth aga hentrevethow moy gwedhyn erbynn liva. Dre dhyllow an derivas ma, ni a wayt may hyllyn displetya yn frav nebes ensamplow kooth a 'praktis an gwella' rag awtoritys leel ha kemenethow erel omheveli dhodho.



“...we have seen some fantastic examples of community spirit as people work together to make their neighbourhoods more resilient to flooding.”

Luci Isaacson Chair Cornwall Community Flood Forum

Cornwall sits in the 'front line' as our prevailing Atlantic weather patterns batter the shores of the United Kingdom. The impacts of climate change are already being felt here with prolonged periods of drought followed by long periods of extreme rainfall and storm conditions. There is little doubt that we must all become more resilient to the increasing risk of flooding and the Cornwall Community Flood Forum looks to relieve the effects of, and mitigate further flooding in the properties of the inhabitants of Cornwall by bringing together the statutory authorities, voluntary organisations and inhabitants in a common effort to advance education and training, to assist the victims of natural disasters, to provide facilities in the interests of community regeneration, and the promotion of volunteering. Through this Pathfinder project we have been able to demonstrate how, through working together, communities and individuals can be more resilient to the impacts of our changing weather.



Raglavar gans Luci Isaacson Kaderyores, Forum Liv Kemeneth Kernow

Kernow a esedh y'n 'voward' ha'gan patronyow kewer Atlantek gwarthevya a fust morlannow an Ruvaneth Unys. Yma strokosow a janj hin ow pos klewys omma gans spysow hirhes a syghter sewyes gans spysow hir a lawas tynn ha studhow hager-awel pella. Nyns eus saw dout byghan y tal dhyn ni oll dos ha bos gwedhyn moy dhe'n peryl owth ynkrësya a livans ha'n Forum Liv Kemeneth Kernow a hwither orth difres an effeythow anodho yn kerthow trigoryon Kernow, ha lehe livans pella dre dhri war-barth an awtoritys laghel, kowethyansow bodhek ha trigoryon yn assay kemmyn dhe avonsya adhyskans ha trenyans, dhe weres fethegigow a derosedhow naturel, dhe brovia komoditys dhe les a dhastinythi an gemeneth, hag avonsyans a ombrofyans. Der an ragdres Hwilervownder ma, re beu possybyl dhyn dhe dhiskwedhes fatel yll, dre gesoberi, kemenethow hag unigynnow bos gwedhyn moy erbynn strokosow a'gan kewer ow chanjya.

“... we have been able to demonstrate how, through working together, communities and individuals can be more resilient to the impacts of our changing weather.”

Project highlights

Cornwall's ambitious Pathfinder comprised eight work packages covering both county wide and very localised activity.

With only limited time and resources available for Cornwall Council and the Cornwall Community Flood Forum to design and develop this partnership bid we were ambitious in our aspiration, therefore no time was available to identify the specific communities to be served by the localised activity until project delivery commenced.

Project award was followed by the need to then recruit a Project Officer which took three months before delivery of the project could commence in earnest. From the outset it has been important to learn that our ambition to succeed must be tempered with the realisation that this is a 'pilot' and as such the 'journey' is equally as important as the 'destination'.



Year one of the project in Cornwall already saw significant progress in four of the eight work packages. A further two packages demonstrated measurable progress whilst the final two packages have always struggled to gain traction. The work packages that have shown the most significant progress are those that demonstrate a clear evolution or up-scaling of the early work of the Cornwall Community Flood Forum, in particular the development of community volunteer training and the raising of flood awareness on both a county wide and in a very local context. In contrast, those work packages that embark on entirely new initiatives, particularly those relying on multiple external partners have been the more challenging to initiate, possibly due to their relative complexity, the limited time available to negotiate stakeholder buy-in during the bidding phase and an unavoidable reliance on an unwieldy public sector procurement and commissioning process.

Particular highlights for us have been to see our leaf litter project support three communities that suffered significant flooding in 2010 and 2012 escape property level flooding during winter 2013/14 and to see volunteer flood wardens across three counties receive bespoke training to enable them to understand their role and stay safe. Other highlights have been to see some previously vulnerable but disengaged communities become active participants in resilience initiatives and to see the status and reputation of the Cornwall Community Flood Forum grow on both the local and national stage. The biggest lesson of all that we have learnt is that good community resilience is more about 'people' than it is 'stuff'. Whilst it is of course important for individuals to invest in appropriate measures to protect their property, it is the community spirit and willingness to come together that really matters. The important goal must be to change the mind-set of society from one with an expectation that 'they' (i.e. the Environment Agency, Council or whoever) will 'do' for us to one where we 'do for ourselves'

Defra perspective

Department for Environment, Food and Rural Affairs (Defra) is working across a range of technical areas including planning, land management, flood defences, sustainable water management, to improve flood resilience in England.

Community resilience – the response of people at risk of flooding - is an important aspect of this system. Quite often, simple actions by individual householders and communities can significantly reduce local vulnerability and the level of any resulting damages from flood events. The Flood Resilience Community Pathfinder scheme is a demonstration pilot, whose outputs and outcomes will help us understand better the contribution that actions by individuals and communities can make to better manage their flood risk.

The scheme operated between 2013 and 2015 and we expect that the overall investment in this scheme to be around £5.2m of which, Defra will have provided £4m. The first output from the scheme was published in February 2014 – a study reviewing the best research evidence about communities and resilience [The report <http://goo.gl/jf0N9G>]. Its findings underscored the complexity the relationship between awareness and action but noted that interventions based on engagement, dialogue and learning seem to provide promise, in terms of improving resilience to flood risk at the community level. This will form part of the base line for the overall evaluation of the scheme.

The Pathfinder scheme is a demonstration pilot, whose outputs and outcomes will help us understand better manage flood risk.

Authorities in: Blackburn, Buckinghamshire, Calderdale, Cornwall, Devon, Liverpool, Northamptonshire, Rochdale, Slough, Southampton, Swindon, Warwickshire and West Sussex, all implemented practical projects with local communities. Many are partnerships, with the authority working with a range of national and local organizations to deliver the aims of their project. The local audience for each project varies considerably across the country and they deployed a range of approaches to engage local people. We hope that the results help authorities work with other local communities in their area and that by sharing their learning and experience from their projects, they can inspire neighbouring authorities to engage their communities in similar ways.

Defra will be evaluating the results from all 13 projects during the summer of 2015. By reviewing the work of all the pathfinders we hope to capture the key practical and policy learning points to better inform our policy making and that of other flood risk management authorities.

What has changed

as a result of the project's activities in relation to the project objectives?

Work Package 1

Supporting Community Resilience across Cornwall

The objective was to: Provide support and encouragement to communities wishing to form flood groups and produce community flood plans, develop flood warden training courses, liaise with municipal insurers to enable schemes to obtain insurance, test and accredit courses, deliver training and make it available country-wide for others to use. We soon realised that what we were attempting carried significant interest beyond Cornwall with a number of statutory and voluntary sector partners keen to become involved in developing the training. However, this then raised the issue of Intellectual Property Rights, both from the perspective of consolidating the material we were using to develop the training, but also in our ability to protect the quality and integrity of what we had produced. For this reason, the development of the toolkit took longer than anticipated. Also as we progressed through two evolutions of our training packages, we learnt a great deal about how support to communities cannot be a 'one size fits all' approach.

The outcome of our work is that throughout Cornwall, Devon and Somerset there are now almost 300 trained and equipped flood wardens able to operate safely and in accordance with their individual community flood plans, making their communities safer and more resilient. These individuals also act as resilience ambassadors in their community with a good awareness of flooding as well as how to respond as a community volunteer prior to a flood event as well as during and after a flood. They are also able to appropriately support the more vulnerable members of the community with practical tasks such as the timely placement of active property level protection or simply 'warning and informing'.

A further outcome is the national interest in our community toolkit and the associated training that has been developed. Communities outside Cornwall have already benefitted from this training and we are determined to see investment in a consistent approach to the training and support of community emergency volunteers.



Early work in mid-Cornwall by the Cornwall Community Flood Forum had demonstrated that a will existed within communities flooded in 2010/12 to become better prepared and more resilient in the future. The fledgling flood groups that had formed were asking for advice and training, culminating in the Lostwithiel flood group having its liability insurance suspended because the insurer didn't have the confidence in the level of risk they were being asked to underwrite.

Working with partners, Cornwall Community Flood Forum has been able to develop and refine its 'Community Resilience Toolkit' along with the associated training for community volunteers. We have been able to deliver two evolutions of the modular training materials, not only supporting flood groups in Cornwall, but through working with the Environment Agency, Devon and Cornwall Police, Devon County Council and Devon and Somerset Fire and Rescue Service our training has been delivered in Devon and Somerset.

Following discussions between a member of the Cornwall Community Flood Forum Management Committee and Lostwithiel's municipal insurer we were quickly able to identify their concerns and propose a series of actions to overcome these. These concerns, centred on due diligence around risk assessment, record keeping and the training and equipping of volunteers and directly informed the development of our toolkit. As one of the priorities was to enable the Lostwithiel flood group to resume operation, they were the first group to receive the early training along with advice on risk assessment and clear role profiles for the volunteers. On the back of the support we provided, the insurer was content to recommence their cover.

The first evolution of the training comprised four modules covering: the role of a flood warden, the risks associated with the role, working with the emergency services and understanding flood risk. The first two modules were delivered during a 3-hour evening session by a professional trainer from a local Voluntary Sector Organisation, the second two sessions in a further 3-hour session by staff from the Environment Agency and Devon and Cornwall Constabulary. Additionally, the first two sessions were accredited by the Assessment and Qualifications Alliance (AQA) requiring participants to undertake an exam at the end of the session in order to receive the qualification. Feedback from the participants was obtained and led to the development



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of the second evolution of the training. We also gained a better understanding of the demographic of our volunteers, their aspirations, and what we could expect of them. In essence, there is no 'typical' volunteer however the common factor is a desire to support ones community. The reasoning for this can be centred on personal self-interest or a wider community conscience. Also, for many, being a flood volunteer (even the term 'Warden' can prove contentious) is about being there to help 'in the event' and the prospect of too much training time and a formal qualification proved a disincentive. Whilst for some, especially group coordinators the training was a part of the attraction. Striking a balance proved very challenging indeed. As a result, the second evolution of training reduced the length of the risk and role modules as well as no longer accrediting the training but introduced two further modules covering the use of sand bags and Personal Protective Equipment (PPE). The second evolution of the training has enabled us to support additional volunteers in Cornwall, Devon and Somerset. Furthermore, we have been able to continue developing the toolkit and related training to an extent that we have been able to submit a substantial bid to the National Lottery Reaching Communities Fund for delivering community resilience training on a regional scale.



The second evolution of the training has enabled us to support further volunteers in Cornwall, Devon and Somerset.



Training modules available

Role profile

Outlines simple ways in which a community volunteer can support their community and the Emergency Services before, during and after a flood

Flood risk awareness

Aims to help individuals carry out their role as a community volunteer in a safe and responsible way

- Assessing risk
- The dangers of flood water
- Personal safety
- Flooding and road safety
- Managing sensitive information and data protection

Understanding flood risk

An introduction to the processes and terminology associated with flooding

- Factors that can influence flooding
- Flood risk and flood frequency
- Limitations of flood warnings
- Managing flood risks: who is responsible?
- Private land owners and riparian law

The use of sandbags

- 5 myths about sandbags!
- Their advantages and limitations
- How to handle, store and dispose of sandbags
- Alternative ways to prepare property for flooding

Personal protective equipment (PPE)

Highlights the importance of the correct use, maintenance and storage of personal protective equipment (PPE) such as: high visibility clothing, safety whistles etc.

An introduction to emergency response for community volunteers

An introduction to the processes and terminology associated with emergency response

- Phases of a major incident
- Things to consider when reporting an incident
- Emergency responders: What they do and don't do
- Cordons, evacuations and the media

Work Package 2

Developing the Cornwall Community Flood Forum

At the beginning of the Pathfinder, the fledgling Cornwall Community Flood Forum was a membership association comprising 45 town and parish councils. Its activity was centred on mid-Cornwall as the flood recovery groups in this area formed its foundation. Through the Pathfinder with the Cornwall Community Flood Forum at the forefront of delivery, it was hoped that the future of the Cornwall Community Flood Forum could be secured and the organisation evolve into an incorporated body with a growing membership.

As a direct result of having the services of a paid officer available to support the work of the Cornwall Community Flood Forum the organisation has been able to grow in stature and influence during the past 18 months. The management committee has also developed in confidence with a more diverse and representative membership. For example, at the 2014 AGM community representation on the Management Committee increased from 2 to 4 members whilst representation from Cornwall Council reduced by one. The Cornwall Community Flood Forum 'model' has proved appealing on the National stage as it brings together local residents, authorities and other interested parties in a constructive way. However, the additional profile and activity, along with significantly increased cash flow and the acquisition of Intellectual Property

has brought with it its own challenges. As a simple Association of members, the appointed trustees on the management committee carry an unacceptable degree of risk should the Forum become insolvent or be subject to another form of legal challenge. It was therefore deemed necessary to create some form of incorporated entity to insulate the membership from liability. This in turn runs the risk of preventing officers from statutory organisations vital to the effective function of the Forum from fully participating in its operation. The outcome of our work is the agreement of the membership to create a Charitable Incorporated Organisation (CIO) to be known as the Cornwall Community Flood Forum CIO which will replace the current Association along with its property, membership and Management Committee. A further outcome has been the ability of the Cornwall Community Flood Forum to clearly define its relevance and the need for its 'on the ground' capacity to be maintained. As such, it has secured sufficient funding to second a dedicated part-time Community Flood Resilience Manager who will be employed by a local Third Sector organisation to further grow the Cornwall Community Flood Forum. This Third Sector organisation will also provide the 'back room' support currently provided by Cornwall Council, thus enabling any remaining public perception that the Cornwall Community Flood Forum is an adjunct of Cornwall Council to be countered.

During the Pathfinder, the Cornwall Community Flood Forum has had the capacity to plan and support events reaching a range of audiences. It has held two conferences, free to delegates, covering a wide range of relevant topics from the role of the Regional Flood and Coastal Committee and climate change, (both presented by internationally recognised speakers), to more local interest topics such as the winter storms of





2013/14. Working in partnership with the Environment Agency and Cornwall Council Emergency Planning team, we delivered a series of ten Community Emergency Planning events across the county. Other capacity building activities have included the launch of a Cornwall Community Flood Forum Twitter Feed, YouTube Channel and the production of public information films.

Community resilience to flood risk has begun to improve with an additional 11 community groups of varying sizes beginning to form and be supported. The Cornwall Community Flood Forum is acting as a cohesive force to bring together the needs and aspirations of those at risk of flooding in Cornwall to improve community resilience now and in the future. Communities are becoming more engaged with Flood Risk Management and working far more closely with Statutory Stakeholders. During the Pathfinder, the project coordinator has attended meetings at 18 different Town and Parish Councils, as a result of which many have now been encouraged to embark upon the drafting of community flood or emergency plans.

The Cornwall Community Flood Forum is now seen on the National stage as an exemplar of best practice. As such it has presented on its work in various high profile arenas such as the National Flood Forum Conference and at the Cabinet Office.

Work Package 3

Raising Flood Awareness for Individuals Across Cornwall

Having identified over 7600 properties in Cornwall at significant risk of flooding through an exercise of overlaying flood maps on the Address Gazetteer we carried out a baseline survey to ascertain pre-activity awareness and influence our approach to informing. We

explored a range of awareness raising activities ranging from the design, production and distribution of flood awareness packs to local media campaigns to stimulate an interest and awareness. Following the exceptional winter of 2013/14 we learnt that our initial approach to identify properties at risk based around flood maps served us well, but it failed to identify the many isolated single properties affected by surface water runoff from neighbouring (often agricultural) land. The maps also failed to identify sea front properties vulnerable to the effects of extreme waves and blown spray hitting the coast.

The outcome of the awareness raising activity is best reflected in the empirical evidence gathered during our baseline survey of 800 'at risk' properties chosen at random compared with the responses to the same questions from the same cohort of property occupants a year later. Surveys were posted to the same county-wide 800 random selection of addresses as the baseline. All of these properties sit in Flood Zones 2 or 3. We had 181 surveys returned compared with a total of 230 baseline surveys returned.

Respondents were asked if they had received any advice or support from any source about flood risk and how best to prepare for a flood during the past 12 months. This could have been in person, on the phone or information sent to the property. On the face of it the response was positive – those saying 'yes' up from 17% to 38% and 'no' down from 81% to 51%, however, when you take into consideration that in January 2014 every property surveyed has been sent an awareness booklet from Cornwall Community Flood Forum this response is disappointing. Clearly the booklet distribution along with other activity had a measurable impact on awareness and feedback on the publication was extremely positive. However, on this evidence up to 55%

The Cornwall Community Flood Forum is now seen on the National stage as an exemplar of best practice.

of the booklets were ignored in spite of the recipients being at significant flood risk.

The Information Packs (which comprise an A5 booklet and plastic emergency contact and flood safety information card) were designed on the basis of what residents 'want' to know. This was ascertained through the responses to the baseline survey and, for example resulted in better information on obtaining and using sandbags. Distribution was by Royal Mail addressed to each property in 'Cornwall Council' branded envelopes so as to minimise the risk of them being confused with marketing 'junk mail' and discarded before opening.

When asked who they thought was responsible for managing flood risk in the area the responses were broadly similar to the baseline, but there were a few surprises. 4% fewer thought it a responsibility of Cornwall Council (now 68%) but 4% more see it as a responsibility of the Environment Agency (now 78%). This is likely to be as a result of the media focus on flooding on the Somerset Levels which was widely reported in the regional media.

Asked if they had undertaken any from a range of flood protection measures, slightly more people have now taken out appropriate flood insurance, keep drains clear around their property and have installed flood gates. Slightly fewer keep sandbags at the property or regularly check flood warnings. 4% more respondents have found out if their property is at risk of flooding, but 5% fewer are signed up for flood warnings. More people have prepared a flood plan, bought flood protection products and joined a flood group all of which indicate a shift in overall attitude in the direction towards greater resilience. However, worryingly, the main (and increasing over the past year) reasons respondents cite for not being better prepared are cost and lack of information. 7% more said they couldn't afford the cost than in the previous survey. Overall, attitudes to flood resilience have become more polarised with fewer respondents not having a view, however a significant shift is that 88% (up from 68%) of respondents now accept that protecting their property from flood is partly their responsibility.

When asked if further information about flooding was made available, what in particular would be useful to know more about, people seem generally better informed. For example, 9% more respondents

now know who to contact in an emergency. The one disappointment is that (as previously) 61% of respondents still wish to know "Where to get Sandbags".

The outcome of our work clearly demonstrated that a multi-channel media campaign including a targeted mail-out and 'prime time' air time on the most listened to BBC Local Radio Station in the country (Radio Cornwall), still failed to reach or engage some of those at flood risk. However, in those communities that have a volunteer group prepared to go 'door-to-door' to offer support, individual awareness and resilience can be stimulated.

Through this exercise we have also learnt that the media responds in a more positive and less challenging way to a voluntary organisation than the local authority. Being interviewed as a representative from 'Cornwall Community Flood Forum' rather than 'Cornwall Council' enables important messages to be disseminated in a less confrontational manner, avoiding the more aggressive tone that the media tends to show towards the public sector. Members of the public participating in the 'phone ins' also engaged more willingly with a Cornwall Community Flood Forum representative and were more accepting of a suggestion that they had a part to play in their own flood resilience,



A5 information booklet and plastic emergency card

Work Package 4

Supporting Household Resilience and Property Insurance in Two Communities at Risk of Flooding

Through the Cornwall Community Flood Forum membership we invited communities to bid to be one of two to receive close support from the Community Flood Resilience Manager. We wanted to work with two communities that were in the early stages of coming to terms with their flood risk, rather than communities that were already well advanced in terms of engagement and flood resilience. The aspiration was to hold focus groups with flood victims/vulnerable households and together design a 10-point community-specific property level action plan in each of the two communities.

In order to identify the most appropriate two communities to support we undertook an objective process to identify support and 'buy in' from communities that were already linked to the Cornwall Community Flood Forum. Following an open invitation to Cornwall Community Flood Forum Member Communities to submit an expression of interest to participate in this work package, the communities of Angarrack and Polperro were selected. Whilst similar in size and flood risk, the two communities have very different characteristics.

Angarrack. An inland village of about 300 properties in West Cornwall set in a valley with several watercourses running through it and a long history of flooding. Hayle Town Council serves the village municipally, but we worked with the local emerging flood group which has active Town Council support. There are very few business premises in the village and the vast majority of homes are occupied all year around.

“The process of working up a 10 point action plan has made the group talk with other residents and focus on helping people be more aware of the possibility of flooding and that they need to take sensible precautions to try to prevent their properties being affected. It has also identified, in the event that they are flooded, what help and advice is available and from where.” Cllr Brian Capper – Angarrack Flood Group and Hayle Town Council



Polperro. A traditional ‘picture postcard’ fishing village in East Cornwall of about 500 properties. One of the challenges in this community is the demography. Approximately 70% of vulnerable homes are ‘second homes’ and ‘holiday lets’ so are often empty during the winter months and when in use, are often occupied by visitors. Many of the permanent residents are elderly and retired. Although a coastal community that suffers tidal flooding around the harbour, the most extreme flood risk is due to the topography of a steep sloping valley in which the village is located. Significant flood alleviation work has been carried out by the Environment Agency, which whilst reducing flood risk has not removed it. The Environment Agency’s investment had led to a degree of false-confidence in the village, with many considering the threat of flooding to have gone away (which it hasn’t). There was no community flood group and the Community Council (same statutory basis as a Parish Council) has limited resource. However, the Community Council agreed to form a subcommittee to provide the local support to participate in this work package, hoping that in so doing it will increase community flood awareness and resilience.

“In the past Polperro has experienced a number of devastating floods. Various actions by the Environment Agency have done a great deal to reduce the chances of similar events occurring again, but lower level risks remain. Working with Cornwall’s Flood Resilience team to produce and distribute a ten-point household action plan has been a useful reminder of the relatively simple steps that individuals can and should take to protect themselves. As a result we believe our community is a safer place.”
Cllr Paul Lightfoot – Polperro Community Council



Between the two communities, approximately 160 households and businesses were supported, with the local Flood Group (Angarrack) and the Community Council (Polperro) identifying the specific properties at risk of flooding, using their local knowledge to augment the published flood maps.

A Baseline Survey was delivered by community volunteers to every flood vulnerable property within the two communities. Focus Groups with flood victims/vulnerable households met and 10-point community-specific property level action plans in the two communities have been created and encapsulated, copies distributed by members of the Angarrack flood group and Polperro Community Council. Community volunteers are now able to provide individual support to householders to adopt the plan. This community-level support will provide an improved resilience infrastructure beyond the life of Pathfinder.

Improved community cohesion, acting together to prepare, deal with and recover from any flooding is also identified as an output from this work package. At the outset neither community had a community flood plan nor warden scheme in existence, although Angarrack did have a fledgling flood group. As a direct result of Pathfinder, both communities now see the value in having a Flood Plan and Angarrack has completed a plan. Polperro couldn't achieve sufficient community buy-in to create a formal flood plan and volunteer scheme, but was able to produce a brief plan which was distributed to residents. The Community Council is also better engaged and informed on all aspects of flood risk in the community they serve. The Angarrack group has evolved into a flood warden scheme which participated in the first evolution of the training project and its members have all been equipped with Personal Protective Equipment.

An attempt to engage with the insurance industry was made; however, the response received indicated an unwillingness to communicate with us on a company level whilst the Association of British Insurers (ABI) was in discussion with Government over Flood Re. There is clearly scope for better engagement and we believe that this could be better achieved if there was some form of recognisable community standard to adopt that was acknowledged by the insurance industry as a sign of a resilient flood aware community (in the same way that Neighbourhood Watch identifies a community more resilient to crime).

Work Package 5

Business and Town Centre Resilience in Two Cornish Town Centres at Risk of Flooding

The aspiration was to support two flood vulnerable town centres and provide whatever support in the form of training workshops that business proprietors deemed necessary to become more resilient and promote the 'business as usual' message as soon as normality returned. We hoped to work with them to develop a communications plan to cover a flood event and post flood recovery with workshops held during the 'quiet season' between New Year and Easter 2014.

Due to the 2013/14 winter flooding, the decision was taken to change the two towns to work with from Looe and Porthleven to Looe and Perranporth. Businesses in Perranporth were directly affected during the storms, even more so than in the past. The two town centres we chose to support are both coastal, tourist towns with moderate sized populations. Both towns have flooded historically during high tides with on-shore wind conditions. The decision was also taken to try and balance the difference in business resilience between Looe – already quite resilient and prepared for storm conditions – and Perranporth – not at all resilient and unprepared for storm conditions.



Both towns have flooded historically during high tides with on-shore wind conditions.

All businesses in the two town centres were visited, spoken to and given copies of the baseline survey with an explanatory letter and pre-paid return envelope. Indications from the visits and the small number of surveys returned was the need to manage negative media, traffic management during floods to mitigate 'wash' from vehicles travelling through flood waters affecting business premises and provision of sand bags or flood defence equipment such as 'flood gates'. With the exception of the businesses that were part of a larger organisation, very few had any form of Business Continuity Plan and worryingly, when offered free business continuity training, were not interested in receiving it (or any other form of relevant training).

The overriding view was that they were either too busy or too 'hand to mouth' and expected everything to be done for them. This is possibly best demonstrated by the responses of business owners in Looe. Following the announcement of the Repair and Renew Grant a Flood Surgery was held in the town and businesses invited to attend to find out about the grant. A number of the business owners reacted adversely to being invited to 'apply' for a grant to improve resilience for their flooded business, implying that someone should just 'come and install the measures'. Another example of lack of willingness by the business community to take advantage of the support available to them (but which required them to initially make an application) is our experience delivering the Business Support Scheme

– we had 126 known businesses that had flooded and were eligible for a grant under the Business Support Scheme. After months of encouraging, visiting, and support, only 40 applications were made. In addition to the feeling that "someone else must be responsible" there was also a concern amongst a number of businesses to being identified as having flooded for fear of insurance premium increases. Cost of insurance was prohibitive for many businesses. It is clear that this work package failed to achieve any measurable positive outcomes on a cross-town basis although isolated business were grateful for the support and advice offered and have gone on to install Property Level Protection (PLP) funded through the Repair and Renew Grant.

Work Package 6

Catchment Management and Reducing the Impact of Surface Water Runoff

The original objective was to identify two appropriate and significant catchments, understand the flooding Issues affected by land use and install low cost flood defences. However, the time available and complexity of developing even a modest scheme was proving too complex for the available timescale. In recognition of the significant number of cases during the winter of 2013/14 whereby the flooding amounted to a dispute between neighbours, where the 'victim' was invariably the least empowered party it was decided to run a



small grant scheme. The purpose of the scheme was to promote a positive relationship between landowners and their neighbours where there was clear evidence that surface water runoff was causing flooding and/or a significant flood risk to property, but that the apportioning of liability was likely to be a contested civil matter. The scheme was not designed to absolve or remunerate land owners where clear legal obligations to act existed. Every land owner (or tenant with responsibility under their tenancy for the drainage of their land) had access to this scheme provided they had the support of their Cornwall Councillor or Parish/Town Council (the sponsor). The grants could be used for a range of small scale interventions where surface water runoff from the land represented an unacceptable flood risk to one or more property in a neighbouring community. Examples of interventions carried out under the grant scheme included:

- The digging of ditches or laying of French Drains and soakaways where they can be shown to have a positive impact to reducing runoff.
- The construction of earth banks, hedges and other structures which will divert runoff into a recognised watercourse or appropriate storage area.

Shortly after the launch of our grant scheme, the government launched the Repair and Renew Grant to support those flooded during the winter of 2013/14. In considering the award of grants we first satisfied ourselves that the proposed scheme was not fundable through the Repair and Renew Grant. In total six schemes were completed at a total cost of £22,067 protecting over 20 homes or businesses.



“Gaffers and Luggers is a small family run boat building and restoration business that has been passed to me through three generations operating in Mylor since 1965. At any time I can employ up to 4 staff and am an important employer in the small village. The business is also an important part of local culture keeping traditional boatbuilding crafts alive. During the winter I am totally reliant upon a single large workshop in which boats are built and restored. The winter months are the busiest period in the boat restoration business and last winter the workshop was not operational for several weeks due to surface water running off my neighbours land. The Ord Statter Trust, who owns the neighbouring land, is a community sports club. It operates with very limited financial resources and was unable to afford to address the issue themselves without the support of this grant.” Sam Heard – Gaffers and Luggers, Mylor

“The winters of 11/12 and 12/13 saw an unprecedented and sustained rainfall over a very short period. The Cottage at Fenton Pitts sits on the corner of the road as it splits to Trebell Green. The back of the cottage is built into the bank and the field that it separates us from is three feet higher than our floor level. So as soon as that field becomes saturated water pores through the back wall into the cottage, the field itself has a hill behind it and water naturally flows into it so increasing the flow. Given the condition of the soil, digging a sump proved to be pointless and we went down Ten Feet but nothing would drain away. The only alternative

was to lay in a French Drain 6 feet down behind the cottage 25 metres long going to the corner of the field, then under the road going 120 metres across another field to an old spring to join a stream. This hopefully will take any water around the cottage and away before it has a chance to build up from the surrounding fields to an old water course.” Keith Mursell – Bodmin

“The grant has been a God sent gift for us. We both now feel so secure due to the new fencing and do not fear the weather as we did last year. Thanks to St Mewan Parish Council and yourself for the amazing support we received.” Paul Clarke – Little Polgooth

“We are all very grateful for the funding towards the works that have sensibly addressed the intermittent flooding problem that we have experienced in the hamlet over the last 10 to 15 years; there are 5 houses here all of which were at some level of risk and the works carried out with the assistance of this grant give us confidence that we will not have the problems in the future”. Lloyd Spencer - on behalf of all the property owners at Ellenglaze



Outcomes from the pilot project in Par and St Blazey have been significant but relatively limited in scope.

Work Package 6

Supporting Community Level Rainfall Monitoring in Four Catchments

The original objective was to identify four communities at risk of flooding that would receive their own rain gauge. Information from the gauge would be shared within the community and with others to help raise flood awareness and warn of rainfall conditions that could trigger flooding. However, attention has focussed upon two case study communities rather than develop a network within the county: In Par and St Blazey the community flood group initiated a pilot project with South West Water and Hydro-Logic Services to install a rain gauge within their catchment and develop a flood forecasting model, while in Bude a river level gauge was installed in the canal.

Outcomes from the pilot project in Par and St Blazey have been significant but relatively limited in scope.

“In Par and St Blazey we face the risk of fluvial, surface water and tidal flooding. As a community flood group, the biggest problem we had was monitoring short-lived but high-intensity rainfall at night which could result in surface water impacts. Having a telemetered rainfall gauge that sends text messages to mobile phones when alarm thresholds are triggered has made a huge difference to the co-ordinators of our local flood group. We would not want to be without it. We have the confidence to rely upon the gauge to trigger our flood plan, especially at night, without the need to drive around the local area waiting for a potential surface water problem. It has also meant we can cut down on the number of false-alarm text alerts we send out to the community thereby reducing the stress and anxiety these can cause”. Charles Richards - Chair, Par and St Blazey Community Flood Group

In June 2013 we arranged a multi-agency meeting, which was hosted by the Met Office, and also included the Environment Agency, the Flood Forecasting Centre, South West Water, Cornwall Council, Devon and Somerset Fire and Rescue Service and representatives of the Cornwall and Devon Pathfinder projects. The purpose of the meeting was to learn more about rain gauges in general and understand how they could be used to help communities. Following the meeting it became apparent that on-going costs beyond the life of the project could become a burden for communities. Rain gauges can have a relatively short life-span (about 4 years), may incur annual licensing and data costs and it can be difficult to identify secure yet un-obstructed locations. At the time we felt that the provision of rain gauges may place a financial burden upon communities that might not be sustainable beyond the project.

We then investigated the possibility of working with BBC Radio Cornwall to purchase high-end amateur rain gauges to be monitored by their existing volunteer ‘weather watcher’ network with results posted on a public access web site. We also offered to support the recruitment of additional ‘weather watchers’. However, following discussions with the BBC Radio Cornwall meteorologist, it became apparent that the current weather watchers already used suitable rain monitoring equipment and that the current network of watchers was as large as he could cope with, therefore this idea was shelved.

Alongside the Pathfinder project the Par and St Blazey Community Flood Group had initiated a pilot project with South West Water and Hydro-Logic Services to install a rain gauge within their catchment and develop a flood forecasting model. We therefore decided to focus our attention upon one or two case study communities rather than develop a network within the county.

Following severe flooding in mid Cornwall in November 2010 the Environment Agency established a pilot flood alert scheme for St Blazey which involves the Flood Warning Duty Officer informing the community’s flood group co-ordinators of potential flood risk. The scheme has been successful in building confidence and momentum within the flood group to manage their own gauge and use additional information to trigger the flood plan.

A telemetered tipping bucket rain gauge was installed within the St Blazey catchment in April 2014 and a steering group was established involving the Par and St Blazey Community Flood Group, South West Water and Hydro-Logic Services to develop the forecasting model. The gauge serves two roles: firstly, it provides alerts to the flood group during periods of high intensity rainfall, and secondly, data collected over time can be used to help identify conditions that could trigger flooding in the future.

The Par and St Blazey Flood Warning Pilot Project has resulted in the following outputs:

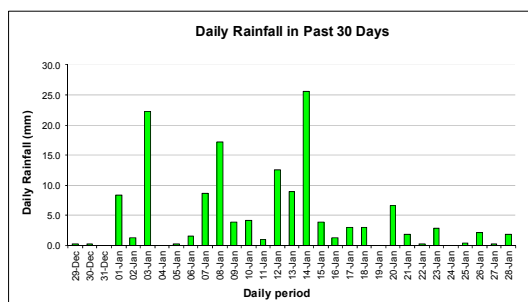
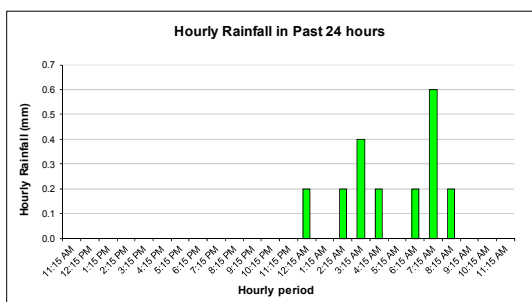
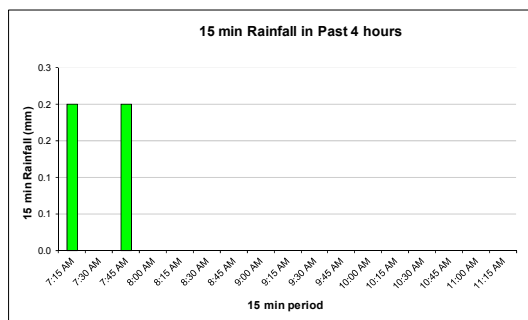
- A telemetered tipping bucket rain gauge has been installed within the St Blazey catchment that generates sms text message and e-mail alerts to the co-ordinators of the Par and St Blazey Community Flood Group when alarm thresholds are triggered.
- Rainfall processing tools have been made available to the flood group co-ordinators. A website provides access to real-time data from the rain gauge and a spreadsheet has been developed that collates a “rolling” rainfall history allowing key statistics to be calculated such as storm return periods. To make it easier for the flood group co-ordinators, information within the spreadsheet is split between two worksheets: one contains “critical information” while the other relays statistics that are considered “nice to know” (see screenshots below). As a storm develops, real-time data from the gauge can be compared against two historical events that produced known flood impacts. In this case, the “flashy” flood event of November 2010 is used alongside the more “steady” rainfall seen in December 2012.
- A flood forecasting model has been developed that uses real-time data from the rain gauge to forecast the peak flood level which can be used by group co-ordinators to trigger the community flood plan. The forecasting system makes use of well-established hydraulic and hydrological principles and has been tested using Environment Agency river level data from the Pontois Mill catchment yielding very good results.

Screenshot of rainfall processing worksheet showing “critical information”

RAINFALL HISTORY

Disclaimer & warning to users of this system

This is a “pilot” version of a flood warning and forecasting system, developed by Hydro-Logic Services LLP (HLS) for the Par & St Blazey Community Flood Group. This spreadsheet collates rainfall data via mobile telephony and internet links and uses this to forecast peak river levels. Since this is a “pilot” version, it has not been subject to full evaluation and review. Accordingly, HLS accepts no responsibility or liability for use of the data and forecasts, nor for the consequences of that usage. It is the responsibility of recipients of the data and forecasts to check and verify their integrity.



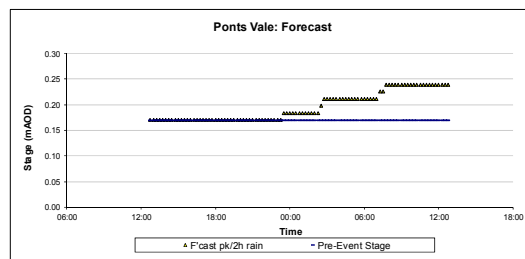
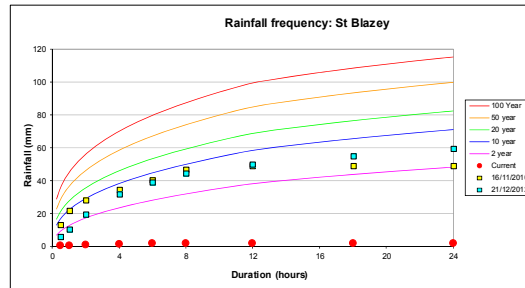
Screenshot of worksheet showing “nice to know” information

RAINFALL FREQUENCY AND FLOOD FORECAST

Disclaimer & warning to users of this system

This is a “pilot” version of a flood warning and forecasting system, developed by Hydro-Logic Services LLP (HLS) for the Par & St Blazey Community Flood Group. This spreadsheet collates rainfall data via mobile telephony and internet links and uses this to forecast peak river levels. Since this is a “pilot” version, it has not been subject to full evaluation and review. Accordingly, HLS accepts no responsibility or liability for use of the data and forecasts, nor for the consequences of that usage. It is the responsibility of recipients of the data and forecasts to check and verify their integrity.

Date of Forecast	28/01/2015			
Time of Forecast	12:57 PM			
Catchment wetness	Historical events			
		"Flashy"	"Steady"	
Last 7 days (mm)	27.4	17-Nov-10	21-Dec-12	
Last 28 days (mm)	71.2	86.2	113.8	
Rainfall		167.8	262.6	
	Max 1 hour rainfall (observed) (mm)	0.6	21.8	10.6
	Max 1 hour rainfall (forecast) (mm)		48%	24%
	Max 1 hour rainfall (% of 1: in 100)	1%	34.6	31.8
	Max 4 hour rainfall (observed) (mm)	1.2	49%	45%
	Max 4 hour rainfall (forecast) (mm)	2%		
Peak Level	Ponts Vale (m)			
	0.239			
Comments				



Looking ahead, this work package will deliver a legacy beyond the life of the Pathfinder project. Our focus to date has been on calibrating the rain gauge and setting alarm thresholds and developing the flood forecasting model and spreadsheet tools. We are now in a position to turn attention towards other planned objectives:

- It is intended that data from the rain gauge will be shared with local schools in February 2015. Students will experience working with “real life” data and gain an insight into the various conditions that can cause different types of flooding.
- The Par and St Blazey Community Flood Group uses social media to relay information to the wider community and from February 2015 will make data from the gauge available in graphical form through Facebook and Twitter.
- The flood forecasting model is a scalable and transferable output from the Par and St Blazey pilot project and Hydro-Logic Services are planning to offer it to customers nationally. In terms of publicising the pilot Dr Paul Webster of Hydro-logic Services has given the following two presentations which both highlight the case study:
 - “Flash-flooding: Mechanisms and warnings”. NCAS Research Forum on Flash Flooding, The University of Oxford, 24th September 2014.

- “Responding to flood warnings”. Flood Prevention and Defence Expo, ExCel London, 4th to 5th December 2014.

Telemetry System on the Bude Canal

The recently installed telemetry system for the Bude Canal has benefited the current call out system and improved flood resilience. The alarm system in the form of text messages sent to nominated phones allows sluice operatives to respond quickly before water levels in the river reach a critical height. Alerts are sent when the river level rises or falls to pre-defined trigger points allowing sluice operatives to monitor the levels without the need to manually check the river level.

The online smart chart database gives an up to date record of the water levels with a half-an-hour lag time which enables Town Council staff and The Bude Canal and Harbour Society to remotely monitor river levels which enables them to prepare for potential flooding. The online access is also very useful to staff on call, who use the system to remotely monitor rising and falling water levels prior to and after flood alerts are sent.

The flood alert text messages allow staff to respond early to potential flood events which reduces the danger of flooding and damage to property. Without a swift response to rising water levels the canal would breach its banks and flooding could occur to private houses adjacent to the canal as well as workshops and units

adjacent to the lower wharf. The integrity and structure of the canal itself is also protected as water can overtop the banks, locks and tow path causing substantial damage.

The flow of water down the canal is increased by the opening of sluices on the locks and eventually out to sea. This reduces the amount of water flowing over the weir and down the River Neet into Bude itself which in turn reduces the flood risk to the town. This has been particularly relevant in recent years during storm events when there are large spring tides and swell causing the water in the river to back up and increase the danger of flooding in the town.

The data currently being logged is now also available to a local school who study rivers and the impact of flooding at AS Level (Sixth form). The school propose to use the data as part of their fieldwork investigations for their summer exam.

Work Package 8

Cost Effective Leaf Litter Clearing

We wished to explore the use of an unpaid workforce to carry out the clearance of leaf litter from the highway drains within three rapid response catchments. Ideally, developing a 'tool kit' that could be adopted by other communities. Cornwall Council commissioned the services of Climate Vision a small local Social Enterprise to carry out and report on this activity.

Delivery through partnership working was integral to the project between Climate Vision (project design and management), the Probation Trust (equipment, labour and supervision), the Highway Authority (training and equipment) and the local community. The project was run in 3 different communities, Par, St Blazey and Lostwithiel, each served by the same teams organising and performing leaf clearance and composting. Each community selected also had a volunteer community flood plan and this work reduced the burden on



A total of 9 tonnes of leaf litter was gathered during Autumn/Winter 2013/14 and is being composted for use as a mulch during 2015

community volunteers within these communities. The project also facilitated the following:

- Engagement between offenders and society, in this case the communities they helped, allowing them to be thanked for their hard work.
- Renewed discussions in the community about flood risk
- Invigoration of community spirit
- Free labour for the Highway Authority
- Increased partnership working between public sector organisations
- Increased profile raising (through good news stories in local news media) for all professional partners involved
- Increased flood resilience in vulnerable communities

Primarily, the project was successful in clearing the drains of leaf litter and in making the community more resilient by increasing their awareness of flood risk management. Since the project has been running there has been no surface water flooding in Lostwithiel and Par and St Blazey and residents are convinced of the success

of the project. Offenders gained the opportunity to really understand the importance of their work to the local communities in which the project was run. This came from members of the communities thanking the offenders and telling them about their flooding experience within the community. The Probation Trust found a work stream that is highly visible to the public to engage offenders on their Community Payback Scheme. Also, the project successfully increased partnership working between public sector organisations and also created some excellent publicity for those organisations through the promotion of the project by Climate Vision.

A "toolkit" which can be downloaded from the Climate Vision or Cornwall Community Flood Forum Web Sites has been produced to ensure that this project can be replicated in other communities, where flood risk of this nature is an issue.

When evaluating such a public facing project it is also important to note the positive responses that were received about the project. The positivity from the community, the staff and the offenders was noteworthy and worth using in promotion when attempts are made to get projects of this sort started with other local authorities.



“Lostwithiel is grateful that the leaf litter project is returning this autumn. It proved a great success when trialled in 2011. In between times our town has been flooded twice, in November & December of last year. The project is of great assistance in minimising any future flooding risks that may occur over the winter period. A considerable amount of leaf mulch was created last time which was utilised by the nearby town council and allotment tenants”. John Pegg, Lostwithiel Resident, ex-Town Councillor, Chair National Flood Forum

In Lostwithiel the community had not been prompted to, but thanked the offenders at the end of the programme. This had a huge impact: one offender was particularly hard to motivate and work with; however, after returning to work in the community after some leaf clearance they had done in the previous weeks he was talked to by a local family. They chatted for half an hour as the family thanked him for his efforts, telling him that they felt it had directly protected their home from flooding in the last rain event. They told him how important his work had been in preventing flooding in their home. This particular offender, formerly intimidating and difficult to work with, was moved to tears from their thanks telling Luci Isaacson (Director of Climate Vision) and a local journalist:

“Nobody has ever thanked me for anything in my entire life”.

“It has made me think a lot about things I have and I have decided that I would really like to do some voluntary work in the future to help more people.” Phillip, 19, offender from Padstow

“At first they hated the work, working in the rain every Sunday. After a few weeks they started to become interested and discussing the absolute logic of the work they were doing. ‘If the drains are blocked, course it’s going to flood.’ Eventually they became very proud of their work and could understand the cycle through learning about composting the leaves. By the final week, they were considering themselves super heroes as they knew that had stopped flooding, this they discussed alongside discussions about ‘atmospheric rivers’ and all sorts of interesting stuff”. Luci Isaacson, Director: Climate Vision

Media interest in the project has been significant. The news story was taken up in the local newspaper (the Cornish Guardian) and by the BBC on at least 3 occasions, twice locally and once nationally.

An estimated 105 Offenders on Community Payback have undergone ‘Safe working on the highway’ training, also composting, flood prevention and climate change training.

During the project one Met Office Amber Alert/ Warning was issued for 22/12/13, but coincided with the traditional Probation Service Holiday break. Nonetheless, two teams were still mobilised especially to attend the three sites on that day (as planned for in the Drain Clearing Schedule). 94 bags of leaves were removed from the selected sites that day. This helped prevent rainfall proceeding down the hills notorious for contributing to flooding.

A total of 9 tonnes of leaf litter was gathered during Autumn/Winter 2013/14 and is being composted for use as a mulch during 2015.

Case studies

Case Study 1

Community Flood Prevention – The Leaf Litter Project

Background

Blocked drains and leaf litter are common themes in flooding. Defra's 2007 Pitt Report identified a need to reduce the risks of floods, have a better understanding of each local authority's drainage system and ensured clear responsibility for the systems is held by the local authorities. Upon interview about the 19/11/2010 Lostwithiel flooding event, two residents felt leaf litter had played a significant role.

Drain clearing, the responsibility of the Highways Authority, is expensive and labour intensive. In 2011 Climate Vision voluntarily approached stakeholders to bring together expertise, training and manpower to create a project to remove autumn leaves covering drains and turn them into a valuable resource, in a bid to help alleviate surface water flooding from mid-September 2011 to mid-December 2011.

In 2013/14 and 2014/15 Pathfinder funding enabled roll-out of the project to three sites in order to gather data and produce a report and toolkit for use in other areas from mid-October to mid-January.

What did we do?

Climate Vision designed and managed delivery of the project. Having identified drains susceptible to blockage by leaf debris during autumn, flood impacted sites were determined through community discussion and witnessing landscape response to rainfall events.

Climate Vision consulted Cornwall Council's Highways Authority, Devon & Cornwall Probation Service, The Environment Agency, Lostwithiel Town Council, Par & St. Blazey Town Council and Cornwall Community Flood Forum to produce a routine drain-clearing schedule for the three communities along with a response plan to minimise the impact of extreme weather events likely to lead to flooding. Having studied the catchment area the final schedule was based on:

1. Area of the road most likely to have drains covered in leaves
2. Ability to clear all three sites and deposit leaves to compost site in one day
3. Ease of transporting workers safely from site to site
4. Ability to respond outside of normal clearing schedule

Climate Vision ensured the local media were very well engaged with the project, in line with the Pitt Report's recommendation for related public information campaigns.

What were the objectives and how were they met?

- To reduce surface water flooding events.
- To inspire and reform Community Payback Offenders
- To provide a 'toolkit' to use nationally

What were the outputs and outcomes?

In liaison with stakeholders, Climate Vision:

- identified drains susceptible to blockage by leaf debris
- produced a routine drain clearing schedule
- managed working methods to include, training, equipment and PPE
- Produced interim & final reports including evidence of improved flood resilience.

Outcomes

- There has since been no surface water flooding in the areas
- Offenders valued their work as members of the communities thanked them
- The Highway Authority gained free and effective labour
- The Probation Trust benefitted from a highly visible work stream and reduced re-offending
- Stakeholder partnership working has successfully increased
- A “toolkit” has been produced to ensure replication in other communities.

Lessons learnt

- The media easily grasp the community thanking the offenders as a ‘good news’ story’
- One single town Councillor didn’t like the leaf litter being mulched at the local allotment and it resulted in the demise of the project at an entire site.

Conclusions

Would you do this again? Yes

- What would you improve? Policy to ensure this sustainable way forward was made known to local councils and support to ensure continuity.
- Would you recommend someone else to do this? Yes

Case Study 2

The Development of the Cornwall Community Flood Forum

Background

The Cornwall Community Flood Forum is a community-led initiative committed to supporting communities, households and businesses at risk of flooding. It brings together organisations with statutory flood management responsibilities, Parish and Town Councils, local flood groups, businesses and individuals with an active involvement in flood risk management. It was established as an immediate response to widespread flooding throughout mid Cornwall in November 2010 when more than 300 households and businesses were affected.

The extent of the flooding took in 15 separate communities. Following the floods Cornwall Council and the Environment Agency established two Flood Recovery Groups, between them incorporating all 15 communities, which met monthly to oversee the recovery stage and involve the communities in the process. These groups fed back via their Chairs to a strategic Steering Group represented by Cornwall Council, the Environment Agency and South West Water. Through the Flood Recovery Groups community newsletters were issued, community flood groups were established, significant improvements were made to the flood infrastructure and eligible properties received individual property protection funding.

Rather than dissolve the Flood Recovery Groups it was decided that the knowledge, skills and experience should be retained to assist other communities throughout Cornwall and maintain an ongoing focus on flood risk. In October 2011 a constitution was drawn up to create an association

in the name of the Cornwall Community Flood Forum. During its first year of operation the Cornwall Community Flood Forum secured £16,350 in funding. This money was used to support a range of community based initiatives including: the training and equipping of community flood wardens, the production of information for households at risk of flooding and the hosting of a conference that brought together all stakeholders for the first time. In its second year the Cornwall Community Flood Forum became the lead delivery partner for Cornwall's Defra funded Community Flood Resilience Pathfinder.

What did we do?

The Cornwall Community Flood Forum has an interest in all flood related activities within Cornwall. It is guided in particular by the following aims:

- Supporting communities in becoming better prepared
- Raising flood awareness within Cornwall
- Promoting partnership approach to flood risk management and community engagement

The Pathfinder bid appraisal focussed on highlighting the integrated nature of flood risk management in Cornwall brought about as a direct result of the formation of the Cornwall Community Flood Forum. It was agreed from the outset that for the Cornwall Community Flood Forum to develop further it would need to have its own dedicated officer support.

What were the objectives and how were they met?

Local Authority compliant recruitment process for Coordinator.

Diarise, plan and support events.

Capacity building activities for Cornwall Community Flood Forum.

Consultation exercises with members, management committee and Parish/Town Councils.

Commission a consultancy report on Cornwall Community Flood Forum's future role and governance by 'Social Enterprise' MSc students at Exeter University (Penryn Campus).

Cornwall Community Flood Forum Management Committee to act on the basis of the information and advice obtained and the guidance of the membership.

What were the outputs and outcomes?

Planning and supporting events for the Cornwall Community Flood Forum. This included 2 x AGM/Conference events and a series of 10 x Community Emergency Planning Workshops.

Capacity building activities for Cornwall Community Flood Forum such as: the promotion of flood resilience through the production of press releases, media interviews and radio appearances, increasing the Cornwall Community Flood Forum's presence on social media.

Consultation exercises with Cornwall Community Flood Forum members and Parish/Town councils.

Advocating on behalf of communities and liaising with relevant Flood Risk Authorities in order to find affordable and realistic solutions to flooding issues.

Identifying a revised structure for the Cornwall Community Flood Forum that recognises its greater role in delivering community resilience solutions.

Outcomes

A growing willingness of communities to develop safe and responsible community based resilience structures.

Communities better informed on matters relating to flood resilience.

Cornwall Community Flood Forum acts within Cornwall and beyond as a powerful voice in support of improving community flood resilience.

Lessons learnt

Conclusions

- A multi-partner organisation operating at Lead Local Flood Authority level is needed to bring communities, authorities and other interested parties together and drive communication.
- The value of two-way communication between the members and the authorities should not be underestimated.
- As well as representation from the relevant flood risk management authorities in the area, it can influence where funds are invested in flood relief. Ultimate success is reliant upon identifying and supporting strong and committed volunteer champions within the management structure of the Forum.

Economic benefits

The economic benefits of community engagement and increased resilience are best showcased through the direct benefits that have been seen within the Par, St Blazey and Lostwithiel area of Cornwall.

As a direct result of the community being seen as receptive of support, it is estimated that in the past two years it has benefitted from an investment of over £2.5 Million through a range of initiatives and infrastructure improvements. This has included the installation of property level protection, the clearing and improving of watercourses and the decision to pilot initiatives such as the Leaf Litter Project, and support with the formation and equipping and training of flood wardens. On the basis that in 2010 more than 300 properties in this part of Cornwall flooded, it is estimated that those floods will have cost the insurance industry and residents in the region of £10 Million. The fact that no major flooding has occurred in the area since (anecdotally, the area would certainly have flooded as badly if not worse during winter 2013/14), the economic case for community-led resilience activity is clearly demonstrated.



Lessons from the Pathfinder Project

As a Unitary Authority Cornwall Council is not only the Lead Local Flood Authority, it also has responsibility as: Highway Authority, Land Drainage Authority, Planning Authority, Emergency Management Authority and Coastal Authority.

Whilst there are no District level authorities in Cornwall the Council must also work closely with the Environment Agency, South West Water, The Highways Agency and individual land/property owners in the management of flood risk. The County was one of the first to publish its Flood Risk Management Strategy:

The Strategy, which can be found on the Cornwall Council web site, embraces early learning from the Pathfinder project and the role of the Cornwall Community Flood Forum. In addition, many other organisations, public and private bodies and groups have a role to play in delivering the County's Flood Risk Management Strategy. At the heart of the Cornwall Pathfinder has been co-delivery with the Cornwall Community Flood Forum. Cornwall Council is fully committed to supporting this group to ensure it maintains its capability to provide guidance and assistance to local groups and town or parish councils to respond to flooding emergencies and to be resilient to flooding. It also provides a link to the National Flood Forum.

An early decision was made about the appropriate 'skill set' for the Project Manager, also the strategic positioning of the post within the project structure. A background in community development and volunteer support along with an understanding of local government and flood risk from a layman's

perspective were considered far more relevant than a technical or civil engineering background. It was decided that the individual would be directly employed by Cornwall Council, but would provide officer support to the Cornwall Community Flood Forum to enable its development as an organisation as well as to administer those aspects of the Pathfinder to be delivered in the name of the Cornwall Community Flood Forum. As the largest rural Unitary Authority in the country, it was also vital to ensure the appointee was appropriately job titled and strategically positioned to access the relevant technical officers and Council Members. The post was established as the 'Community Flood Resilience Manager' with line management placed within the Localism service within the Chief Executive's Department. This ensured a direct link was in place with Parish and Town Councils as well as the County's Community Network structure and the individual Electoral Division members. However, in order to ensure a direct relationship was maintained with the elements within the Council responsible for the Lead Local Flood Authority functions, the Pathfinder budget was lodged within the Land Drainage team that sits within the Environment Directorate. This provided the Project officer with access to the Environment Portfolio Holder and relevant technical officers of Cornwall Council. The status and positioning of the Project officer enabled him to have a 360 degree view of flood risk in Cornwall and easy access to key individuals within Cornwall Council, Highways, South West Water, the Environment Agency and the community.

The vision for flood risk management in Cornwall is closely aligned to what we have learnt during our Pathfinder. Cornwall Council will aim to manage flood risk so that no new flood risk is created and flood risk is reduced wherever possible. This will help to reduce the number of people, homes and properties at risk of flooding.

- Cornwall Council will work with its communities and other Flood Risk Management organisations to

manage the likelihood and impact of flooding for the benefit of our communities, visitors, businesses and environment.

- With the assistance of the Cornwall Community Flood Forum, Cornwall Council will support local people and businesses to take part in managing the risks that affect them.
- With the help of the Cornwall Community Flood Forum, Cornwall Council will coordinate information sharing and emergency plan making.

Building on what we have learnt and developed during our Pathfinder we intend to ensure that:

- All communities with significant flood risk develop and apply a Community Emergency/Flood Plan that

helps to safeguard vulnerable residents during an emergency. These plans will be underpinned by the Cornwall Community Flood Forum's Community Resilience Toolkit and wherever possible be delivered within the community by teams of properly trained and equipped volunteers.

- Communities living and working in areas at risk are represented on local Flood Risk Management Partnerships. They are involved in community resilience initiatives and the views of those living and working in areas at risk are represented. As a result householders, businesses and communities better understand and manage any flood and coastal erosion risks they face.



How to recommendations

Activity	Developing a Community Property Level 10 - Point Action Plan
Audience	The direct audience is those in the community who have flooded in the past or believe that they are at risk of flooding. The indirect audience is all those within the community believed to be at flood risk, including those who are less cognisant of the risk.
Who can deliver	A local flood group or Parish/Town Council, ideally facilitated by an individual from the Lead Local Flood Authority, the Environment Agency or perhaps an appropriately skilled and experienced volunteer 'Flood Ambassador'
What	Identifying 10 things that residents in the community could do on an individual level to maximise their resilience to flooding
Method	The 10 point plan can best be developed by holding a focus group of those who have either been flooded or understand the communities flood risk. It may help for the facilitator to provide some example actions that may go into the plan. The group can then discuss these actions and suggest some of their own. Finish by agreeing the most important 10 actions. It is helpful if the facilitator can promote awareness of a community flood plan as one of the 10 'actions' to be adopted.
Resources	The facilitator or someone in the group will need to turn the 10 point plan into a presentable single page document that can then be printed and delivered to each at risk property within the community. Ideally, delivery should be by members of a flood group who have sufficient understanding of the actions to be able to support and advise residents who require further assistance. Whilst costs can be minimal, if the 10 point plan is produced in an attractive format personalised to the community with photographs and containing a brief outline of the community flood plan on the reverse it will engage the population more. An encapsulated colour A4 document, perhaps with a few photographs that link it to the community will encourage residents to keep the plan to hand.
Outcome	Through the use of community volunteers to distribute the plan, property owners will become familiar with their local flood wardens and will be motivated to carry out at least some of the actions in the plan.

Risk Table

potential risks	likelihood	impact	mitigation
Lack of volunteers for focus group	Low	High	Adequate promotion of initiative and if need be a 'one to one' approach to ask people to participate.
Residents ignore the action plan once produced	Medium	Medium	It is clearly up to individual property owners to engage with the plan. However if presented in an attractive readable document by local volunteers able to promote it as a locally relevant document it will stand more chance of being embraced.

Activity	Community Flood Plan Workshop
Audience	The primary audience is members of Town and Parish Councils who the local authority wishes to encourage to draw up a Community Flood Plan. The audience could be extended to encompass individuals who wish to lead on a community plan but are not directly supported by their local council. It may also promote the drafting of non-flood specific community emergency plans.
Who can deliver	Delivery of the workshop requires a partnership approach between the appropriate local authority teams, Emergency Planners, relevant voluntary sector organisations and the Environment Agency Flood Resilience team.
What	A workshop style event comprising brief presentations and round table topical discussions.
Method	<p>These are held as a series of events covering the geographical area of responsibility notified well in advance. The workshop will focus on up to six topical aspects of developing a community flood plan with a lead partner nominated for each topic. Popular topics may include:</p> <ul style="list-style-type: none"> ● Getting a plan off the ground – finding a suitable person in the community to lead the plan and drive it forward ● Identifying ‘the community’ – It could be a village, street, part of the town, estate, business park ● The bare bones of a community emergency/flood plan ● Recruiting, motivating and retaining volunteers ● The potential roles and responsibilities for volunteers ● Setting up an emergency rest centre ● Testing ‘the plan’ <p>After an initial introduction, the delegates are split into groups and will cover all the topical areas. Allow 25 minutes per session with a 5 minute introduction by the topic lead. Rather than the delegates move between sessions, it is more expedient for the topic lead to move between the delegate groups.</p> <p>The event should end with a plenary session.</p>
Resources	The main resources are suitable venues to host the delegates and the engagement of the key partner organisations to support the events. Fundamental to their success is the attendance at each event of individuals who have already produced plans within their community and current flood wardens and volunteers. It may be necessary to budget for the expenses of these volunteers on top of any local venue hire and staff costs. Basic refreshments such as hot drinks and biscuits should also be provided.
Outcome	The event should act as the catalyst for communities to begin drafting their flood/emergency plans. Furthermore advanced workshops may be needed to support the progression of the plans.

Risk Table

potential risks	likelihood	impact	mitigation
Poor attendance	Medium	Medium	Timely promotion of the events to accommodate the lead time needed by Parish/Town Councils which normally only meet Monthly. Also the scheduling of events both during the daytime and evening to accommodate the preferences of attendees

Activity (obj)	How to start a Leaf Litter Project
Audience	A Town or Parish Council to identify a volunteer to undertake the autumn project with partners (Highways, Probation). Once their approval is gained, having previously circulated the Report and presented on the toolkit at the meeting, set up meetings with local Probation Officer, Highways Authority, Environment Agency and Local Flood/Community Group.
Members of the community can deliver	<p>The Report and Toolkit is designed to allow partner supported volunteers with project management experience to undertake the project, potentially with some expert help. The volunteer will be driven and may benefit from the sale of the mulch the following year.</p> <p>Training of Offenders in Flood Prevention & Climate Change is essential to value of the project and would need to be paid for by the Probation Service or undertaken by the volunteer having researched the subject.</p> <p>Training of Offenders to work in the Road by the Highways Authority is expected pro bono in return for clearing the highway. In return Probation are expected to supply workers free of charge for the value of the training.</p> <p>Training of Offenders to learn about composting is expected to be done voluntarily by a local gardener or municipal Parks Department who can benefit from the mulch.</p>
Following the Toolkit	<p>Identifying the Sites, Feasibility and Risk Assessment</p> <p>Assembling the Workforce</p> <p>Emergency Response</p> <p>Disposal / Composting</p>
Method	<p>The toolkit is designed to identify key steps needed to reduce flood risk in communities at risk from surface water flooding caused by leaf litter obstructing proper drainage.</p> <p>Starting in July, with effective engagement with the community and strong working relationships with professional partners: getting offenders trained and ready to start work on routine and emergency leaf litter clearance during the autumn is highly achievable.</p> <p>Getting Started: Scope the Project</p> <p>As communities are usually the first to identify the need for local flood prevention, community engagement is essential. Local knowledge from the community is necessary so, bring together all the outside expertise and manpower, having clearly identified the initial scope of the project to effectively improve drainage and reduce flood risk.</p>
Resources	<p>This could be financial. However, our aim is to embed successful activities within the delivery organizations and they are a normal part of their role rather than as an additional (nice to do) project requiring funding.</p> <p>Once the preparation has been done once, contacts made and sites identified maintaining the project year on year will require less resource.</p> <p>The value-swapping exercises that combine to make this model effective also make it cost effective, potentially cost-free. Training budgets within the Ministry of Justice could ensure Climate Change Training is delivered. Revenue generated from the by-product the mulch, could provide a bonus to the volunteer project manager.</p>

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Outcome

What should happen and how will you know it worked.

Primarily, the project should be successful in clearing the drains of leaf litter and in making the community more resilient by increasing their awareness of flooding risk management.

Since the original project has been running there has been no surface water flooding at the selected sites that normally flood. Residents were convinced of the success of the project in helping to increase roadside drainage and reduce surface water flooding as a result.

Offenders should gain the opportunity to really understand the importance of their work to the local communities in which the project was run. Previously this came from members of the communities thanking the offenders and telling them about their flooding experience within the community.

The Highway Authority gained free and effective labour to perform valued highway maintenance work.

The Probation Trusts benefit from a work stream that is highly visible to the public to engage offenders on their Community Payback Scheme and according to the original product has reduced re-offending rates.

The project successfully increases partnership working between public sector organisations and also created some excellent publicity for those organisations through the promotion of the project by Climate Vision, which could in turn be done by the volunteer.

The toolkit should ensure the model can be replicated in other communities, where flood risk of this nature is an issue.

Risk Table

potential risks	likelihood	impact	mitigation
Working on the roadside has inherent risks and to maintain a strong ethos on health and safety.	High-Medium	Fatality/ Injury, residual Risk – Low	With stakeholders, Climate Vision produced a Method Statement, Risk Assessments and a Training package. This ensured the correct personal protective equipment requirements were used in the project and health and safety requirements were met.
Co-ordination of the partners	Medium	Failure to prevent flooding	Keeping stakeholders communications as needed

Project legacy

At the beginning of the Pathfinder, the Cornwall Community Flood Forum was a fledgling organisation with the status of a 'members association'.

Financially it had secured £16,000 comprising £10,000 in Lottery Funding and a further £6,000 in donations from commercial and public organisations with an interest in promoting flood resilience. Whilst these funds enabled significant development of the Cornwall Community Flood Forum and the promotion of the Flood Resilience message within mid-Cornwall, without officer support its capacity to deliver was very limited. The capital injection of £238,000 for the Cornwall Pathfinder, almost half of which was specifically targeted at the development of the Cornwall Community Flood Forum will, by March 2015, have enabled the fledgling organisation to incorporate and fund a paid officer to ensure the continued delivery of many aspects of the Pathfinder into the future.

It has also enabled the Cornwall Community Flood Forum to develop Intellectual Property, in the form of the Flood Resilience Toolkit, to secure its financial viability and roll into the future.

Ongoing flood risk-related activities

In addition, Cornwall Community Flood Forum will be undertaking the following activities in Cornwall (this list is not exhaustive):

- Cornwall Community Flood Forum will continue to develop its 'Community Resilience Toolkit'© and is currently a partner in a tri-partite bid to the National Lottery – Reaching Communities Fund for a substantial project to roll this out regionally.
- Cornwall Community Flood Forum will maintain its relationship with the Lead Local Flood Authority (Cornwall Council), the Environment Agency and South West Water to act as a bridge between communities and the authorities.
- Cornwall Community Flood Forum will sit as a member of the Cornwall Council led 'Community Emergency Plan (CEP) Management Group. In this capacity it will assist Parish/Town Councils and other formed groups to draft and deliver the flood risk element of their CEPs, including support with the recruitment and training of volunteers.
- Cornwall Community Flood Forum will assist the Lead Local Flood Authority and the Environment Agency with the promotion of Flood Awareness and Resilience messages through communication with its membership and the wider community.
- Cornwall Community Flood Forum will, if called upon, act as an independent advocate to help resolve disputes and disagreements between residents and the authorities in relation to flood risk matters.
- Cornwall Community Flood Forum will maintain a Web site www.cornwallcommunityfloodforum.org.uk and Social Media presence on Facebook and Twitter. It will also build upon the domain <http://getfloodready.org/>

Supporting community resilience

This work package has the potential to create a legacy of national significance should the bid to roll out the Community Resilience Toolkit model to a countrywide audience through the National Lottery – Reaching Communities Grant succeed. Even without the support of a 'Reaching Communities' grant, Cornwall is now equipped to support the establishment and training of volunteer groups to deliver community flood plans. It is anticipated that this will also enable the toolkit to expand from the current six flood related training modules to encompass other community emergency scenarios and needs. These may include snow and ice, pandemic flu or setting up an emergency rest centre. If not funded directly to share the toolkit, the Cornwall Community Flood Forum will use the Intellectual Property rights to the material produced to licence its delivery outside the County at reasonable cost to share

the best practice it has developed and provide an income stream to sustain the organisation.

Developing the Cornwall Community Flood Forum

A fundamental legacy of the Pathfinder is the evolution of the Cornwall Community Flood Forum. Not only has the pathfinder created a sustainable model in Cornwall for the delivery of Community Resilience devolved from the Local Authority, the successful model has been seen by other areas as something to aspire to. We will continue to support other areas wishing to set up a local forum on similar lines and will continue to present on this subject at national conferences. For example we will be presenting at the 'Inside Government' sponsored 'Reducing the Risk and Impact of Flooding in the UK' Conference in London in May 2015.

Raising flood awareness

Building on the awareness raising activity that we have carried out over the course of the Pathfinder we have learnt what the people in Cornwall at risk of flooding want to know and how they can best receive that information. Our 'What to do and how to stay safe' booklet is now available on-line and for mail out within Cornwall and has been augmented by a range of other professionally produced products that will be deployed by the Cornwall Community Flood Forum on behalf of the Local Authority.

Household resilience plans

The exercise of working on a one-to-one basis with two communities in Cornwall that were vulnerable to flooding but totally unprepared for the consequences has taught us techniques for community working in this area of risk. It is also interesting that the communities being approached by Cornwall Community Flood Forum provided a 'will' to help themselves that previously didn't exist when being encouraged to make plans by the local authority or the Environment Agency. The ability to sit down with a focus group and for them to work out the 10 most important things for their community's resilience gave them a feeling of ownership and empowerment and the Cornwall Community Flood Forum will share the learning from this as well as employ the techniques when engaging with other communities.

Business and town centre resilience

The legacy of this work package is limited, to one of learning. We now have a better understanding of how unprepared small businesses (the majority of businesses in our towns) are in terms of business continuity planning. It was astonishing that there was no appetite amongst the businesses for training or support, even when offered free of charge. Also the expectation of businesses that 'everything will be done for them' proved disappointing. The Pathfinder has highlighted the challenges the Local Authority faces improving small business resilience. Lack of resilience was also highlighted as a major issue by the Federation of Small Businesses in Cornwall having consulted their four thousand members. Subsequently, Cornwall Council is now leading on a series of Business Continuity packages for the wider business community (accepting that it is wider than flood risk) and will be rolling this out in partnership with the Local Enterprise Partnership, the Federation of Small Businesses and our own business links.

Catchment management

The main legacy of this work package is a demonstration to Defra on how, with a little lateral thought, a small grant scheme can protect a number of properties in an innovative way. The scheme was launched just before the Repair and Renew Grant and because we designed it and 'wrote the rules' was flexible in tackling the 'cause' of the flooding beyond the affected properties boundary rather than providing traditional Property Level Protection. It also focussed on an area where the authorities have no statutory enforcement powers. It highlighted how there is a need to address centrally the challenge posed by disputes between neighbours, particularly when the victim of the flooding is at a disadvantage coming up against a wealthier more powerful neighbour.

Monitoring rainfall

Whilst we didn't achieve the total number of rain gauges anticipated, the legacy is that the public in Par/St Blazey and Bude are now better informed and able to respond quickly to flash flooding and heavy rainfall. The full benefit of the monitoring is yet to be tested but it is hoped that once it has been proved that a community can benefit from direct access to relevant telemetry; it

will encourage more communities and flood groups to seek funding for their own gauges.

Leaf litter clearing

It is an unavoidable fact that local authority funding for drain clearance struggles to keep pace with demand during the autumn 'fall', particularly in areas where drains can become blocked within a matter of only hours. Our contractor Climate Vision has been able to clearly demonstrate a cost effective model for handling the consequences of autumn leaf litter in vulnerable catchments. In addition to 'proving the model', Climate Vision has produced a 'Toolkit' that can be adopted by any community using either a volunteer, or as in our case 'Community Payback Offender' workforce. The toolkit is scalable and could equally be utilised by a couple of volunteers in a small hamlet or in an area within a town centre under the direction of the Town Council. Through publicising the Leaf Litter Project we hope to see further groups empowered to tackle their own leaf litter problem during the autumn of 2015 and beyond.

Grant allocation and other funding

Cornwall received a Grant from Defra of £238,000 to deliver its Pathfinder. £110,000 of this sum was allocated to the development of the Cornwall Community Flood Forum and included the employment and 'on' costs of the Project Manager who was employed by Cornwall Council. Funds also covered the day-to-day running costs of the organisation, two combined AGM/Conferences and the legal advice and costs leading to its eventual transition to a robust incorporated structure with sustained officer support into the future. Essentially, the Pathfinder funds have ensured security for the Cornwall Community Flood Forum for the foreseeable future.

Other examples of expenditure include:

The employment of professional trainers employed by a local Voluntary Sector organisation to design, accredit and deliver training in the community accounted for £15,000 with a further £7,000 being spent on the design and production of six different training booklets in two editions, including small scale print runs of the first edition booklets and a print run of 300 copies of each of the second edition booklets.

The general awareness raising campaign has seen expenditure of £25,000. In addition to utilising the services of a professional marketing company, 10,000 Cornwall Community Flood Forum booklets have been produced titled 'Help and advice to be prepared and stay safe', each booklet comes with a plastic credit card size information card. We have also produced two films, held 10 events to support the development of community flood/emergency plans and funded 'boosts' on our Social Media activity.

The leaf litter project which not only involved supporting the communities, but also the research and development of a tool kit accounted for £20,000 in the first year and we were able to replicate delivery during the second year and update the 'toolkit' for a further £7,200.

A total of six Runoff Alleviation Grants were awarded at a total cost of £22,067. These grants enabled both home owners and one business to become more resilient to flooding although not eligible for support under the Government Repair and Renew Grant Scheme.



If you would like this information in another format or language please contact:

Cornwall Council
County Hall, Treyew Road
Truro TR1 3AY

Telephone: 0300 1234 100
Email: enquiries@cornwall.gov.uk
www.cornwall.gov.uk

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