



Evidence

Investigating an analytical methodology for
evaluating behaviour change projects

Report: SC080017/R3

Resource efficiency programme
Evidence Directorate

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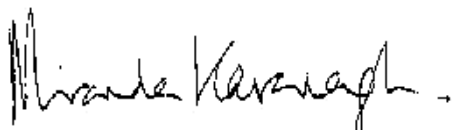
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Miranda Kavanagh
Director of Evidence

Executive summary

This report describes initial research investigating the feasibility of applying a new evaluation methodology to Environment Agency initiatives for promoting behaviour change.

This research was carried out in the context of the Environment Agency's wider objective to develop a methodology for evaluating projects and interventions aimed at improving or supporting sustainable behaviours. A new evaluation approach would provide a way to learn from these interventions, promoting good practice, gaining insights and informing future work.

The evaluation methodology used in this research was based on the '4Es' behaviour change model used in the UK Government Sustainable Development Strategy (HM Government 2005). This model identifies four major factors needed to catalyse behaviour change: *engagement* of those whose behaviour the intervention is seeking to change; measures to *encourage* and to *enable* them to change; and *exemplifying* evidence that others are also committed to taking action.

This approach was tested on case studies of past behaviour change initiatives within the Environment Agency, ranging from flood risk preparation to farm waste management. Radar diagrams were used to provide a visual display of the contribution of each type of intervention to the overall success of the behaviour change initiative.

The research was in two phases. In phase 1, the major factors of *engage*, *enable*, *encourage* and *exemplify* were divided into 19 types of behaviour change intervention. After testing with five case studies, the methodology was reviewed and simplified. The second phase used phone discussions with project managers to test the methodology with practitioners and evaluated the following three case studies in more detail.

- Increasing flood preparedness in the Thames Region.
- Reducing fly-tipping and improving the urban environment on the Fairyland estate, South Wales, in 2002.
- Encouraging sustainable management of flood risk among caravan and camping site owners in South West England during 2008.

Phase 1 results

- Rather than representing the *effort* on a particular factor, more insight was gained by measuring *performance*, defined as the extent to which each intervention contributed to changing behaviour. However, this approach raised challenges in terms of evaluating how different stakeholders determined success for each project, and how much time is needed before change can be measured.
- By using a radar diagram, all 19 intervention types could be visually displayed and projects could be directly compared. However, radar diagrams with so many factors were difficult to read, particularly if only a small number of factors were truly significant. By later simplifying to just eight types of intervention, the visual display became clearer, while still allowing projects to be compared.
- The method involved subjective judgements, both in selecting significant factors and in scoring project actions against these factors. It was noted that the value of the radar diagram method as an evaluation tool could be significantly increased if the conditions before the project could be

compared with the conditions at the end. Phase 1 also relied on write-ups of the case studies by others who were limited in their ability to judge effectiveness, but Phase 2 involved practitioners directly.

Phase 2 results

- The tool was easy to use and with support the questions could be answered in under an hour. Once users understood the concept of the '4Es' model and behaviour change, they could interpret the results of the tool themselves.
- From the discussions with practitioners, the factors on *enable* and *engage* were easiest to understand. Approaches to *encourage* (ranging widely from taxation to social encouragement) were initially harder to understand, but seen as important when understood. Practitioners found *exemplify* hardest to evaluate, as it was difficult to quantify consistency with policies and how this affected behaviour change.

Conclusions

- Practitioners found the tool a useful way of thinking about the work and one practitioner suggested that the tool could prove useful in helping to design interventions.
- The radar diagrams were felt to be useful as representations of the information captured by the tool, but not for use on their own. In many cases, practitioners felt that one or several components were most important in catalysing change, and that the diagram fails to capture this importance. The diagram may also lead people to think that success depends on employing as many approaches as possible, which may not be the case.
- The evaluation tool was found to give robust results about the nature of the behaviour change intervention, helping practitioners to think about and make sense of what had happened.

Recommendations

- The tool should be promoted as a design tool for use by Environment Agency staff that are starting projects with objectives that include promoting more sustainable behaviours.
- If the tool is used at the design stage, it is recommended that project staff use the same tool to check how far the project has pushed progress in the factors contributing to behaviour change.
- By systematically collecting this kind of information, Environment Agency staff could improve their understanding of behaviour change interventions and thereby allow the Environment Agency to increase its impact in this field.

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1 Background

One of the barriers to improving Environment Agency initiatives for promoting behaviour change is uncertainty about how to assess the quality and benefits of this kind of work. The Environment Agency is seeking to develop a methodology for evaluating projects and interventions aimed at improving or supporting sustainable behaviours. A new evaluation approach would provide a way to learn from these interventions, thereby promoting good practice, gaining insights and informing future work.

The '4Es' behaviour change model identifies four major factors needed to catalyse behaviour change: *engagement* of those whose behaviour the intervention is seeking to change; measures to *encourage* and to *enable* them to change; and *exemplifying* evidence that others are also committed to taking action. While this model provides a good description of the components of behaviour change processes, little work appears to have been done on whether and how the 4Es could be used to measure and evaluate the effectiveness of initiatives and to identify good practice.

This report describes the initial research conducted by Collingwood Environmental Planning (CEP) to investigate the feasibility of applying an evaluation methodology based on the '4Es' behaviour change model used in the UK Government Sustainable Development Strategy (HM Government 2005).

2 Methodology

The methodology being tested used **radar diagrams** (also known as spider charts or star charts). Radar diagrams structure concepts along axes representing specified variables. Researchers can then map where any particular object of study falls along each axis and produce a composite profile by joining up the points on the axes to create a polygon (Schultz 2009).

Radar diagrams are used to make comparisons in a range of contexts. Figure 1 shows a complex radar diagram developed for the European Prelude project (European Environment Agency) to explore five contrasting yet plausible environmental scenarios of future changes in land use and European landscape. The axes describe 20 significant drivers for change identified by stakeholders; the shaded area gives a simple diagrammatic representation of one of the scenarios.

It is important to note that radar diagrams do not give a precise output: they are a visual tool that allows relative comparisons to be made across a number of cases. They help to articulate characteristics or values of interest in comparative work (Schultz 2009).

European Prelude Project

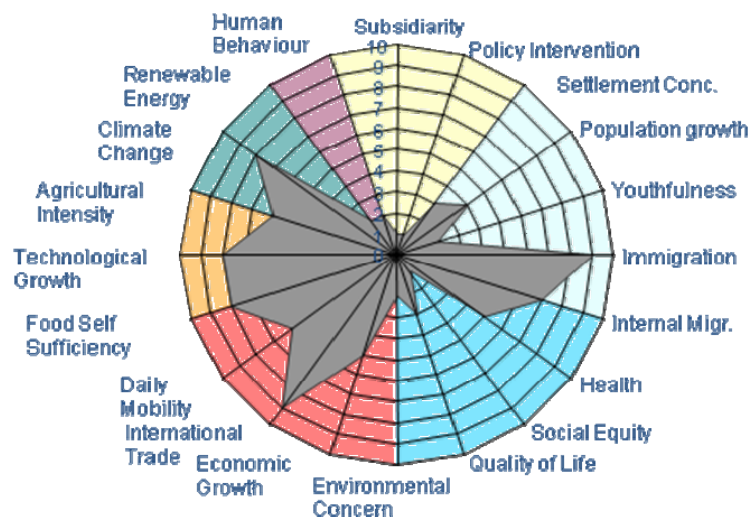


Figure 2.1 Radar diagram of scenarios for future changes in land use and European landscape.

Another application is the development by the UK Department for Environment, Food and Rural Affairs (Defra) of a tool called ‘Stretching the web’, which uses a spider chart to help staff integrate sustainable development into their policy-making, as well as into project or programme work. The chart takes its questions from the checklist of specific impact tests in the Better Regulation Executive Impact Assessment (IA) (Defra 2009).

In developing a behaviour change evaluation methodology, we used a radar diagram with axes that represent the variables intended to catalyse behaviour change. Figure 2 shows Defra’s ‘4Es’ model (HM Government, 2005). In this, each of the Es represents a single axis, but the diagram also provides a list of sub-variables under each heading.

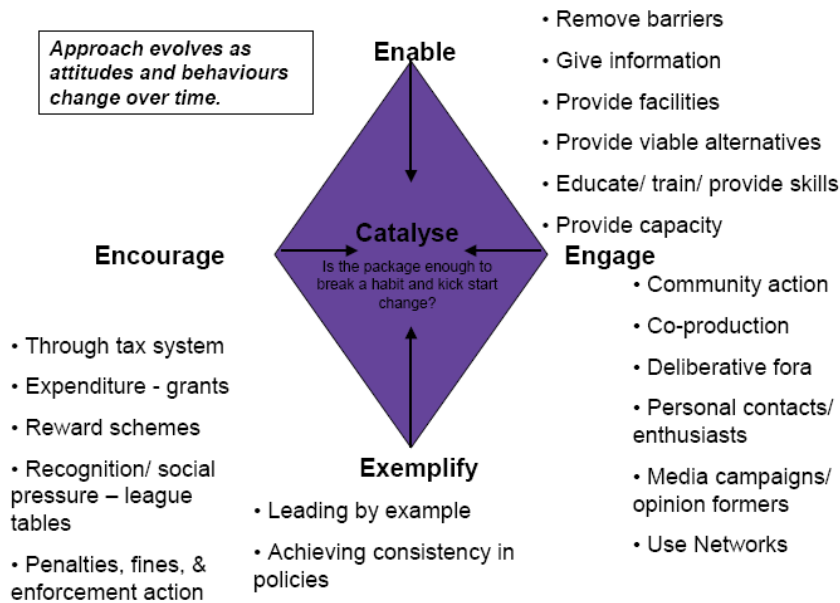


Figure 2.2 UK Government behaviour change model (HM Government 2005).

Given that the '4Es' methodology is not intended to give a precise score for performance against the behaviour change variables, a simple scoring system (Low – Medium – High) was chosen to plot where each case study intervention falls along each axis or variable. The points on each axis could subsequently be joined up to form a polygon whose overall area and location in relation to the behaviour change axes would give an idea of the focus of the intervention (e.g. was it skewed towards one or more of the behaviour change variables?). It would also allow comparisons of the conditions at the start and end of the intervention and of the focus and impact of different interventions.

An early question that arose in developing the methodology was the need to define more clearly the purpose of the diagrams.

- If the points on the axes represent the extent of action on a particular variable (for example, the resources – such as staff time – invested in particular types of action), the diagram will simply *quantify* that *effort*. Such a diagram could perhaps be useful as a design tool, allowing staff to compare how much overall change (stretching of the web) could potentially be achieved by investing in action on different variables. But it probably couldn't contribute much to evaluating the effect of an intervention.
- In order to plot *performance* against the variables, a qualitative judgment will have to be made about the extent to which the different measures taken as part of the intervention have contributed to changing behaviour. This raises a number of challenges.
 - The timing of the evaluation: how long do you need to wait after an intervention to see whether behaviour change has occurred and been maintained? Does this vary for different types of project?
 - Who makes the assessment? Different actors in the project (project team, target population, other stakeholders) may make different assessments of how successful the intervention has been and the factors that contributed to or hampered success.

- If the variables (axes) need to be the same for different projects in order to make comparisons is there a risk of leaving out variables that are significant in an individual project but aren't represented on the axes? Does the definition of the axes properly represent the relative importance of each variable?

3 Case study testing: Phase 1

The Environment Agency provided a number of case studies for testing the model. These case studies were reviewed to see which provided enough information for populating the model. The following case studies were selected for the first round of testing.

- **Landfill case study:** the Government has implemented a fiscal regime to reduce the amount of municipal solid waste (MSW) going to landfill, in order to meet EU targets. Local authorities are subject to the regime, which is administered by the Environment Agency. Trading and banking of allowances is allowed and financial penalties apply where targets are not met. The landfill allowances scheme was chosen for study because it will provide the basis for a strategic look at how a fiscal instrument has worked in combination with a regulatory regime.
- **Farm Waste Management Plans (FWMP):** these plans implemented a policy-driven initiative offering technical advice to farmers to ensure that they understood how to plan and implement the storage and spreading of farmyard dirty water, slurry and manure on their fields, in ways that protect water quality. The plans combined supplying information, developing farmers' networks and providing support through grants, with discouragement of unsustainable behaviours through fines.
- **Case studies aimed at reducing diffuse water pollution from agriculture in England:** an assessment by Defra of a range of projects to reduce diffuse water pollution from agriculture (DWPA) across England. The purpose of the evaluation was to identify the factors that characterise a successful project.

An initial draft pro-forma was drawn up for each of the case studies, in order to classify their actions under the sub-headings of the 4Es, as set out in Figure 2.2 above. The interventions employed were then scored for each of the variables. The scores used were Low, Medium or High, depending on the relative effectiveness of the interventions in facilitating behaviour change.

- Low: the intervention did not result in any significant behaviour change.
- Medium: the intervention was useful in changing behaviours, but only as an additional factor that increased the effectiveness of another intervention. It would not have been effective on its own.
- High: the intervention was one of the principal methods used to facilitate behaviour change.

Once the interventions were scored, they were plotted on the radar diagram. As the case studies were all based on *evaluations* of interventions, the resulting diagrams represented the evaluation of the relative effectiveness of the intervention in facilitating behaviour change. Thus the interventions employed in the case study were compared with each other, and not with behaviour change interventions more generally or with the situation prior to the intervention, as this information could not be gleaned from the reports available. Figures 3.1 and 3.2 present the first radar diagrams for the land fill case study and the farm waste management case study respectively.

At this stage a problem was identified with the visualisation of the information: the fact that no information was available for a number of the variables meant that the diagrams appeared not as a polygon, but as a set of somewhat random 'spokes'.

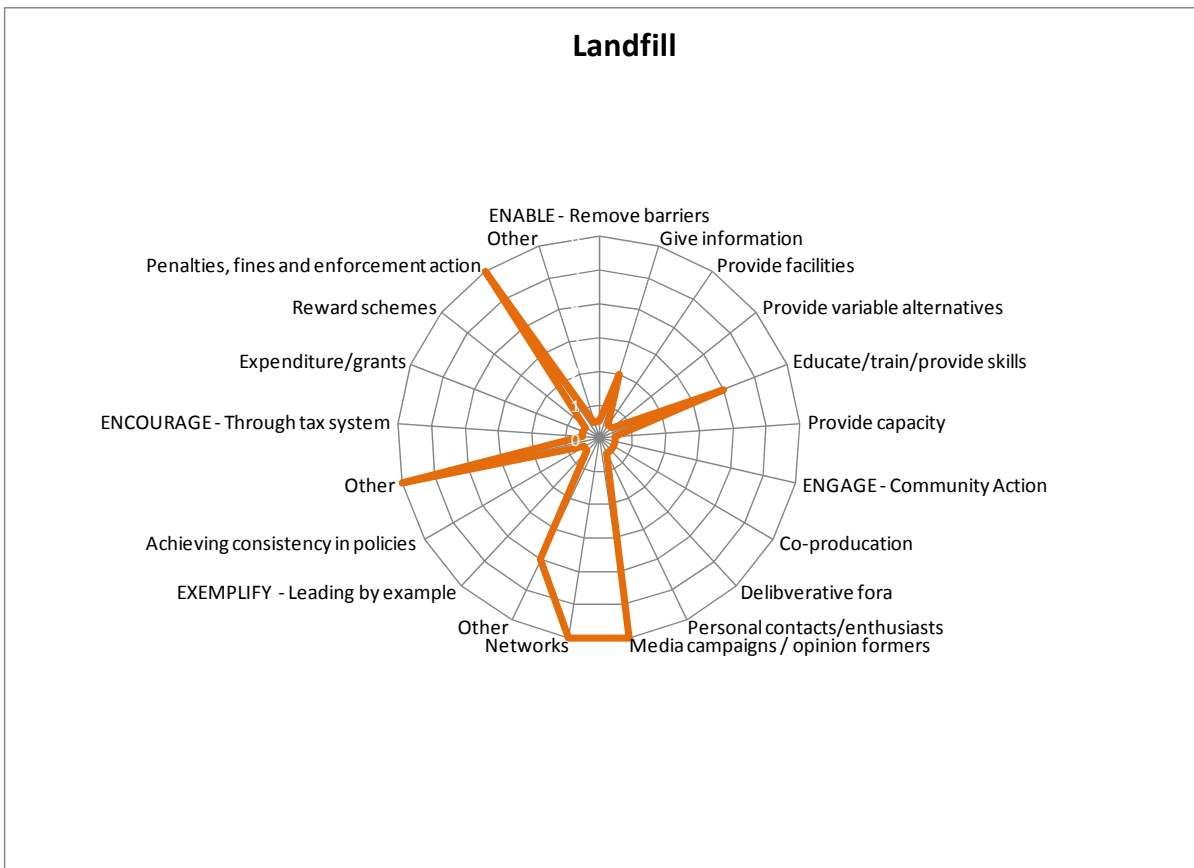


Figure 3.1 Radar diagram (version 1) for landfill case study.



Figure 3.2 Radar diagram (version 1) for agriculture and FWMP case study.

Although different interventions are effective for different reasons, depending on the particular barriers to behaviour change and the exact circumstances of the case study, the evaluation of behaviour change needs to focus on common variables to facilitate comparison between case studies. Collecting information on common themes may also allow behaviour change interventions to be tailored to particular sectors, improving their effectiveness for future projects. The sub-headings of behaviour change variables were therefore reviewed and a smaller set, with two sub-headings under each of the 4Es, was drawn up, as shown in Table 3.1.

The pro-formas for the case studies were re-worked as shown in the example in Table 3.1. The radar diagrams were then re-drawn and the results for two of the case studies were re-plotted. Figure 3.3 shows the results for the FWMP case study and suggests that the three most effective interventions were providing information (enable), discouragement (encourage) and positive re-enforcement (encourage).

Table 3.1 The 4E's and revised sub-headings.

Enable	
Facilitate mechanism	Were there interventions that provided the facilities to enable behaviour change?
Provide information	Did the case study provide the skills, education and knowledge necessary to enable behaviour change?
Engage	
Community action	Was community action employed as a means of changing behaviours?
Create awareness	Were media campaigns, personal contacts or networks used to engage and communicate with stakeholders?
Exemplify	
Lead by example	Did the case study provide examples of the behaviour it sought to realise?
Consistency in policies	Did the case study cite examples of where government initiatives upheld the principles of the desired behaviour?
Encourage	
Positive re-enforcement	Did the case study employ incentives, either monetary or social, to encourage behaviour change?
Discouragement	Did the case study employ incentives, either monetary or social, to discourage behaviour change?

While the results of the revised radar diagrams were felt to make the diagram easier to understand and facilitated assessment of the different behaviour change variables, a number of problems remained.

- Reliance on write ups of the case studies by others limits the ability to judge the overall effectiveness of the interventions in changing behaviour, particularly as the case studies were generally not designed or evaluated from a behaviour change perspective.
- The lack of comparable 'before and after' information meant that it was difficult to assess what difference the intervention had actually made. The value of the radar diagram method as an evaluation tool could be significantly increased if the conditions before the project could be compared with the conditions at the end.

- The method involved making subjective judgements about both the significant variables to be used and the scoring of the project actions against those variables. While developing an agreed set of variables (axes) should involve a wider group of stakeholders, in a process that was beyond the scope of this project, there did seem to be a case for testing the assessment of performance against selected variables with one or two project managers. This would give an initial sense of whether these variables are meaningful for those directly involved in the projects and, if so, what criteria they might use in assessing success.

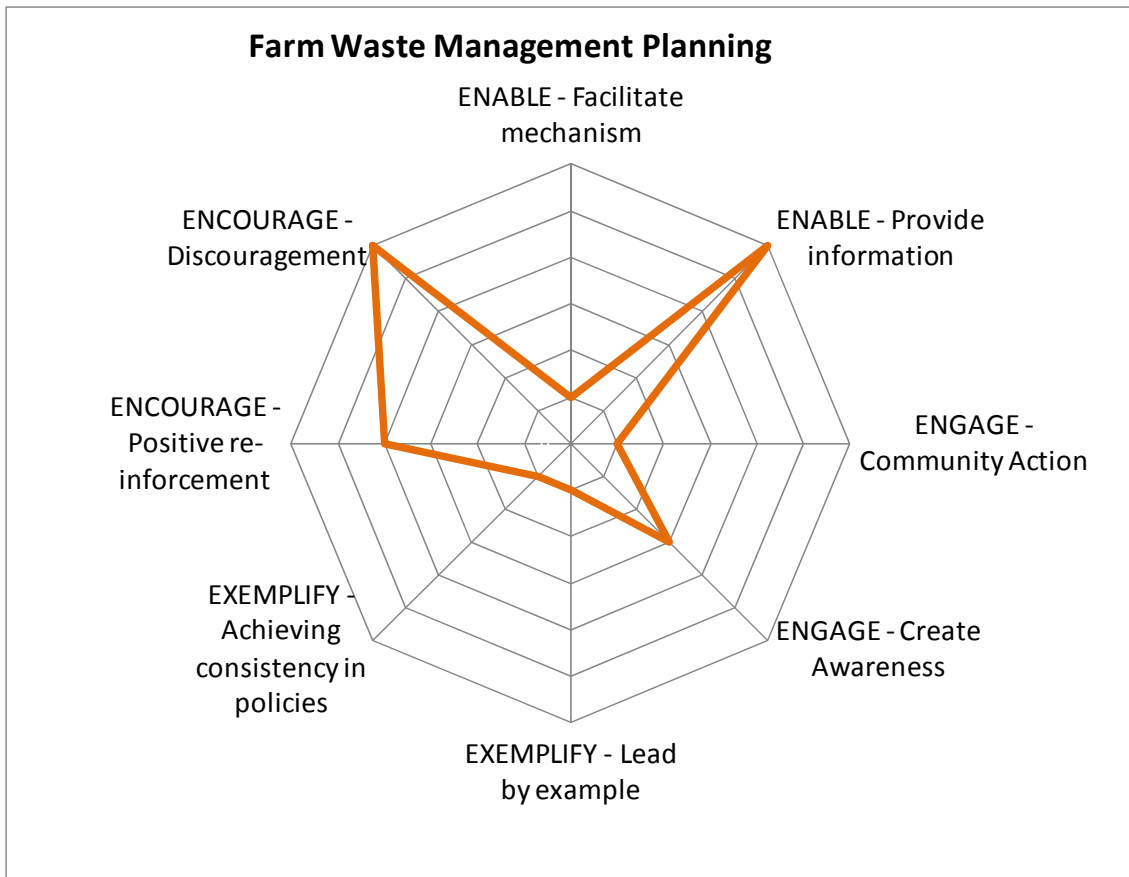


Figure 3.3 Radar diagram of FWMP case study.

4 Case study testing: Phase 2

Phase 2 of the research involved refining and testing the methodology, using three new case studies. We invited someone directly engaged in each project to work with the CEP team to apply the evaluation methodology to their project, thereby gaining their insights on the case study. This helped us to assess how far the methodology accurately describes the behaviour change interventions employed during a project and how meaningful it is for those working on it.

It proved quite difficult to find case studies that met all the criteria necessary for us to explore the methodology. In the end, we used two flood awareness projects, one in the Thames Region and one in the South West, and a project to improve the urban environment in a deprived area, particularly focusing on fly-tipping. The projects are described below, together with the radar diagrams developed to reflect the situation before and after each intervention. The evaluation tables completed by the project team and reviewed with the practitioner involved in the project are shown in the appendices.

4.1 Case study 1: Increasing flood preparedness in the Thames Region

4.1.1 Background to case study

The Environment Agency carries out regular flood awareness campaigns, with the aim of drawing attention to flood risk and also of getting residents, businesses and organisations in flood risk areas to sign up to the free flood warning service, so that they can be notified in the case of flooding. Receiving flood warnings is one of the main measures that people can take to prepare for flooding, but across the country less than half of all properties eligible to receive the service are currently signed up. The methods used to encourage people to sign up for warnings have included sending letters to properties and conducting press campaigns.

4.1.2 Behaviour change focus

In autumn 2008, the Environment Agency Thames region hired a contractor to run a campaign of door-to-door visits in high risk flood areas in the Thames Valley. The campaign covered key areas where specific properties were at risk of flooding. The focus of the campaign was to talk to local residents not already subscribed to the flood warning service about the risk to their properties from flooding and to give them the opportunity to register on their door step. The behaviour change objective of this intervention was limited to getting people to sign up for warnings either during the visit or subsequently. There does not appear to have been any discussion of what else people might do to prepare for flooding or what actions they should take in the event of a flood occurring.

4.1.3 Baseline situation

At the time that the campaign was carried out (November 2008), Thames Region had a fairly comprehensive flood warning service. The majority of people in flood risk areas in the region were able to receive flood warnings if they signed up to the service, known as Floodline Warnings Direct (FWD). Environment Agency staff believe that plenty of information about flood risks in the region was already available to residents, organisations and businesses through a range of channels (TV, internet, mail shots).

For other areas little baseline information was available. This highlighted a problem with the radar diagram: a lack of information on a factor looks the same as a lack of action on it, although there may actually be relevant actions. For example, there was insufficient information available to be able to say whether local people or organisations were involved in collective action on flood risk with the Environment Agency or other organisations. In this case, the Thames Regional Flood Awareness Campaign Co-ordinator felt that it was reasonable to assume that the people targeted by the campaign were unlikely to have been involved in Flood Action Groups, as they were not signed up for flood warnings.

The baseline refers to the situation in mid-2008, only a year after major floods in the Midlands and parts of the Thames Region. So while there do not seem to have been many publicised exemplary cases of residents, businesses or other organisations benefiting from being signed up to FWD, most people targeted by the campaign will have seen pictures and heard or read reports of the devastation caused by the 2007 floods. This is likely to have had some impact on their willingness to sign up.

There does not seem to have been any direct encouragement to sign up for flood warnings before the campaign. Nevertheless, encouragement of different kinds could be offered: as well as monetary incentives, those agreeing to receive warnings could be offered rewards (according to the Flood Awareness Co-ordinator, people signing up to FWD in the Thames Region in the past have been entered into a raffle to win a pair of boots) or access to other services offered by the Environment Agency or its partners.

On the contrary, concern about the possibility of increases to their insurance premiums may have discouraged some people from getting flood warnings. This was mentioned in feedback to the contractor carrying out the door-to-door visits. The methodology used does not reveal negative impacts of this kind on behaviour change, but only accounts for positive drivers or the lack of these drivers.

The radar diagram (Figure 4.1) provides a graphical representation of the situation before the 2008 door-to-door campaign.

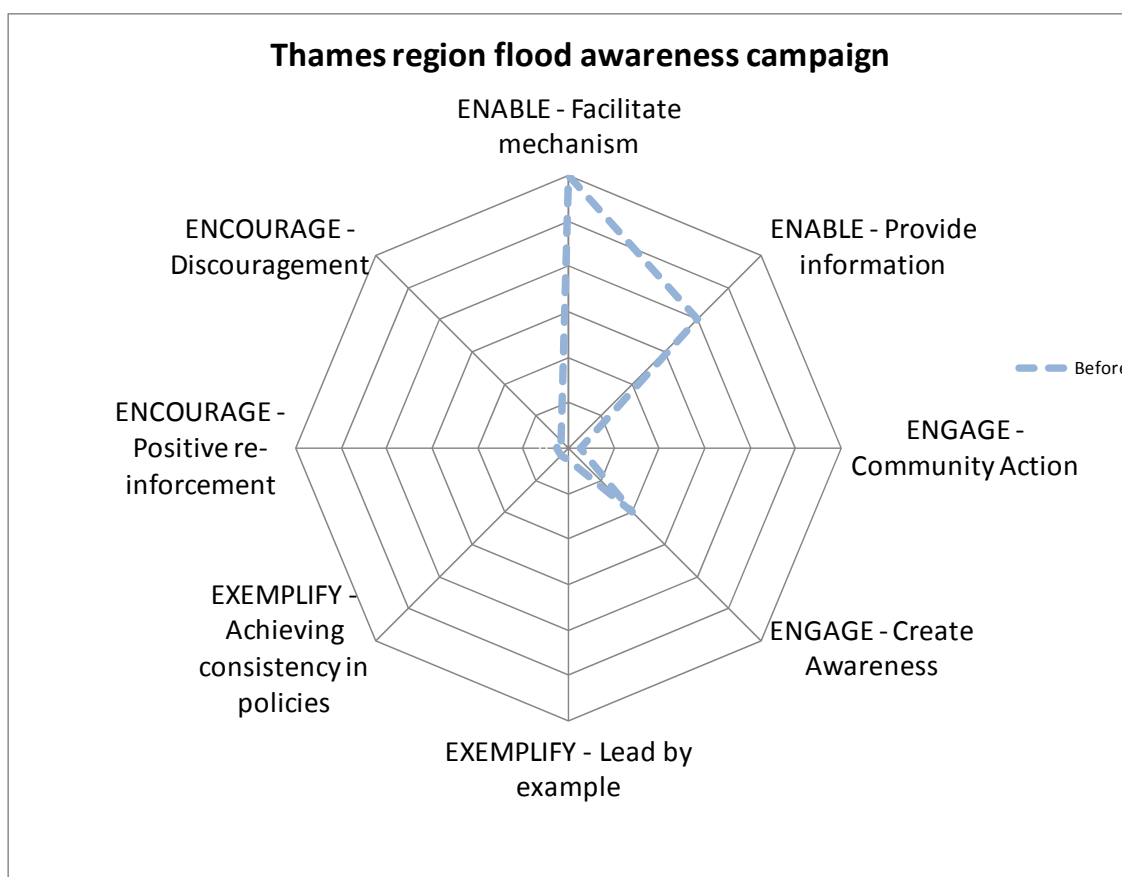


Figure 4.1 Presence of factors encouraging sign up to Environment Agency flood warning system before the 2008 Thames region flood awareness campaign.

4.1.4 Measures taken

The activities carried out during the campaign were:

- visiting 3,915 properties;
- registering 485 homes for the flood warning service;
- leaving registration packs in 2,009 homes for completion at a later date.

The people making the visits were trained in flood risk issues and were provided with maps and information about the history of flooding in the area, so that they would be able to answer residents' questions.

Feedback from homeowners indicated that the majority were happy to be visited, although there was a general reluctance to share personal information. They felt that the FWD scheme was worthwhile, but that it was more appropriate to other parts of the country.

4.1.5 Description of the intervention in terms of the 4Es

The intervention had no effect on the offer for free flood alerts from the Environment Agency, which already had high coverage in the area. However, the home visits that were the core activity of the intervention did further help people in the area to

understand the risks they faced and the benefits of receiving flood warnings by providing targeted information.

The design of the intervention emphasised the importance of engaging householders in one-to-one conversations with trained staff who could answer their questions and address their concerns about the FWD system and explain what they would get out of it. The engagement seems to have had a fairly positive response from the people visited, but it was limited in terms of engagement with wider communities that might produce knock-on effects. This kind of engagement is risky, because it relies heavily on the ability of individual field staff to establish quickly a rapport with the people they visit.

Our assessment of the case study is that it did little to provide examples of the benefits of receiving flood warnings. Neither did it draw the parallels between the need for people to be signed up to flood warnings and actions that the Government and public bodies were taking, such as developing climate change adaptation strategies. As a result, flood risk might still be seen as a problem affecting individuals rather than wider society.

There was little effort to provide positive encouragement in the form of incentives or awards.

This description of the results of the flood awareness campaign are reflected in the radar diagram in Figure 4.2 (shown as a solid line), which shows that half of the behaviour change factors were not addressed.

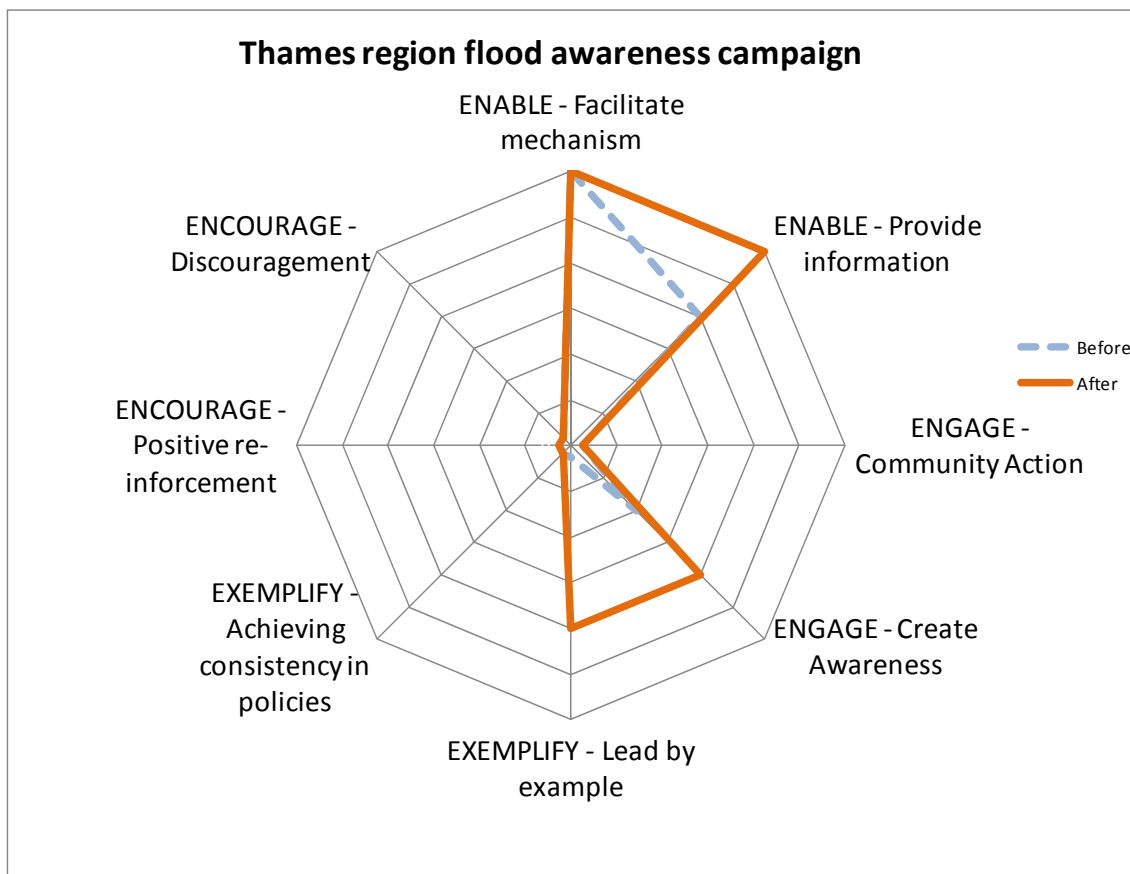


Figure 4.2 Presence of factors encouraging sign up to Environment Agency flood warning system before and after the 2008 Thames region flood awareness campaign.

4.1.6 Conclusions on the Thames Flood Awareness campaign

Despite the scale of the intervention (over 4,000 properties visited) and the high profile nature of the Environment Agency's efforts to encourage residents to prepare for the risk of flooding, the intervention did not address several of the factors that help to achieve behaviour change objectives. In particular, the intervention focused solely on engaging *individuals*, without presenting flood risk in a social context or engaging with networks or community organisations that might have provided positive social pressure for people to sign up.

4.2 Case study 2: Reducing fly-tipping and improving the urban environment on the Fairyland estate, South Wales

4.2.1 Background

The Fairyland housing estate in Neath, South Wales, was notorious for severe problems with fly-tipping, which were undermining residents' pride in their surroundings. People living on the estate tend to have low incomes and low levels of education. People were aware that their estate was run down and squalid but felt that there was little they could do to change it. Relations between residents and public officers in the local authority or other agencies were poor, as residents felt that their complaints were ignored. So despite their frustration about the situation, few people took any action, creating a sense of resignation – 'that's the way it is'.

In 2002, a number of organisations came together in an initiative called Pride in our Communities, which aimed to improve the physical conditions of deprived communities as a way of promoting community cohesion and enhancing well-being. The project was first piloted in several areas of Neath Port Talbot in south Wales, including the Fairyland estate. The Environment Agency's role was largely strategic, representing a departure from its usual legislative duties into the 'cleaner, safer, greener' liveability agenda.

4.2.2 Behaviour change focus

The aim of the intervention was to encourage the community of Fairyland to take ownership of the fly-tipping problems in the estate and reduce the incidence of the inappropriate disposal of waste by attempting to get to the root of the problem. Rather than attempting to 'police' the residents into good behaviour, the project consulted with residents to identify what measures could be most usefully deployed. This consultation revealed that there was a general acceptance of fly-tipping due to a perception of the estate as an area that did not deserve any better. The situation was such that fly-tipping and the burning of waste had become normalised, and there was a perception that, although not ideal, other options were limited. The project wanted to generate a shift in the mindset of Fairyland residents, encouraging them to take pride in their local area and reduce the social acceptability of fly-tipping or burning waste.

4.2.3 Baseline situation

Prior to the initiative, waste was commonly disposed of in public areas and ‘set alight on a daily basis’. The estate had a lack of facilities suitable for the disposal of waste. There was also little knowledge of the services available from the local authority in respect of waste collection (and other services in general), which was compounded by a lack of confidence and self-esteem. The lack of confidence and self-esteem prevented residents from becoming more active in requesting assistance from the local authority. Thus the fly-tipping of waste in the local area was partly due to a perception, held by the residents, of a lack of alternative methods for waste disposal.

Before the initiative, the residents were aware that fly-tipping of waste was not common practice. But the extent of the problem in the estate, and the length of time it had been occurring, caused the practice to become somewhat normalised and reduced the stigma attached to disposing of waste in this way. The residents had a poor perception of their local area, with many feeling that the estate was a ‘dumping ground’ (for low income tenants as well as rubbish) and that many people were ‘watching the estate crumble around them’. Although there were fines and penalties related to the dumping and burning of waste, these were not enforced and so offered little incentive for residents to dispose of waste properly.

The radar diagram (Figure 4.3) provides a graphic representation of the situation before the Environment Agency initiative.

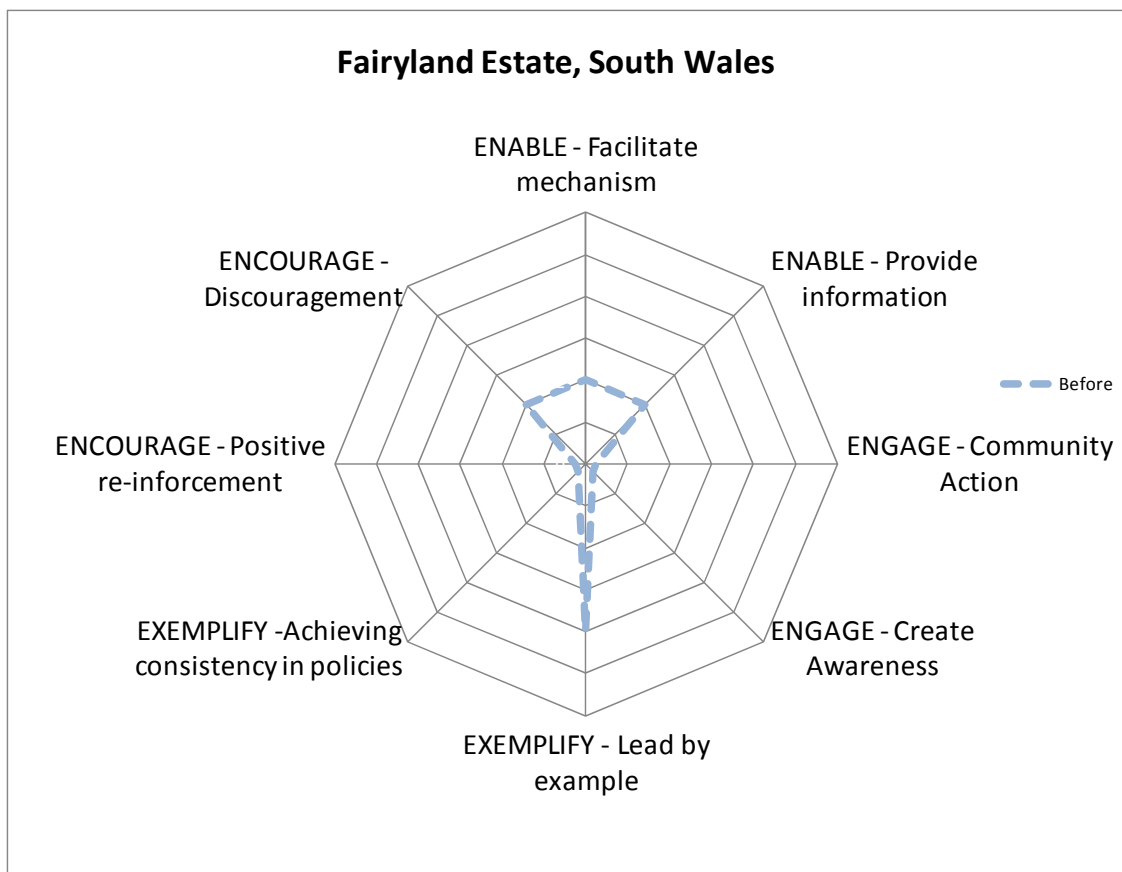


Figure 4.3 Presence of factors encouraging fly-tipping and burning of waste in Fairyland estate, South Wales.

4.2.4 Measures taken

The project involved one full-time 'Keep Wales Tidy' project officer working alongside 'Communities First' and Neath Port Talbot council to encourage communities to take ownership of fly-tipping problems. The three principal components of the intervention in the Fairyland estate were:

- provision of large skips (on a monthly basis) for residents to dispose of bulky items;
- community 'clean ups' on the estate (residents clearing out each other's homes/gardens); and
- environmental improvement projects, such as the creation of a children's play area on a piece of land previously used for burning fly-tipped material.

4.2.5 Description of the intervention based on the 4Es

The measures taken to encourage changes in behaviour related to the fly-tipping and burning of waste had the following outcomes.

Enabling action

- The case study involved providing a skip to collect bulky waste that might otherwise have been fly-tipped and organising community clean up events. The services provided seem to have been considered good by the residents, with 69% of households using them. However, qualitative comments were made about the difficulty of maintaining cleanliness levels after local authority clean ups, which indicates that perhaps there was room for improvement.
- The project played a role in supporting and promoting a successful residents association – Forward4Fairyland. This included capacity building, i.e. building the skills and capabilities of the residents involved. An environmental training programme was also provided through Communities First.

Engage action

- Around 60 per cent of residents had been directly involved in the clean-ups at some point (and 25 per cent are still regularly involved).
- Personal contact was important in engaging local residents, because there was a likelihood of a low response rate among Fairyland residents (common in areas of high deprivation). The extent to which local people assumed the role of enthusiast, or whether there was more reliance on a small number of project staff from outside the estate, is unclear.
- Additional networks (beyond the community members/Residents' Association) were involved on the estate – networks like church and social welfare organisations, and Keep Wales Tidy. However, they were likely to be seen as part of the intervention, rather than acting as trusted intermediaries

Exemplify action

- The project focused on local issues rather than national policies. Drivers for change related to the proper disposal of waste, with the local authority involved in measures to prevent fly-tipping. However, there was insufficient

evidence to draw conclusions about whether examples of desired behaviours (national or local) were used to encourage behaviour change.

Encourage action

- Although there is no evidence that residents received monetary incentives, there were community activities, training and material improvements to the estate, which acted as positive reinforcements of the desired behaviour.
- Penalties for fly-tipping existed before the intervention. However, residents were unlikely to see these as a significant discouragement for 'bad' actions, due to the low levels of enforcement. This represented no change from the situation prior to the project.
- There is anecdotal evidence that residents' general perceptions of the estate have started to shift. Before the project, people had a poor perception of the local area, deeming it a place where things/people were 'dumped'. However following the project, residents reported a renewed sense of pride in their local area. This sense of pride contributed to improved self-esteem and as a result social pressure seemed to be an important factor in reducing fly-tipped waste. Residents reported increased confidence in rejecting anti-social behaviours like fly-tipping and community leaders emphasised the need to maintain a good environment.
- Anecdotal evidence suggests that some residents are becoming 'embarrassed about making a mess'. As above, social pressure seems to be a factor. However, it appears that a section of the estate containing families who have lived there for a long time has been more engaged than another part containing residents who have lived there for a shorter time.

Figure 4.4 shows the factors contributing to behaviour change as a result of the Environment Agency's intervention (shown as a solid line). Comparing this with the situation before the intervention (shown by the dashed line), the factors that increased their influence most significantly were **enable** and **engage**.

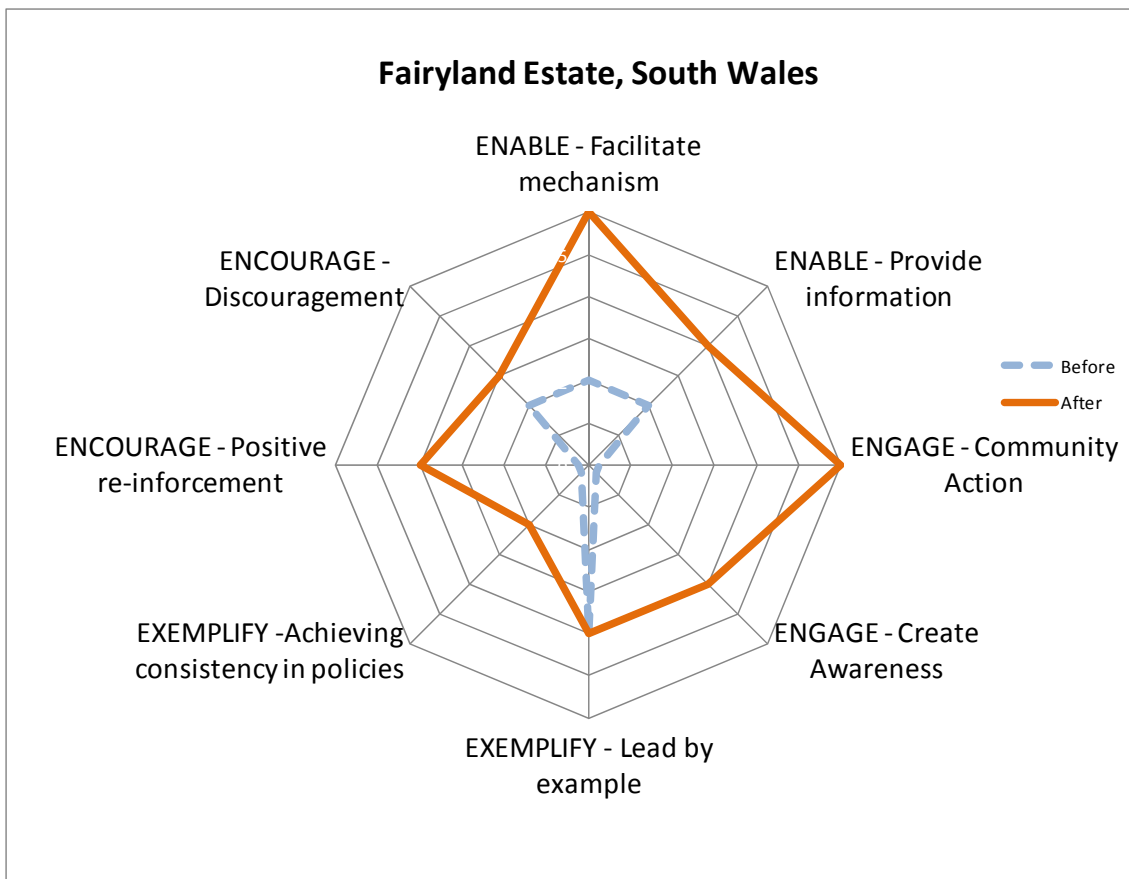


Figure 4.4 Presence of factors encouraging fly-tipping and burning of waste in Fairlyland estate, South Wales (before and after the intervention).

4.2.6 Results of the Environment Agency’s intervention

The response to the intervention has been overwhelmingly positive. From 2003 to 2006, the proportion of residents citing litter as a problem in the estate fell from 91 per cent to 32 per cent. This achievement is made even more impressive by the fact that fly-tipping incidents have increased in Neath Port Talbot as a whole over the same period, indicating that the improvements recorded in Fairlyland are directly related to the project rather than other factors.

The project has had a positive impact on the physical environment of the estate, with as many as 84% of residents thinking that the general appearance of the estate has improved in the years following the project. The project has also appeared to play a role in fostering a sense of pride in the estate among residents, with 83% of residents now thinking the area has ‘got better’ as a place to live, compared with only 2% who felt that the area had got worse.

The project has increased community activism, playing a role in supporting and encouraging a successful residents association – Forward4Fairlyland. In addition, some residents are developing a greater sense of civic responsibility, with 66% of residents surveyed stating that the clean-ups had made them ‘much more’ or a ‘little more’ careful in disposing of rubbish.

4.3 Case study 3: Changing the approach to preparing for flood risk on caravan and camp sites in the South West

4.3.1 Background to the case study

People staying in caravan and camping sites are vulnerable to flooding, because their shelters are not solid and it may be difficult for them to get to a safe place. Flash flooding in Boscastle in 2004 highlighted the risks to tourists visiting steep catchments, as they are less likely to be aware of the potential for flooding following heavy outbursts of rain or to know what to do in this situation. The extensive damage caused to caravans and camping sites by flooding in the Midlands in summer 2007 also suggested that owners and users have very limited understanding of the risks and the actions they could take to reduce them.

Caravan and camping site owners and managers in the South West have been made more aware of the need to take measures to prepare for possible flooding, because they are now obliged to demonstrate that they have flood action plans in place when applying for planning permission.

When the Flood Awareness team at the Environment Agency South West (SW) Region office began to receive a large number of requests for guidance on the preparation of flood action plans to support applications for planning permission, they found that there was no information specifically designed for caravan and camping site owners. They decided to produce an action pack for this audience (*Flooding: Minimising the Risk*) and to promote measures for reducing risk. The team was already working closely with the tourism sector within the SW Climate Change Partnership and co-ordinated with SW Tourism on the production of the pack.

4.3.2 Behaviour change focus

The aim of the pack and other initiatives with caravan and camping site owners and managers was to help them to develop flood plans. Flood plans can involve specific actions, such as:

- having a 4x4 vehicle available to tow caravans to a safe location;
- identifying an accessible rest centre in a suitable location, such as on higher ground;
- specifying measures to take in the event of the site being cut off by flood waters, such as safe routes off the site;
- providing flotation skirts for caravans.

However, these measures on their own would not be enough to ensure that visitors were prepared for flood risk. What was needed was a change in the way that flood risk was perceived and talked about, and a recognition that flooding can pose a threat to the safety of visitors if they are not aware of the risks and prepared to take action. In this sense, the work had a *behaviour change* objective.

4.3.3 Baseline situation

The situation before the initiative was characterised by a very low level of awareness of flood risk, not just among tourists but among the caravan and camping site owners and managers themselves. Very few knew that they were in a flood risk area unless they had actually been flooded. In some cases, caravan and camping sites are authorised on land that cannot be used for housing or other forms of permanent development precisely because of the risk of flooding, yet little seems to have been done in the past to make operators conscious of this situation and the need for action.

The Environment Agency provides a flood warning service (FWD), which advises individuals, businesses and organisations who have signed up for it about flood risks. The warnings can be provided by telephone, email or text message, which means they can be received at places where there are no landlines. However, this service can only be provided in locations where the Environment Agency has a system in place for monitoring river levels. Coverage tends to be much more complete in more densely populated areas, which means that many caravan and camping sites in more isolated locations are not covered. Lack of a flood warning service makes it more difficult to be prepared for flooding.

Caravan and camping site owners are legally required to put up a board with contact details for the emergency services and, if they are within a flood risk area, to display prominent notices about flood risk. However, in practice only a very small number of sites had such notices and the local authorities – who are responsible for compliance – are not proactive in enforcing this condition.

One of the problems in conducting this work was the concern that drawing attention to flood risk would have a negative impact on tourism. There have been no media campaigns concerning flood risk in the region and there is no evidence that organisations that work with the tourism industry have raised the issue of flood risk in the past. It is therefore not surprising that few caravan and camping site owners have gone out on a limb to find ways of minimising flood risk. Nevertheless, a few cases do exist. One caravan site in Cornwall did take a lead in introducing flood protection measures, including a cascade system to share flood warning information with other sites in the catchment. The measures were so successful that the business can now stay open all year round. However, it is unlikely that this almost unique example had much impact on the wider tourism sector.

The radar diagram (Figure 4.5) provides a graphical representation of the situation before the Environment Agency initiative.

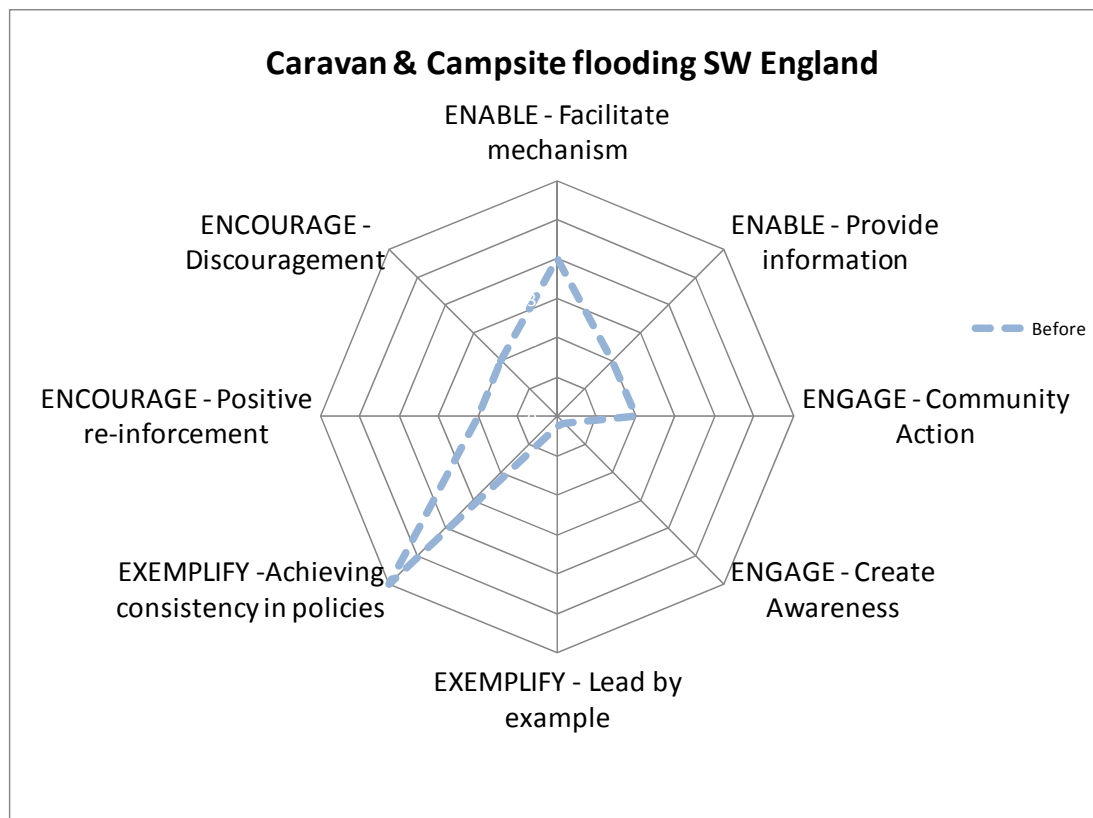


Figure 4.5 Presence of factors encouraging sustainable management of flood risk among caravan and camping site owners in SW England.

Measures taken

The following measures were taken by the SW Flood Awareness team.

- Designing, producing and mailing out 420 flood packs to caravan and camping sites in locations at risk of flooding. The pack included a template Flood Evacuation Plan and posters for use in different parts of the site.
- Supplying telephone contacts for additional support and advice on implementing flood action plans.
- Providing support for sites where there was no flood warning service available so that they could establish their own systems for monitoring river levels.

4.3.4 Description of intervention in terms of the 4Es

The measures taken to encourage changes in behaviour towards flood risk on the part of caravan and camping site owners had the following outcomes.

Enabling action

- The flood pack provides an easy to use guide to action.
- There was no increase in the coverage of the flood warning service and owners did not have financial or other help to make investments in facilities such as access routes to a rest centre or protection for caravans. However, the Environment Agency has been helping sites where services are not

available to set up their own flood risk monitoring systems. This will make them better able to decide when they need to activate their flood action plan.

Engaging them in the initiative

- The flood pack was sent out by post, which is rather an impersonal channel and might have suggested that take-up would be low. However, the pack seems also to have been promoted by SW Tourism through its contacts in local areas. The packs were sent out with direct contact numbers for Environment Agency staff in the area, so anyone calling the Environment Agency could get through to a person who would be able to give advice on their situation.

Exemplifying good practice

- The local planning authority requirement for flood plans in support of planning applications is likely to have continued to be a very important driver of concern on the part of caravan and camping site owners in terms of taking the necessary action. In this sense, there was consistency between the messages being communicated by the Environment Agency and the local authorities.

However, there is surprisingly little evidence of measures to further **encourage** change, either through positive reinforcement in the form of incentives, awards or social recognition of the value of change, or through discouragement (such as penalties).

Figure 4.6 shows the factors contributing to behaviour change as a result of the Environment Agency's intervention (shown as a solid line). Comparing this with the situation before the intervention, the factors that increased their influence most significantly were **Enabling** and **Engaging** factors.

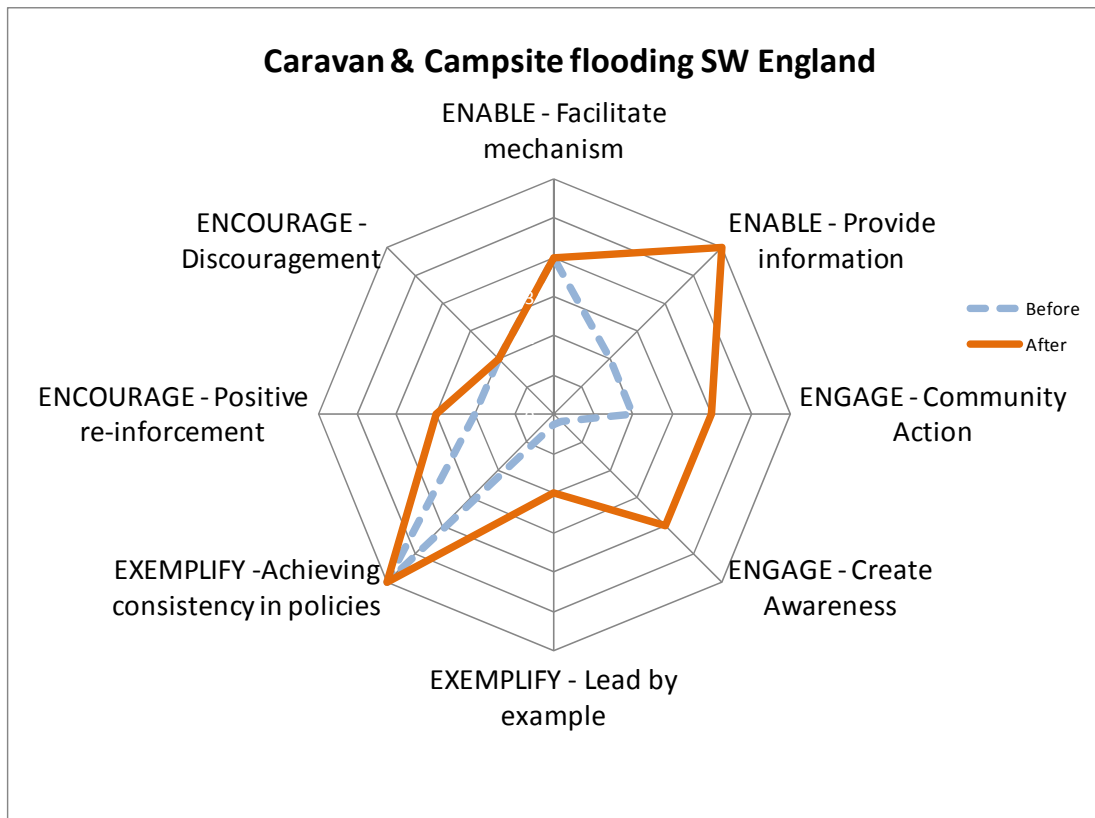


Figure 4.6 Presence of factors encouraging sustainable management of flood risk among caravan and camping site owners in SW England (before and after the intervention).

4.3.5 Results of the Environment Agency's intervention

The response to the Environment Agency's flood packs for caravan and camping sites has been extremely positive. Of the 420 sites sent packs, 315 had contacted the Environment Agency for further advice and information by May 2009. This is a high return rate on written communications and suggests that significant factors contributed to their behaviour. The radar diagrams provide some suggestions of what these factors may have been.

It is important to remember that the results refer to take-up of the advice provided by the Environment Agency; they do not show how many of the caravan and camping sites have actually made practical changes. The SW Flood Awareness team is going to carry out an evaluation of what has been done following the distribution of the flood packs. This information could provide a better understanding of the influence of the different behaviour change factors.

5 Conclusions

5.1 Conclusions on the application of the evaluation tool

Usability

The tool proved to be quite easy to use: the list of questions can be answered in under an hour and without specialist information or training. People using the tool for the first time usually find it helpful to work through the list with someone else in order to check their understanding of the questions and to determine what kind of information is required. Once users have understood the concept of the 4Es and behaviour change, they can interpret the results of the tool themselves.

The radar diagrams were felt to be useful as representations of the information captured by the tool, but not for use on their own. The radar diagram approach could imply assumptions that are not supported by the theory or practice of promoting behaviour change.

- *Each of the axes on the diagram has equal weight in promoting behaviour change.* The diagram model was designed by arbitrarily dividing each of the 4Es into two sub-components, when in fact some of the factors could more reasonably be broken down into three or even four sub-components. The diagram is then divided into equal segments by the axes, but in most cases practitioners feel that in reality one or several of the components has been most important in catalysing change: the diagram fails to capture the importance of particular components.
- *The more of the total area of the diagram that is covered, the more effective the initiative will be in achieving sustainable behaviours.* It is reasonable to suppose that by ensuring all four behaviour change factors are fully in play, success in bringing about the desired behaviour can be guaranteed. But of course this does not happen: different governments have marshalled a battery of initiatives, from legislation to information through tax measures, to stop smoking and yet people continue to smoke. On the other hand, in cases where just one factor is the key barrier, it could be that one good intervention may be enough to lead to behaviour change. By itself, the radar diagram may not help in understanding how change is catalysed.

Relevance

The practitioners who tested the tool said that it was a useful way of thinking about the work. One member of staff suggested that the tool would have been very helpful for designing their intervention. They felt that all the behaviour change factors had probably been considered during the planning of their project, but said that it would have been simpler and quicker to have a tool like this.

From discussions with practitioners, we gained the impression that some of the factors were more relevant than others.

- **Enable:** it made sense to practitioners that projects with the aim of changing the way that people behave in their everyday lives needed to consider whether the necessary facilities and services exist, as well as information on how to make that change. These considerations are simple and straightforward, cutting through the complexity that often gets in the

way of staff from a social science, marketing or communications background.

- Encourage: differences between the practical methods of encouragement/discouragement, such as taxes and penalties on the one hand and forms of social encouragement or discouragement on the other, were somewhat more difficult for practitioners to make sense of than 'enabling' factors. However, once this had been clarified, they felt that these factors were important considerations to address and assess.
- Engage: practitioners recognise the importance of projects that engage people in practical activities as a means of changing behaviour. They could also see that contacting communities and individuals via the networks they participate in or through trusted intermediaries was likely to make them more willing to engage with the issues raised and facilitate behaviour change. However, there was a sense that by breaking 'engage' into a number of different components the tool suggested that projects ought to engage in all the different ways. Whereas in fact the project context or characteristics often means that one form of engagement is more appropriate than another.
- Exemplify: this was the most difficult factor to understand and to apply. The sub-component that related to providing examples of good practice was clear but seemed to overlap with the information sub-component of 'Enable'. So should including photographs of caravans chained to the ground to prevent them from being carried away by flood water be considered as 'enabling' or 'exemplifying', or both? The second sub-component concerning consistency with public policies was less clear. For example, the flood awareness campaign in the Thames region is consistent with Government policy on managing flood risk, but this is not something that has changed in recent years and it seemed to have little bearing on the response to the campaign.

Robustness

- A robust tool will give consistent results that are supported by evidence. The evaluation tool was found to give robust results about the nature of the *behaviour change intervention*, which helped practitioners think about and make sense of what had happened. However, it has not been shown that the tool could give precise and reliable information about the behaviour change that will result from a particular intervention, and it is unlikely that it could give this kind of information.
- The main reason for this is that the 4Es model does not claim to establish precise causal relationships between particular kinds of action and changes in behaviour. Instead it argues that there is a package of factors that together can catalyse behaviour change, given an understanding of the particular circumstances and barriers to change. From our application of this tool, it would appear that not all the factors need to be equally strong all the time. In some circumstances, one factor may be virtually absent and yet there may nevertheless be a change in behaviour.

6 Recommendations

We recommend that the tool should be promoted as a design tool to be used by Environment Agency staff that are starting projects with objectives that include promoting more sustainable behaviours. All the practitioners involved in testing the tool felt that it was useful for systematically identifying conditions that need to be altered to achieve behaviour change. While practitioners do often identify and address these sorts of factors anyway, they said that having this tool at the design stage would help their work. They felt that users would need some initial support, for example from the Social Science team, in order to understand the tool and possibly to get help on individual questions. They liked having the radar diagrams as a way of illustrating the information generated by the tool, but did not think that the diagrams should be used on their own, as they might be misleading.

If the tool was used at the design stage, it is recommended that project staff also use the same tool to check how far the project has pushed progress in the factors contributing to behaviour change. The systematic collection of this kind of information by Environment Agency staff should improve understanding of behaviour change interventions and allow the Environment Agency to increase its impact in this field.

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Appendix 1 Case study pro formas

A1.1 Case study 1: Increasing flood preparedness in Thames Region

A1.1.1 Situation before the case study interventions

<p>Case study title: Thames Flood Awareness Campaign</p> <p>Description: Talking to local residents not already subscribed to the free flood warning service regarding the risk their properties may be at from flooding and providing them with the opportunity to register on their door step.</p>				
<p>Low</p> <p>Medium</p> <p>High</p>				
<p><i>Please provide a description of the situation prior to the intervention, in relation to the following behaviour change factors. Each should be given a score of zero, low, medium or high. Where no information is available, please leave the description box blank.</i></p>				
BEHAVIOUR CHANGE FACTOR	ASSESSMENT	SCORE	COMMENTS - CEP	COMMENTS – Helen James
Enable Mechanisms				
To what extent were the necessary facilities and services in place?	The flood warning service was already available to all those to be contacted.	High	The necessary facilities and services in this case was the flood warning service. The intervention aimed to get people to sign up to this service – in scoring this factor we experienced some initial difficulty in differentiating between the availability of the service and extent of sign up to it.	Agree that Flood Warning Service is an enabling mechanism and was comprehensively available.
Provide information				
To what extent did those involved already have relevant skills, education	It is assumed that the respondents had little awareness of the level of flood risk their property faced, and had little understanding of the benefits of the flood warning	Medium	Lack of knowledge may not have been a limiting factor in preventing sign-up to the flood warning system prior to the study. There has to be an assumption made here in relation to	Prior to the campaign, residents would have received blanket mailings which go to all

and knowledge?	system, or how the system would operate. The information that they had is likely to have come from leaflets or advertising that many people don't look at or pay attention to.		the amount of knowledge respondents did or did not have prior to the study, i.e. receiving a leaflet does not mean that people have necessarily read it.	properties (messages: 'You are at risk', 'You should register for flood warnings') Assesses this element of factor as 'Medium' not 'Low'
Engage				
Practical action				
Were those to be involved engaged in any relevant practical action to address the problem?	No information available about Flood Action Groups or other activities in the areas covered	Zero	The diagram does not currently differentiate between where there is no action or where there is a lack of information related to the factor. Thus a factor might have been more effective than it is scored. Shading of the diagram might be a useful way to show where no information is available, but this is not possible in MS Excel.	Intervention targeted people not signed up to FWD, so probably right to assume that they were not involved in Flood Action Groups – so change score to Zero.
Create Awareness				
Was personal contact/enthusiasts being used to engage with stakeholders?	Assume no.	Zero	The diagram cannot adequately differentiate between where there is no action, or where there is a lack of information related to the factor. (as above) Currently there are three different aspects considered under this factor as part of the test of the methodology. These may be combined or just one aspect used, depending on results of research.	Agree with this assumption.
Were media campaigns / opinion formers being used to engage with stakeholders?	Media campaigns may have been used before, but it is assumed that they were ineffective (hence the door-to-door survey).	Low		Agree with this assumption
Were networks being used to communicate and interact with stakeholders?	No information		The diagram cannot adequately differentiate between where there is no action, or where there is a lack of information related to the factor. (as above)	Local Authorities regularly communicate with residents about flooding through newsletters, etc – not sure whether this had happened recently in the area covered.
Exemplify				
Leading by example				
Were those to be involved aware of relevant examples of the behaviour the case study was intended to catalyse?	They may have been aware of the 2007 flooding, but probably more aware of the negative consequences than of any positive outcomes of preparedness. Assumed no awareness.	Zero	Assumption made, but score could change upon further information.	Agree: there was publicity about negative consequences of previous floods, so local people would have been aware of that

Achieving consistency in policies				
Were existing government policies or practices consistent with the desired behaviour?	The report notes that, “Many felt EA should do more to prevent flooding”. This may have been seen as the EA / Government not taking flooding seriously, but no assumption has been made.		This question could also relate to people’s <i>perception</i> of the consistency of Government policies or practices. E.g. The Environment Agency may take a decision not to invest in a flood defence scheme, in line with policy, which could appear to the public as inconsistent with encouragement to sign up to flood warning.	It might be possible to get information from Area office on letters of complaint about lack of flood defences, but this would only reflect perceptions of those who objected. Not sure that this would be helpful.
Encourage				
Positive re-enforcement				
Were any of the following in place to encourage the desired behaviour? <ul style="list-style-type: none"> incentives or reward schemes 	Assumed that were no incentives in place, based on usual Environment Agency practice.	Zero	The diagram cannot adequately differentiate between where there is no action, or where there is a lack of information related to the factor. Thus a factor might have been more or less effective than it is scored. Shading of the diagram might be a useful way to show where no information is available, but this is not possible in MS Excel.	Correct assumption in this case. But note that the EA does occasionally provide incentives, e.g. ‘win a pair of wellies’ competitions.
Was positive social pressure a factor in changing behaviour?	Not mentioned – not scored in initial assessment.	Low	The diagram cannot adequately differentiate between where there is no action, or where there is a lack of information related to the factor. Thus a factor might have been more or less effective than it is scored.	Change to ‘Low’: Thames region does visit schools and gives children “promise cards” which they take home and talk to parents about. But this is done on an ad hoc basis, not across at risk areas.
Discouragement				
Were any of the following in place to discourage the undesired behaviour? <ul style="list-style-type: none"> Penalties/fines. 	There was a perception that to maintain an unawareness of flooding vulnerability would keep household insurance premiums down. Thus the perception was that to sign up for the system would incur a financial penalty in the form of increased insurance premiums.		This is confusing to score. There was some discouragement of the desired action (signing up for flood warning direct) due to fear of impact on insurance premiums. The methodology does not allow this negative effect to be shown. Additionally, it is not clear whether this should be in the baseline or the ex-post study.	OK.
Was there any social stigma associated with the behaviour?	Not mentioned			Mentioned that there may be social stigma associated with <i>defending</i> properties, as the erection of defences is sometimes seen as having

				negative consequences for properties downstream. But this point relates to defences, not signing up for flood warning service.
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A1.1.2 Situation following the case study interventions

Low				
Medium				
High				
<p>The Environment Agency appointed a contractor to conduct door to door visits in high risk flood areas in the Thames Valley to encourage residents to sign up to a free Flood Alert Service. The campaign covered 24 key postcode sectors where specific properties were at risk of flooding. The purpose was to talk to local residents not already subscribed to the free service regarding the risk their properties may be at from flooding and offer them with the opportunity to register on their door step. The goal was to get residents to register for flood warnings, as a first step to increasing their flood preparedness.</p>				
BEHAVIOUR CHANGE FACTOR	ASSESSMENT	SCORE	COMMENT - CEP	COMMENTS – Helen James
Enable				
Mechanisms				
To what extent did the case study provide the services necessary to enable behaviour change?	The early warning system remained in place.	High		OK
Provide information				
To what extent were skills, education and knowledge provided to those from whom it sought behaviour change?	The study included a degree of education on the flood risks faced by the respondents home, included the local history of flooding. The study also educated respondents as to how the early warning system works, and the benefits such a system would offer them.	High		OK
Engage				
Practical action				

What degree of practical action did the case study employ as a means to changing behaviour?	Not mentioned	Zero		No work with Flood Awareness Groups or to encourage people to form these included in this intervention, so change to Zero.
Create Awareness				
To what extent was personal contact or enthusiasts used to engage with stakeholders?	Marketing people were employed to make personal contact with respondents.	High	Overall high score on the diagram, as personal contact assumed important.	OK
To what extent were media campaigns / opinion formers used to engage with stakeholders?	Assumed that media campaigns continued to be used, but as ineffective as before.	Low		OK
To what extent were networks used to communicate and interact with stakeholders?	Not mentioned	Low		Some contact with networks e.g. local authority, Church, but only on a piecemeal basis. Change score to Low
Exemplify				
Leading by example				
Did the case study provide relevant examples of the behaviour it wished to realise?	The case study included hypothetical examples of how the early warning system would work, which demonstrated what would occur if a flood was predicted.	Medium	This is an assumption as the information is not available.	Canvassers were given maps demonstrating which properties had been affected by flooding in the past. HJ suggested changing score to High. CEP's assessment is that more could be done to provide positive examples of the benefits of receiving flood warnings –HJ said that there are examples of using positive case studies in other areas of Thames - so leave score as Medium.
Achieving consistency in policies				
Did the case study make participants aware of government initiatives to uphold the principles of the desired behaviour?	Environment Agency policies related to flood awareness are consistent with getting the respondents to sign up for the early warning system. It is unclear if these Environment Agency policies were known by, or communicated to, the respondents. More information would clarify this score.	Low	This question could also relate to peoples <i>perception</i> of the consistency of Government policies or practices. E.g. The Environment Agency may take a decision not to invest in a flood defence scheme, in line with policy, which could appear to the public as inconsistent with encouragement to sign up to flood warning.	Difficult to know what information could be used to support assessment of this factor: not sure how relevant it is to flooding?
Were policies relevant to the	Not mentioned			As above – not clear what information

case study in conflict with the principles of the new behaviour?				would be relevant for assessing this factor.
Encourage				
Positive re-enforcement				
Did the case study involve the use of any of the following financial incentives to encourage behaviour change; tax incentives; grants; rewards?	Not mentioned, but assumed unlikely.	Zero		Not used as part of this initiative, but incentives have occasionally been used.
Was social pressure a factor in positively encouraging behaviour change?	Not mentioned		<i>Reflection on EA comment about using social pressure: some of these factors may not be susceptible to influence by the EA, :e.g. there could be a risk of an attempt by the EA to mobilise social pressure might backfire in that the EA could be seen as acting like “big brother”.</i>	EA did not attempt to mobilise social pressure to support this campaign: may be something that could be done in the future.
Discouragement				
Did the case study involve the use of any of the following financial disincentives to discourage the undesired behaviour change; tax incentives; grants; penalties?	Not mentioned		See the comment in the before table above, as there was an existing issue related to insurance premiums.	OK
Was negative social pressure a factor in changing behaviour?	Not mentioned.			OK
Note				
<ul style="list-style-type: none"> • There was a strong disincentive for people to sign-up to the early system, as it was feared that to do so may place an upward pressure on insurance premiums. This was not addressed during the project, and may have prevented people from changing their behaviour and signing up to the early warning system. • Where respondents could not perceive any immediate benefit to the early warning system, for instance if they lived in flats (which may have been above the high water mark, or may have not been owner-occupied) there was a significantly lower amount of take-up. The reasons for this are unclear from the information provided. 				

A1.2 Case study 2: Reducing fly-tipping and improving the urban environment on the Fairyland estate, South Wales

A1.2.1 Situation before the case study interventions

<p>Case study title: Fairy Land Estate – Pride in Our Communities Description: Pride in Our Communities was a partnership programme to reduce fly-tipping in a socially deprived estate in Neath, South Wales.</p>				
<p>Low</p> <p>Medium</p> <p>High</p>				
BEHAVIOUR CHANGE FACTOR	ASSESSMENT	SCORE	COMMENTS - CEP	COMMENTS – participatns
Enable				
Mechanisms				
To what extent were the necessary facilities and services in place?	A lack of facilities to dispose of bulky waste, leading to fly-tipping in the estate. We have assumed that some low level of facilities for the removal of bulky waste was available.	Low		
Local capacity				
To what extent did those involved already have relevant skills, education and knowledge?	We have assumed that the knowledge of services available and the ability to get support from the Council was low, as the residents' association was not very active. It is also likely that the local population may have been unaware of services provided by the local authority that could have been used to dispose of the waste.	Low	Little knowledge and capacity in the community before the project, as evaluated by the project organisers. Lack of confidence and self-esteem were seen as critical blocks to change.	
Engage				
Practical action				
Were those to be involved engaged in any relevant	There was no engagement around the fly-tipping (or non-accidental fires).	Zero	It is assumed that there was no engagement prior to this study as none has been mentioned.	

practical action to address the problem?				
Create Awareness				
Was personal contact /enthusiasts being used to engage with stakeholders?	There was no engagement with the local residents around the issue of fly-tipping	Zero	It is assumed that there was no engagement prior to this study as none has been mentioned.	
Were media campaigns / opinion formers being used to engage with stakeholders?	There were no media campaigns being used to engage the local residents around the issue of fly-tipping	Zero	It is assumed that there were no media campaigns or involvement of opinion formers prior to this study as there is none mentioned in the report.	
Were networks being used to communicate and interact with stakeholders?	There was no use of networks to engage with the local residents around the issue of fly-tipping	Zero	It is assumed that there no networks (e.g. schools,, Churches) were being used to engage with stakeholders on the question of fly-tipping and litter burning prior to this study as there is none mentioned in the report.	
Exemplify				
Leading by example				
Were those to be involved aware of relevant examples of the behaviour the case study was intended to catalyse?	While normal practice is not to dispose of waste by fly-tipping, or to set fire to waste which has been fly-tipped, it appears that these practices had become so common on the Fairyland Estate that they were regarded as the norm by many. No evidence of efforts to highlight good practice or point to the example of other estates that had cleaned up.	Medium	Mixed picture: it is assumed that would have been a general awareness of what a clean estate would look like and the benefits of avoiding fly-tipping and discouraging arson. But as the problem became more common, residents may have begun to feel this was the norm.	
Achieving consistency in policies				
Were existing government policies or practices consistent with the desired behaviour?	While it would appear that Welsh Assembly Government has a consistent anti-fly-tipping policy nationally, there is not enough evidence about local waste management policies and practice		Further evidence on the Council's waste collection service and other issues around waste management at the time (e.g. contentious incinerator applications?) might affect this assessment	
Encourage				
Positive re-enforcement				
Were any of the following in place to encourage the desired behaviour? <ul style="list-style-type: none"> incentives or reward schemes 	No	Zero	It is assumed that there were no reward schemes to encourage residents not to fly-tip waste or set fire to fly-tipped waste.	

Was positive social pressure a factor in changing behaviour?	No	Zero	Links with “Leading by example” above. Assumed that as having fly-tipped waste around became normal, any social pressure was too low to make a difference.	
Discouragement				
Were any of the following in place to discourage the undesired behaviour? • Penalties/fines.	Yes, there are legal penalties for fly-tipping and setting fire to waste.	Low	Assumed that the penalties/fines were not being rigorously enforced,	
Was there any social stigma associated with the behaviour?	Because fly-tipping and waste burning were so common, there is likely to have been little stigma associated with the practices.	Low		

A1.2.2 Situation following the case study interventions

Low				
Medium				
High				
BEHAVIOUR CHANGE FACTOR	ASSESSMENT	SCORE	COMMENT - CEP	COMMENTS – Environment Agency
Enable				
Mechanisms				
To what extent did the case study provide the services necessary to enable behaviour change?	The case study involved providing a skip to collect bulky waste which might otherwise have been fly-tipped, and organising community clean up events	High	The services provided seem to have been considered good by the residents: 69% of households have used the service. But qualitative comments were made about the difficulty of maintaining cleanliness levels after local authority clean ups, so perhaps room for improvement?	
Provide information				
To what extent were skills, education and knowledge provided to those from whom it sought behaviour change?	The project has played a role in supporting and enabling a successful residents association - Forward4Fairyland. This is likely to have	Medium	Need to confirm the focus and coverage of the training provided by Communities First and work with Forward4Fairyland.	

	included capacity building. Environmental training programme provided through Communities First.			
Engage				
Practical action				
What degree of practical action did the case study employ as a means to changing behaviour?	Sixty per cent of residents have been directly involved in the clean-ups at some point (and 25 per cent are regularly involved).	High	<p>“Clean-up days have a positive impact on the community because they are visible and ‘people can physically see something happening which brings them out of their homes’. This gives residents a chance to interact with each other and ‘people feel that at last someone is taking an interest in them’.”¹</p> <p>Methodology: establishing the parameters of “High / Medium / Low” is a subjective process: here we have said that engaging 60% of residents is a “high” level of engagement, in comparison with average levels of community engagement in waste management. However, if we were to assume that the 40% that haven’t been engaged include people who continue to fly-tip and burn waste, we might feel that the situation hasn’t changed greatly and therefore score it as ‘medium’.</p> <p>Not sure whether it would be possible to establish a score that would be valid for all different types of projects.</p>	
Create Awareness				
To what extent was personal contact or enthusiasts used to engage with stakeholders?	Personal contact was important in engaging local residents. It was noted that there was a likelihood of a low response rate among Fairyland residents (common in areas of high deprivation).	Medium	Scored medium because more information needed about the extent to which local people assumed the role of enthusiasts, or whether there was more reliance on a small number of project staff from outside the Estate.	
To what extent were media campaigns / opinion formers used to engage with stakeholders?	No information about media campaigns/opinion formers being used.	Low	Some specialist media included positive reports about the changes in the estate, but these cannot be considered media campaigns	

¹ Brook Lyndhurst, “Delivering regeneration through environmental improvements, p 40

To what extent were networks used to communicate and interact with stakeholders?	No evidence of the use of additional networks (beyond the community members / Residents' Association)		Networks like church and social welfare organisations, and Keep Wales Tidy, were involved on the estate. However, they were likely to have been seen as part of the intervention, rather than acting as trusted intermediaries. Methodological issue: Important to define clearly what is covered by networks, to avoid 'double counting' with other factors in "creating awareness" or social pressure under "Positive reinforcement". This category should consider sources of communication or social contact beyond the immediate initiative (i.e. not the Residents Association in this case) and which have a normative influence, e.g. as a Facebook group might.	
Exemplify				
Leading by example				
Did the case study provide relevant examples of the behaviour it wished to realise?	Residents would have continued to be aware of normal practice (not to fly-tip or burn waste) but no mention of further examples being provided.	Medium	Assumed that the project made no change to this factor.	
Achieving consistency in policies				
Did the case study make participants aware of government initiatives to uphold the principles of the desired behaviour?	No information that residents were made aware of government initiatives upholding the principles of the desired behaviour.	Low	The project focused on local issues rather than national policies and drivers for change. Further information about whether the project addressed general issues about waste policy in the information provided and if so, how consistent did policy appear to be with the project might be useful.	
Were policies relevant to the case study in conflict with the principles of the new behaviour?	Local authority was involved in measures to prevent fly-tipping. Not enough evidence on policies of national government or local authorities.	Low	This assessment might change if there were further information about waste management policies and practice of Welsh Government and local authorities.	
Encourage				
Positive re-enforcement				

Did the case study involve the use of any of the following financial incentives to encourage behaviour change; tax incentives; grants; rewards?	No information that residents received monetary incentives, however there were community activities, training and material improvements to the estate which acted as positive reinforcement	Medium	Methodological issue – change description of factor to “material“ benefits, as it is not just about receiving money.	
Was social pressure a factor in positively encouraging behaviour change?	There is anecdotal evidence that residents’ general perceptions of the estate are starting to shift. Before the project started, people perceived Fairyland to be ‘a dumping ground’ (for low income tenants as well as rubbish), and that many people were ‘watching the estate crumble around them’. However, as one resident noted ‘within the last two years or so the people of Fairyland can now lift their heads... there is an element of pride’.	Medium	Social pressure seems to more important as a result of the project. Residents have increased confidence in rejecting anti-social behaviours like fly-tipping, and community leaders emphasise the need to maintain a good environment.	
Discouragement				
Did the case study involve the use of any of the following financial disincentives to discourage the undesired behaviour change; tax incentives; grants; penalties?	Penalties are in place for fly-tipping, but residents did not see these as significant discouragement, as levels of enforcement were low. There was no change from the situation prior to the project.	Low		
Was negative social pressure a factor in changing behaviour?	Anecdotal evidence suggests that some residents are becoming ‘embarrassed about making a mess’.	Medium	As above, social pressure seems to be a factor. However, later on the report suggests that one part of the estate with most families who have lived there longer, has been more engaged than another part where residents have been there less time, i.e, only partial coverage..	
Note				
•				

A1.3 Case study 3: Changing the approach to preparing for flood risk on caravan and camp sites in the South West

A1.3.1 Situation before the case study interventions

Case study title: Flooding – Minimising the Risk. South West.

Description: The Environment Agency prepared guidance for caravan/camping site owners, to keep the staff and visitors safe in a flood. The primary desired behaviour is for the site owners/managers to make a plan and take the necessary actions to prepare for flood incidents, in particular by increasing awareness and preparedness for flooding among visitors and staff. (A secondary desired behaviour is for visitors to caravan and campsites to take appropriate measures to be prepared for flooding. This is not evaluated here.)

The information below was initially generated by CEP from information provided by Jane Fletcher-Peters, SW Flood Awareness Officer, and subsequently checked in a telephone interview with Jane.

<div style="background-color: #FFD700; padding: 2px;">Low</div> <div style="background-color: #FFD700; padding: 2px;">Medium</div> <div style="background-color: #90EE90; padding: 2px;">High</div>				
BEHAVIOUR CHANGE FACTOR	ASSESSMENT	SCORE	COMMENTS - CEP	COMMENTS – Environment Agency
Enable Mechanisms				
To what extent were the necessary facilities and services in place?	<p>Not all campsites and caravan parks have telephones on site; where they don't have telephone contact, it is difficult for them to receive flood warnings.</p> <p>The Environment Agency provides a flood warning service, but this is not available in all areas. The Environment Agency is unable to provide a flood warning service for many areas which are at risk from flash flooding; these are often scenic locations popular with tourists, and there are many campsites and caravan parks in these areas.</p> <p>Establishing effective evacuation plans means that sites need to have access to locations (rest centres) which visitors can reach without danger. Many sites do not have places that would serve as rest centres because they are</p>	Medium	<p>It is not clear what proportion of sites have access to a telephone, but it is assumed that most now do, because of the increasing use of mobile phones. It is recognised that mobile phone reception may be poor in remote areas.</p> <p>It is assumed that the FWD service covers sites in major towns, but that a proportion of sites (<40%?) are not covered.</p>	<p>There is a real mix between those that can receive flood warnings (FWs) and those that can't. The EA works out where it will provide FW services on the basis of cost, risk, technical constraints and whether the site is in an isolated area.</p> <p style="background-color: #FFFF00;">Problem situation: the initiative came out of requests from caravan site owners for guidance on the preparation of flood evacuation plans to support applications for planning permission. Evacuation plans could cover:</p> <p style="background-color: #FFFF00;">Having 4 x 4 vehicles to tow the caravans to a safe location;</p> <p style="background-color: #FFFF00;">Indicating a rest centre in a suitable location e.g. on higher ground that people can reach</p>

	isolated, because they get cut off by flood water, etc			Measures to take in the case of site being cut off by flood waters (on some sites, people are only able to reach safety by crossing rivers. Provision of flotation skirts: owners of residential caravans often invest in these.
Provide information				
To what extent did those involved already have relevant skills, education and knowledge?	Low level of information about the risks of flooding among caravan and campsite owners revealed by damage during 2007 flooding in Midlands. Assumed that the level of awareness is similar in SW.	Low		Caravan and camp site owners may not even be aware that they are in a flood risk area. They would generally only be aware if they had been flooded or if they had put in a planning application and been told they needed an evacuation plan. The flood packs were only sent to those at risk.
Engage				
Practical action				
Were those to be involved engaged in any relevant practical action to address the problem?	Caravan and campsite owners / managers are legally required to put up a board with contact details for the emergency services and, if they are within a flood risk area, to display prominent notices about flood risk. This is a fairly administrative measure, imposed by law, so is unlikely to create a sense of engagement.	Low	Would be interesting to know what level of coordination exists between site owners: do they have an association through which they discuss and take action on issues of interest / concern? If so, has flood risk ever been raised as an issue?	As above, the only caravan and campsite owners / managers who would be aware and concerned enough to take action would be those who had flooded or had made a planning application.
Create Awareness				
Was personal contact/enthusiasts being used to engage with stakeholders?	No information about contacts by the Environment Agency or other organisations to discuss flood risk with individual site owners.	Low	We are assuming that SW Tourism has contacts with site owners and is discussing issues of concern with them, but that before the EA initiative, flood risk had not been discussed.	There were ad hoc contacts with individual sites, e.g. Mill on the Mole, Devon, where EA gave advice on an action plan; also a campsite in Cornwall which had flooded regularly and needed planning permission. This site provided an example of what could be done to other sites in the area. Owners also tried to set up a cascade system: other site owners would come and look at the boards. There was seen to be an economic benefit from taking measures, as the site is now able to open all year round. Score changed from Zero to Low
Were media campaigns / opinion formers being used to engage with stakeholders?	No information – assumed that there were no such campaigns	Zero	We have assumed that there were no media campaigns specifically directed to site owners/managers. If there were significant media campaigns about flooding targeted at members of the public or tourists, this would need to be taken into account here, and	The EA doesn't do media campaigns on this because of concerns about potential negative impacts on business. The EA has steered away from media campaigns and the emphasis has been on the positive aspects of taking action, such as demonstrating awareness of safety issues.

			could increase the score.	
Were networks being used to communicate and interact with stakeholders?	No information to suggest that the Environment Agency had been using networks (e.g. of tourism businesses) to communicate with site owners / managers before this initiative.	Zero		There was nothing in place, although JF-P does sit on the Tourism Sub-group of the SW Climate Change partnership.
Exemplify				
Leading by example				
Were those to be involved aware of relevant examples of the behaviour the case study was intended to catalyse?	No information about examples of good practice in caravan and campsite flood risk preparedness being used in SW, or examples promoted in other parts of the country.	Zero		Only informal cases like the Cornwall campsite mentioned earlier (This site provided an example of what could be done to other sites in the area. Owners also tried to set up a cascade system: other site owners would come and look at the boards. There was seen to be an economic benefit from taking measures, as the site is now able to open all year round.)
Achieving consistency in policies				
Were existing government policies or practices consistent with the desired behaviour?	Yes, existing policies related to conditions of the site licence were consistent with the Environment Agency's work to minimise flood risk at caravan sites. In addition, policy related to minimising flood risk is consistent with the desired behaviour.	High	It would be interesting to know if there has been housing development, or proposals for housing development in areas where there are caravan and campsites. There is some suggestion that members of the public (including site owners and managers) may feel that if new housing is being permitted, the risk of flooding must be low. This could lower the score for this factor.	Preparation for the risk of flooding is consistent with PPS 25 Planning and Flood Risk. In some cases campsites are permitted in locations where flood risk means that permanent housing is not permitted, even though it is often vulnerable people who live in campsites (elderly, low income).
Encourage				
Positive re-enforcement				
Were any of the following in place to encourage the desired behaviour? <ul style="list-style-type: none"> incentives or reward schemes legal requirements 	As part of the licence granted to caravan parks, boards with contact details for the emergency services have to be provided; in parks within a flood risk area, prominent notices about flood risk must be displayed. There is no material incentive for compliance with these requirements	Low	It is not known how common it was for caravan parks to display the notices which were part of the licence conditions. In addition, it is not known if any notices which were displayed were adequate in communicating the level of flood risk present, or what this level of risk may mean to visitors.	The EA had been promoting good customer care. There were legal site requirements in place, but these were not enforced. The EA had considered including flood preparedness in business awards, though this has not happened.
Was positive social pressure a factor in changing behaviour?	Potentially, but difficult to tell from source material.		We would need to know if there was openly-expressed concern from members of the public, either in local communities or	

			visitors, about the lack of information and preparedness of caravan and campsites, particularly after the flooding in Boscastle and the 2007 flooding in the Midlands.	
Discouragement				
Were any of the following in place to discourage the undesired behaviour? <ul style="list-style-type: none"> Penalties/fines. 	Yes, there is the possibility that a sites licence would be revoked if it did not display a flood risk area warning.	Low	The conditions of the caravan site licence related to flood risk do not include measures designed to minimise flood risk, or maintain a flood risk plan to safely respond to a flood event. The condition of the licence relates solely to providing a warning notice if the site is in an area of flood risk. Not clear how far this requirement is regulated in practice (do site owners ever get fined?)	Legal requirements not enforced. For local authorities, flood risk is not high on the priorities for action. The EA has been trying to get local authorities to increase the profile of flooding. Nationally, the EA would like to see a real Occupiers' Liability Act
Was there any social stigma associated with the behaviour?	Difficult to tell from source material		As in the case of the factor relating to positive social pressure above, we would need to know if there were cases of local people or visitors avoiding sites where there were no flood preparedness measures in place. There doesn't appear to be any evidence of this	

A1.3.2 Situation following the case study interventions

<div style="background-color: #FFD700; padding: 2px;">Low</div> <div style="background-color: #FFA500; padding: 2px;">Medium</div> <div style="background-color: #90EE90; padding: 2px;">High</div>				
BEHAVIOUR CHANGE FACTOR	ASSESSMENT	SCORE	COMMENT - CEP	COMMENTS – Environment Agency
Enable Mechanisms				
To what extent did the case study provide the services necessary to enable behaviour change?	No change in the availability or coverage of the flood warning service, however the EA has been helping sites where FW services are not available to set up their own flood risk monitoring systems. No information about increase in coverage of	Medium	The EA help with getting flood wardens in place to provide flood risk monitoring seems to be at a fairly early stage.	

	telephone services to caravan or campsites. No evidence of increased access to rest centres.			
Provide information				
To what extent were skills, education and knowledge provided to those from whom it sought behaviour change?	A guidance document was made available to caravan site owners, detailing the steps they could take to minimise the risk of flooding to visitors and staff alike.	High	This guidance is extensive, and is provided with a Flood Evacuation Plan. The Evacuation Plan is to assist the caravan site owners in preparing for a flood event, setting out what indicators should be used to provide adequate warning time, and what steps should be taken if a flood event occurs. 315 out of the 420 sites receiving flood packs have contacted the EA.	The pack provides templates for creating an evacuation plan. They also provide signage for use on sites, e.g. a notice to hand inside caravans and another to post around the site. The packs are tailored to individual sites: each pack includes a map showing the flood risk to that particular site, and provides suggestions of how layout could be changed to reduce the risk.
Engage				
Practical action				
What degree of practical action did the case study employ as a means to changing behaviour?	The case study made a template Flood Evacuation Plan available to caravan site owners, together with guidance that provided an explanation of why an Evacuation Plan is necessary.	Medium	The guidance pointed site owners / managers in the direction of practical action, but the initiative did not engage them directly, so the onus was on site owners / managers to develop action. It is not clear if stakeholders were involved in preparing or testing the guidance. It is assumed that there were to some extent, but this is not apparent from the materials provided. Evidence of such engagement would make this score higher.	Wessex Area organised action days on some sites. These involved practical action such as building flood banks. However, these action days were not held in the context of this initiative, so may not have contributed to it.
Create Awareness				
To what extent was personal contact or enthusiasts used to engage with stakeholders?	The initiative started with the mail out of flood packs and the opportunity for site owners/managers to seek further information or advice from the Environment Agency.	Medium	We have assumed that site owners / managers contacting the EA for advice will have had telephone contact with a member of staff who would have provided them with tailored advice about their own situation. If the follow up advice from the EA took the form of standard written or recorded material (i.e no personal contact) the score for this factor should go down.	The packs were set out by mail. Site owner/managers would have been able to get them through Area offices, and some have been requested through this route. Packs include direct dial numbers for people to ring, so there is potentially direct contact with relevant staff.
To what extent were media campaigns / opinion formers used to engage with stakeholders?	There is no evidence of media campaigns or the involvement of opinion formers (e.g. public figures, celebrities).	Low		

To what extent were networks used to communicate and interact with stakeholders?	There is some evidence that the availability of the guidance was communicated via South West Tourism. The involvement of SW Tourism was very important in framing the messages in a way that would get through to site owners / managers (positive rather than negative messages)	Medium	If the network is very active or other networks were also used in promoting this campaign, the score for this factor could be higher.	
Exemplify				
Leading by example				
Did the case study provide relevant examples of the behaviour it wished to realise?	Some photos of good practice were used in packs.	Low		The EA used photos of good practice in the Flood Packs. However, there is resistance by caravan and campsite owners as they don't want their sites to be considered good practice for flood risk management.
Achieving consistency in policies				
Did the case study make participants aware of other government / public sector initiatives to uphold the principles of the desired behaviour?	Existing policies related to conditions of the site licence are consistent with the Environment Agency's work to minimise flood risk at caravan sites. The flood pack did not emphasise these legal requirements.	High	It is assumed that site owners / managers are aware of their legal obligations and it was not necessary to emphasise this aspect in the campaign.	
Did the case study demonstrate the consistency between public policy and the desired behaviour?	The guidance focuses on the desired behaviour and doesn't address wider policy issues			
Encourage				
Positive re-enforcement				
Did the case study involve the use of any of the following financial incentives to encourage behaviour change; tax incentives; grants; rewards?	No information. It was suggested that a positive perception of the responsibility of the site owner / manager could give the site a competitive advantage over others.	Medium	Did SW Tourism link participation by site owners / managers in this scheme with any other tourism initiatives, e.g. advertising opportunities, certification? This would increase the score for this factor.	No award scheme for the moment, though it is a possibility for the future. Any such scheme would be jointly provided by SW Tourism and the EA.
Was social pressure a factor in positively encouraging behaviour change?	Positive social perception of the desired behaviour was invoked as a reason for making the change: The guidance states that " <i>visitors will feel reassured that the site is acting responsibly and has given</i>	Low	There is no evidence in the material provided of the existence of positive social pressure for change. This might take the form of Parish Councils or local organisations supporting the EA / SWT initiative, letters in the local press,	Score changed from Medium to Low.

	<i>consideration to their safety”.</i>		etc. Evidence of this kind of social pressure might increase the score for this factor.
Discouragement			
Did the case study involve the use of any of the following financial disincentives to discourage the undesired behaviour change; tax incentives; grants; penalties?	The EA and SW Tourism believed that positive incentives should be emphasized rather than penalties.	Low	The model suggests that positive incentives and penalties could combine to increase the likelihood of change. SW Tourism’s position seems to be that emphasizing penalties could undermine the positive incentives. This is an aspect that needs to be evaluated.
Was negative social pressure a factor in changing behaviour?	Difficult to tell from source material.		To assess this factor, we would need to know if there were cases of local people or visitors avoiding sites where there were no flood preparedness measures in place. There doesn’t appear to be any evidence of this.
Note			
<p>In general, it would be useful to have this information for planning projects as well as for evaluation. The SW team spent a lot of time thinking through the different aspects of their project: this kind of list prompts you to think about whether or not to take actions and would help to justify them. In the SW we did think through all these elements, but it would have been useful to have this tool.</p> <p>Radar diagrams: It isn’t immediately clear what the radar diagrams are showing. You need to talk them through.</p>			

Glossary

CEP	Collingwood Environmental Planning
Defra	Department of Environment, Food and Rural Affairs
DWPA	Diffuse Water Pollution from Agriculture
FWMP	Farm Waste Management Plans
IA	Impact Assessment
MSW	Municipal Solid Waste
SW	South West

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