Developing a simulation: review of learning

Working together to adapt to a changing climate: flood and coast

FCERM Research & Development Programme

Research Report

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We help people and wildlife adapt to climate change and reduce its impacts, including flooding, drought, sea level rise and coastal erosion.

We improve the quality of our water, land and air by tackling pollution. We work with businesses to help them comply with environmental regulations. A healthy and diverse environment enhances people's lives and contributes to economic growth.

We can't do this alone. We work as part of the Defra group (Department for Environment, Food & Rural Affairs), with the rest of government, local councils, businesses, civil society groups and local communities to create a better place for people and wildlife.

Research at the Environment Agency

Scientific research and analysis underpins everything the Environment Agency does. It helps us to understand and manage the environment effectively. Our own experts work with leading scientific organisations, universities and other parts of the Defra group to bring the best knowledge to bear on the environmental problems that we face now and in the future. Our scientific work is published as summaries and reports, freely available to all.

This report is the result of research commissioned and funded by the Joint Flood and Coastal Erosion Risk Management Research and Development Programme. The Joint Programme is jointly overseen by Defra, the Environment Agency, Natural Resources Wales and Welsh Government on behalf of all risk management authorities in England and Wales: https://www.gov.uk/government/organisations/flood-and-coastal-erosion-risk-management-research-and-development-programme

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If you have any comments or questions about this report or the Environment Agency's other scientific work, please contact research@environment-agency.gov.uk.

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Executive summary

This report summarises learning from developing and trialling a role play simulation exercise. Our simulation was designed to build 'readiness' among organisation and community stakeholders to engage with the challenges of surface water flooding in an urban context in Surrey/London. The background analysis, design and testing of this simulation drew on both existing research and the local knowledge of our steering group in Caterham and Old Coulsdon, which included both residents and organisations involved in flood risk management in the area.

This report explains the **background analysis** that led us towards exploring a simulation as a potentially helpful tool for facilitating conversations about difficult challenges in flood risk management among a range of stakeholders.

An initial workshop identified the following challenges:

- The complexities of flood risk management, and the difficulty of understanding who is responsible for what, and where decisions are made.
- The fact that different stakeholders operate at very different scales, from the very local to the national.
- The difficulties of negotiating competing priorities and trade-offs, but also the potential for synergies between different goals.
- The ways in which the language and forms of communication used in flood risk management can provoke strong emotions, particularly for people who have themselves experienced flooding.

We explain **why a simulation** might be helpful in opening up conversations about these challenges and building a basis for collaborative working. Simulations aim to increase collective understanding among stakeholders via structured opportunities to consider a range of different options and perspectives. Simulations intend to create a safe space for this, in a setting slightly removed from the actual situation, aiming to form a basis for more informed, empathetic and collaborative decision-making in the real-life context.

How we went about developing a simulation is described in 5 phases:

- Initial trials of an existing simulation from a different context
- Understanding local dynamics and perspectives in Caterham and Old Coulsdon
- Detailed simulation design
- Piloting
- Evaluation

Simulation design is a process that requires considerable thought and understanding, both of the contexts in which simulations might be used and of the main features of simulations that work (for example, building in an appropriate level of conflict and a good range of different perspectives). Our work on the simulation involved close collaboration with a local

steering group throughout – a process that really helped to make the simulation relevant to the local context.

We reflect on the learning that emerged from **running the simulation in Caterham and Old Coulsdon**, and also on the challenges we faced. Main findings here include the following:

- Participants from a range of different groups that we worked with, including both organisation and community stakeholders found the materials we had produced and the discussions that happened during the simulation and in the debrief informative and thought-provoking. Across the board, the simulation format worked very well.
- Nevertheless, it was difficult to get a wider audience interested in taking part, probably due to a combination of factors, including the relatively limited awareness of flooding in the local context, a hesitation from potential participants to engage in 'role play', and the fact that this phase of our work coincided with the Covid-19 pandemic.

We offer suggestions about the **potential uses of this and other simulations**, including questions to consider when deciding whether to use or adapt existing simulations from other contexts. Such uses include:

- building 'readiness' with practitioners involved in FCERM and community engagement work
- accelerating learning for new flood action groups
- building shared understanding and relationships within existing and newly formed multi-stakeholder groups
- using simulations as an educational tool in secondary, further and higher education contexts

Our **conclusion** suggests that simulations can be a helpful tool in a range of settings and with different audiences, but that in considering whether and how to use them, it is important to think carefully about where they might fit into a larger capacity-building, engagement or collaboration process.

Introduction

About this report

This report summarises learning from developing and trialling a role play simulation exercise. The simulation was designed to build 'readiness' among authorities, partners and communities to engage with the challenges of surface water flooding in an urban context in Surrey/London. It was created as part of the research project 'Working together to adapt to a changing climate: flood and coast'. This report outlines design considerations, documents learning, and reflects on some of the challenges we encountered.

This report is aimed at anyone who is interested in innovative methods through which communities, authorities and other stakeholders can work together to increase understanding and plan for future flood and coastal erosion risk. It should be particularly useful for engagement staff in risk management authorities and third sector organisations. It may also be of interest to individuals and community groups interested in or concerned about future planning and decision-making on these issues in their local area.

The purpose of this report is to:

- give an understanding of what we did, how and why
- provide points to consider when conducting a simulation
- help users adapt the simulation for their own purposes[1]

Where this report has come from

This report is a final product of the action research project 'Working together to adapt to a changing climate: flood and coast'. The project was funded by the Flood and Coastal Erosion Risk Management Research and Development Programme (Environment Agency, Defra, Welsh Government and Natural Resources Wales) and implemented by the research and engagement company Icarus.

The research is a response to concerns about the impacts of climate change and the likelihood of significantly higher levels of risk to communities due to increased flooding or coastal erosion. It aimed to explore how authorities can engage effectively with

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[1] Nothing in this report implies (a) any additional duty on the Environment Agency, Defra, Welsh Government or Natural Resources Wales to engage with or consult authorities, partnerships, or wider communities or (b) any requirement for, or undertaking by, the Environment Agency, Defra, Welsh Government or Natural Resources Wales to carry out engagement or consultation in accordance with the methods in this report.

communities on these issues, particularly where options for addressing increased risk may be complex or contentious.

The project is providing evidence for the implementation of the new Flood and Coastal Erosion Risk Management (FCERM) Strategy for England. Findings from the evidence review are featured in the strategy, along with a measure to share learning from the project. The research also addresses aspirations to make people and places central to decision-making and increasing local resilience to climate change.

The action research project included 3 phases:

1. a review of evidence on community engagement on climate adaptation (2018), to inform:
2. designing and implementing an innovative community engagement programme (2019 to 2021). Local communities and organisations were invited to apply to take part, and **2 pilot locations** were selected:
   - Caterham on the Hill and Old Coulsdon, Surrey and London Borough of Croydon - experiences surface water flooding
   - Hemsby, Norfolk – experiences coastal erosion and storm surges
3. bringing together, reflecting on and documenting learning and practice (2021 to 2022)

Co-design and collaboration were integral to the project. This included setting up steering groups in each pilot location made up of authorities and residents. The steering groups helped to develop and trial a local engagement programme. The project took an action research approach, documenting learning throughout and adapting the work programme accordingly. Two-way learning was also instigated through quarterly webinars with a group of almost 200 FCERM practitioners. A project board including representatives from the Environment Agency, Natural Resources Wales and local authorities helped to steer the project throughout.

It is worth noting that different participants had different levels of involvement and influence throughout the project. Research and engagement company Icarus implemented the project and wrote these reports. The use of 'we' refers to the authors unless otherwise specified.

There are a number of products from the project that reflect on the research findings and learning and provide detailed information about the tools developed and tested. These are available on the [project webpage](#).

Report structure

After a general introduction to the simulation and our approach, section 1 highlights findings from a first stakeholder workshop in Caterham and Old Coulsdon. Challenges including complexity, scale, competing priorities and communication were raised. It also discusses why the simulation was chosen as an approach to address some of these challenges. Section 2 details the steps we took to develop the simulation. The stages included trialling an existing simulation; understanding local dynamics; simulation design;

moving online; piloting; and evaluation. Section 3 talks about our experiences of running the simulation in Caterham and Old Coulsdon. Section 4 considers potential uses of this and other simulations. We finish with some concluding reflections.

We have also produced a document on how to run a simulation as well as the simulation briefing materials themselves.

1. Background to the simulation

The initial project evidence review explored the complex challenges involved in climate change adaptation, with a particular focus on flooding and coastal erosion. Our report highlighted the need for collaborative ways of working, involving multiple stakeholders. Drawing on experiences and research from a range of contexts, it includes a section on role play simulations as one way of building readiness for such work. These are 'serious games'; short group exercises run by a professional facilitator that help participants explore the issues, options and potential areas of disagreement and tensions in a safe, supportive environment. The experience of and learning from participating in a simulation can then be used when engaging with the real issues in their own local area.

As part of our work in the pilot location of Caterham and Old Coulsdon, Surrey/London Borough of Croydon, we developed a simulation designed to encourage thoughtful engagement with the challenges of surface water flooding. The local steering group that was closely involved in this work included residents, the flood action group, A Better Caterham, Tandridge District Council, Surrey County Council, Caterham on the Hill Parish Council, London Borough of Croydon, Thames Water and the Environment Agency. The simulation they helped to develop is a role-playing tool used to support stakeholders in their engagement with the challenges of surface water flooding in an urban context.

We recommend that the simulation is used as part of a planned process of engagement with a clear plan for how the experience of running simulation will be used.

Background analysis

At the start of our engagement in Caterham and Old Coulsdon, we held a workshop with some of the main stakeholders, mostly people who were already involved with issues of flooding in the area in a personal or professional capacity. At the heart of this workshop was an activity designed to bring together participants' existing knowledge about the issues, processes and challenges involved in managing or responding to flooding, and to identify questions that they wanted to answer. Below are **the main challenges that were identified in this workshop**:

How complicated it is…
- There are many factors that affect local flood risks, and they interact in complex ways.

- Much of what we face now are the legacies of past decisions that could/did not anticipate the future scenarios we are facing now.

- Within the built environment, water flows and the factors that influence flooding are not visible to many people. This reduces understanding and the sense that they can or should do anything to make a difference.
- The language, technical information and potential strategies used in flood risk management are often difficult to understand for non-experts. Similarly, experts can

struggle to take on board and engage with the local knowledge of flooding and its impacts on particular places that residents and other community stakeholders bring to the table.

- Working out how to engage and who to involve is complicated too – there are many stakeholders, at both community and organisational levels, with different scopes for action, responsibilities and constraints.

- There is a sense that many people find it difficult to understand all of these complexities and to have a clear sense of how their actions fit into the picture.

Questions of scale

Different people and organisations work at very different scales:

- **Geographically**: One person's neighbourhood is a very small part of someone else's patch/area of responsibility.
- **In relation to time**: Organisations and individuals work on different timeframes. Not everyone has the same sense of urgency.
- **In terms of influence and impact:** Some people and organisations clearly have more influence and impact than others. At the same time and in some settings, small-scale actions can have a significant cumulative impact.
- This raises the question of how all stakeholders might develop a greater collective understanding of the scales at which different people and organisations think and work, and of the difference this makes to their thinking, actions or decisions.

Competing priorities and trade-offs... but also potential for multiple benefits?

- Decision-making and action on flooding competes and sometimes conflicts with other policy agendas that need attention and resources, particularly when funding is limited.
- Given this complexity and the fact that these decisions are not necessarily made in public, people don't always understand how decisions on priorities are made.
- For many people whose behaviours influence flooding, flood risk management is not a priority or an active consideration, while others are living with a sense of helplessness, uncertainty and stress much of the time.
- In some areas, there are genuine trade-offs, for example, where there is not enough funding for everything. In others, there are opportunities for action on flooding to have other benefits too such as enhancing the local environment, community and mental health.

Language, communication and emotions

- How we talk about issues and experiences of climate change and flooding (and who with) makes a difference to feelings about:
  - o past experiences
  - o present possibilities for action
  - o place and community

- future options
- the motivation to act and the sense that you can make a difference

- All of this has implications for mental health too.

- For authorities, there are trade-offs between efficiency on the one hand and the demand for communications tailored to individuals and their concerns on the other. Negotiating these pressures can be difficult for people working within large and complex organisations that from the outside may appear anonymous.
- There is a sense that greater transparency on what goes on behind the scenes within decision-making bodies would help. Often, people feel their concerns disappear into a black box, with no visible outcomes.

Why a simulation?

On the basis of the above analysis and the assessment of potential approaches in the evidence review, discussions within the Icarus team considered a potential approach for wider community engagement in Caterham and Old Coulsdon. The intention was to explore ways in which local communities, authorities and other stakeholders might exchange views, build understanding and plan together to help reduce flood risk in the face of climate change predictions.

Overall, we concluded that the project pilot work should aim to develop:

increased collective understanding of/learning about
- the complex factors and interactions that shape flood risk – now and into the future
- the different responsibilities, possibilities for action, and scope for collaboration between authorities, communities and individuals
- the relationship between shorter and longer-term risks and the options for managing them
- the emotional and health impacts of living with risks of flooding and/or coastal erosion

involving

- leading stakeholders, especially those most affected and/or most influential
- a broader public, including people who are not directly affected (or may not realise they are potentially affected) and/or those whose actions could make a difference

in structured opportunities to consider

- the trade-offs and conflicts involved in different potential courses of action
- different perspectives on what is needed, acceptable or desirable
- how our individual and collective choices affect different groups of people
- how the costs and benefits of different options may vary depending on timescales

to create a basis for more informed, empathetic and collaborative decision-making

Going back to the evidence review, we decided to explore the possibility of drawing on the learning from simulations in the New England Coastal Adaptation Project (NECAP). The NECAP research suggests that simulations are particularly suitable for building 'readiness'

among stakeholders, including residents, who may not have had the chance to engage with the issues facing particular locations as they prepare to respond to climate change impacts. In proposing simulations as a tool worth exploring in the pilot locations, we were aiming to open up conversations and build readiness to engage in adaptation planning among a wider constituency beyond our local steering group (who were already very engaged and familiar with the main issues).

Our proposal was based on existing research that suggests **simulations can have multiple benefits relevant to the challenges identified earlier**:

- Simulations can help convey complex information about science, local issues and choices in an accessible form. This can enhance literacy on these issues.
- They encourage empathy by allowing participants to consider a situation from someone else's perspective, and in relation to the different personal experiences and professional roles that inform people's engagement with these issues.
- Simulations address realistic decision-making choices, ensuring that discussion is focused and meaningful.
- Participating in a simulated decision-making exercise creates a safe space for discussion about tricky and often contentious issues, building confidence and capacities for participation in real decision-making processes.
- Well-facilitated simulations give participants an experience of what decision-making processes that take account of a range of stakeholders and perspectives can look and feel like. This holds significant potential for learning, not just for residents but also for practitioners used to a different culture of engagement (using methods such as public meetings, exhibitions, newsletters and leaflets).

An important idea behind the use of simulations is that in a debrief phase they help to open up discussion of real-world dynamics, challenges, dilemmas and potential ways forward. Essentially, they are a capacity-building tool that can help to enhance the abilities of different stakeholders to see 'the bigger picture', to understand the different perspectives, interests and responsibilities involved in complex decision-making processes, and to weigh up trade-offs and explore synergies.

2. How we went about developing our own simulation

Developing a simulation for Caterham and Old Coulsdon involved the following stages:

- **Stage 1 – review and testing:** In a first step, we reviewed and tested an existing simulation resource with a group of practitioners and then with the local steering group, to learn how it worked and explore how (or whether) it could be adapted for this project.
- **Stage 2 – understanding the local context:** To develop our knowledge of local dynamics, perspectives and potential approaches to flood mitigation, we then carried out a series of interviews with stakeholders, both within our steering group and beyond.
- **Stage 3 – design:** We then began to create our own simulation package - relevant to the local context but also considering findings from research about what makes for a good simulation. At various points in this phase, we discussed work in progress with the steering group and incorporated their ideas and feedback into further development.
- **Stage 4 - piloting:** By this point, we had taken the decision to move the simulation online due to the Covid pandemic. We trialled the online simulation package we had developed with a number of groups, from local residents and practitioners.
- **Stage 5 – evaluation**: Finally, and to help with evaluation, we developed pre- and post-simulation surveys for participants.

In the next section, we describe the main insights from each of these stages in some detail.

Trialling an existing simulation: main insights

The first trial simulation involved a group of staff from the Environment Agency and Kirklees Council (Figure 2.1). This was based on [a scenario and facilitation plan generated in the NECAP project by academics from Harvard Law School](#). Participants were given different roles and asked to take part in a meeting tasked with agreeing priorities for coastal adaptation in a fictional town modelled closely on real locations in New England. Some members of the Icarus team facilitated this trial simulation, while others observed and took notes.

Figure 2.1: First trial in Kirklees

The debrief that followed generated some interesting learning and suggestions:

- Overall, **it was not difficult for participants to get into their roles** – detailed briefs made it relatively easy to have a good sense of the different characters' positions and interests. We felt, however, that **the emotional dimension could have been more prominent**, and decided to incorporate this more strongly into our own version.

- **The roles specified in the Harvard simulation package did not differentiate between different scales as much as our real-life local stakeholders.** Since this was an important theme in our analysis, we wanted to strengthen this dimension in our own simulation.

- The facilitation process suggested in the package was a little too prescriptive, encouraging interaction between facilitators and each participant more than between participants. We wanted to adapt this to **encourage greater interaction and engagement between participants.**

- **The simulation scenario did not include a clear enough sense of budgetary constraints,** therefore making it harder to have an informed deliberation on trade-offs. Our suggestion was to build a realistic available budget into our simulations to encourage participants to weigh up what is feasible.

- We also discussed **different ways of presenting the information participants would need to engage with the simulation**. The Harvard package was quite text-focused, but there was clearly potential for including other ways of presenting information. This is also an important consideration in relation to access for people with certain disabilities.

We decided to amend the original package for the trial runs in our pilot location to incorporate some of these insights, particularly those regarding the facilitation style and process.

In Caterham and Old Coulsdon, we trialled the existing simulation twice (Figure 2.2), firstly with the steering group and then with a group that included others from the local community (some of whom went on to join the steering group to shape our own version). Overall, these further trials, which incorporated some modifications following our first trial, confirmed and extended the learning from that earlier trial.

Figure 2.2: First and second simulation trials in Caterham

- As before, **despite initial nervousness regarding the role play element, participants got into their roles relatively quickly, played them convincingly and enjoyed taking part.** This was also helped by our decision to pair people up, allocating 2 people jointly to one role. This helped with confidence and took the pressure off any one person to represent all aspects of their role.

- Although the scenario was still the one adapted from the US, and focused on coastal change rather than the challenges of urban flooding, **everyone involved engaged well with what was a complex set of questions and planning decisions.** This confirmed the finding from existing research that simulations can be effective in promoting serious engagement with complex challenges, and with the difficulties and the possibilities of multi-stakeholder decision-making. **Participants felt that the scenario demonstrated the complexity of policy making, resource allocation and decision-making**, and how different viewpoints and conflicts of interest can affect processes of planning for adaptation.

- **Participants appreciated the chance to adopt a perspective different from their own**, and to articulate and understand the reasoning and/or emotions behind arguments that they may not feel a natural affinity with. The modifications we made to make it easier for participants to understand the details of the scenario and their roles, and to encourage greater interaction and collaboration between participants, worked well. These included colour coding of participants' preferences, ways of making the extent of (dis)agreement more clearly visible, additional visual aids, and

moving materials from a flipchart stand onto the table to encourage closer interaction with each other and with the problem at hand.

- In line with our intention for the next phase of this work, **participants felt that while they were able to engage with a scenario that was some way removed from their actual situation, they would value a scenario more closely tailored to the challenges facing Caterham and Old Coulsdon**. It was noted that this would need to be developed with care; such a scenario would need to put any contentious issues on the agenda in a way that promotes conversation, learning and collaboration rather than rekindling existing conflict.

- There was recognition of **the need to strike a balance between giving participants enough information to have an informed deliberation and overwhelming them with too much detail.**

- **The process itself illustrated the benefits of collaborative working and 'multi-perspective planning'**, and as one participant commented, "maybe this is the way to build a community that is proactive in dealing with climate change and its related problems".

- **There can be a delicate balance between fun and serious engagement.** How much enjoyment/performance is appropriate, given the seriousness of the subject and the fact that for some participants/roles, flooding is linked to traumatic experiences and mental health impacts? **For facilitators, it is important to be aware of and sensitive to participants' emotions, and to manage these dynamics carefully, both during the process and in the debrief.**

- In both trial runs in Caterham, we observed a similar pattern: People were initially reluctant about taking part in role play simulations; most then enjoyed and gave positive feedback on their actual experience, and despite this, many still expressed some reservations about rolling the process out to a more general audience. This raises **some interesting questions about whether and why there may be a higher barrier to taking part in these processes compared to standard meetings**, particularly given the fact that many people are disillusioned by standard meetings too.

- It was clear that **skilled facilitation was an essential element in the success of these trials.** Simulations run as part of the New England Coastal Adaptation Project that we took inspiration from allocated the role of facilitator to one of the community participants. Our experience suggests that this is unlikely to be successful. Instead, the potential of this process is more likely to be fulfilled with an experienced and confident facilitator. In the second simulation, which was run with just one facilitator, it was also noted that the ideal would be 2 facilitators to allow for note-taking and unforeseen contingencies alongside active facilitation.

- **Good debriefs are essential to maximise learning and the potential for future collaboration.** Like the simulation process itself, this needs good planning and confident facilitation.

Understanding local dynamics

Gathering further insights into the local context and talking with people who represent different perspectives, including both local residents and people in relevant professional

roles was crucial to developing a realistic set of roles and positions for our own simulation. To deepen our understanding, we carried out a series of in-depth interviews in the area. Importantly, this went beyond the steering group and included people with varying degrees of involvement in and knowledge of flooding and climate adaptation. It also highlighted differences between places that experience flooding, both regarding the nature of flooding and in relation to how people experience and respond to flooding.

It was important to us that the roles we created for the simulation did not come across as caricatures but as real people with legitimate passions, concerns and emotions. The interviews we did with people at this stage really helped with this, as did the discussions we had within the steering group.

Simulation design

Main design considerations

In designing the simulation, **we attempted to strike a balance between the following objectives and questions.**

- **Capturing complexity:** We wanted to develop participants' understanding of the complexities, tensions and trade-offs involved in planning for an uncertain and challenging future in a real place, while taking account of the needs, priorities and capacities of a range of different stakeholders. Things to be considered/built into the scenario included:

  o diverse and competing values, needs and priorities

  o tensions between short and long timescales

  o tensions between individual and collective problems/decisions/actions

  o different geographical scales

  o a degree of uncertainty, including a changing policy context

- **Clear and accessible inputs:** Much of the potential of simulations as a tool for community engagement with complex scenarios hinges on the effective presentation of important information. This includes the need to maximise understanding and inclusion by avoiding unnecessary jargon and presenting information clearly.

- **Potential to challenge existing beliefs:** Good simulations should have the potential to challenge participants to consider and re-evaluate their own beliefs, values and behaviours. There is a balance to strike here between reflecting the values and behaviours of real people on the ground now and exploring new ways of thinking and innovative options.

  It is helpful to build in the following:

  o a range of attitudes, perceptions, behaviours and cultural values that are actually present within the community

- o opportunities for participants to play less familiar roles and/or encounter perspectives different from their own

- o fictional but realistic elements in the scenario that challenge participants to explore their responses and perhaps to question taken-for-granted assumptions

- **An 'appropriate level of conflict':** To be interesting, thought-provoking and sufficiently complex, simulations need a certain level of in-built conflict: Participants need to be challenged to weigh up trade-offs and take difficult decisions, and different, potentially incompatible, perspectives and positions need to be represented. At the same time, the scenario needs to be 'solvable'.
- **Power and influence:** In real-life settings, different people/groups/authorities have varying levels of power, influence, access to resources.
- **Seriousness/enjoyment:** Simulations have been described as 'serious games'. Our trials suggested that most participants enjoyed taking part, and this was an important dimension of the experience. At the same time, this had to be balanced with the recognition that the issues at hand are serious, and that some participants are directly affected by experiences of flooding and associated emotions. The use of the term 'game' is also potentially problematic, inferring that the process is trivial.
- **Time for facilitated debrief:** In all of the above, it is important to bear in mind that much of the value of simulations lies in the quality of post-simulation debriefs. Poor quality, partial or missed debriefs undermine the value of the simulation process.

While working through several iterations of the simulation scenario, we tried out several possibilities, reflected together on their strengths and limitations, and further refined the materials.

Content

We were aiming for the simulation to stimulate engagement with tensions like:

- environmental limits versus economic development and growth
- short-term solutions versus long-term challenges
- short-term spending versus long-term investment
- individual needs and preferences versus whole community responsibility
- flood prevention and protection versus other social and environmental needs and priorities

With these considerations in mind, our scenario has the following elements.

- **It is set a few years into the future.** This helped us to introduce a few plausible developments that have not yet happened and create a degree of distance from current realities while still staying reasonably close to them. We also tried to

incorporate anticipated future developments as best we could, for example, the changes in planning law[2] that are currently under consideration.

- **It includes a range of plausible options for flood alleviation and flood protection**, ranging from individual to community/local authority level and covering different timescales. These options include property level protection, street/neighbourhood-level schemes, sustainable drainage systems (SuDS), natural flood management and changes to permitted development and planning.
- **It involves 2 levels of deliberation: 1) about preferred options, and 2) about the size of the budget that should be allocated to fund these measures.** The budget dimension is deliberately designed to stimulate a weighing up of trade-offs between competing values and priorities.
- **It includes a manageable but diverse range of experiences and perspectives** in the roles that participants play. Participants are briefed about the different positions their characters are likely to take, but also about the experiences and values that inform these positions. This is intended to help them approach the simulation with curiosity and empathy.

In designing the simulation package, we were very conscious that all aspects of the scenario would need to be presented in an engaging and user-friendly way, and we trialled different versions of this before the package was finalised. Throughout the simulation design phase, we presented working documents, including the scenario, the options for consideration, and the role descriptions, to the local steering group for discussion, comments and feedback. This iterative process was very helpful and helped to increase the relevance of the package to the local context.

Moving online

As we were working on the simulation, it became clear that due to the restrictions related to the Covid-19 pandemic, we were not going to be able to run face-to-face simulations. This posed the additional challenge of creating an online version. We responded to this challenge by:

- **creating a virtual board[3] that would serve as an interactive visual aid by making options and the progress of their deliberations visible to participants throughout** (see Figure 2.3). This was operated by one of the facilitators who amended/moved around content as discussions progressed
- **restricting the number of participants** to 6 (rather than, as in the earlier trials, doubling up participants for each role) to make it easier for the main facilitator and

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[2] The Planning for the Future White Paper (2020) was published by the government during the course of this project.

[3] We did this using an online whiteboard platform called Mural.

the participants to see and interact with each other on the online platform (we used Zoom), while also seeing the screenshare of the virtual board

Figure 2.3: The virtual interactive whiteboard

Piloting

The 2 initial trials we ran with teams from Surrey County Council and the Environment Agency both showed that a) that our package of materials was suitable and effective in engaging participants in animated conversations about a realistic scenario, and b) we had succeeded in translating the package and facilitation plan into an online format. Feedback on the briefing materials that had been sent out to participants prior to the online workshop was very positive overall, in relation to content, quality and usability. Discussions during each workshop suggested that participants were able to take on their roles, and that the scenario was effective in putting important issues on the agenda for discussion.

The main challenge in both trials was fitting discussion of all of the issues that are designed into the scenario into the time available. In particular, this applies to the discussions around trade-offs that we were hoping to stimulate via decisions on funding options. There is clearly a trade-off between fully exhausting the rich potential for exchange and learning through the scenario and the time and focus that we can expect of participants, particularly in an online format.
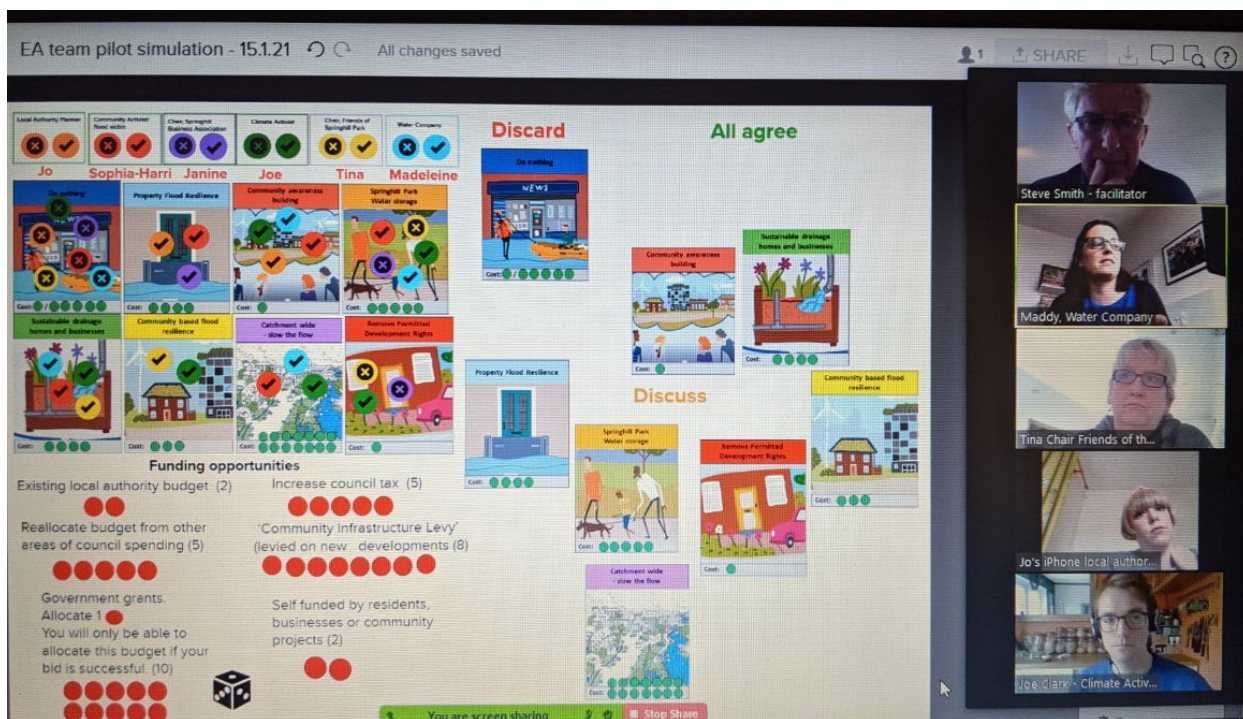
Figure 2.4: Pilot simulation with the Environment Agency team, showing participants and the Mural board indicating discussion of options

While, in general, the move online worked well, it is worth noting that there are some losses too. In particular, online meetings tend to create less opportunity for the informal side conversations that can be important for building personal connections and that can generate unplanned for benefits. As noted earlier, they also restricted the number of participants. Overall though, these had to be weighed against the benefits of bringing

groups of people together for these conversations under the conditions of an ongoing pandemic.

Evaluation

Alongside the simulation package itself, we also developed a pre- and post-simulation online survey. This was designed to capture any difference involvement in the simulation made to participants' understanding, emotions and likelihood of engaging in local initiatives to tackle flooding and/or climate adaptation. Unfortunately, we were a bit late in publishing these surveys, so the number of responses was limited. We did invite immediate oral feedback following each of our simulation workshops, but for future uses pre- and post-simulation surveys would be a helpful tool. We have incorporated findings from both post-workshop debriefs and the survey responses we received into this learning document, particularly the sections above and below, alongside feedback from the simulation debriefs.

3. Running the simulation in Caterham and Old Coulsdon: Reflections and challenges

Learning from further simulation workshops

Following these successful pilots, we ran several additional online workshops with groups in and around Caterham and Old Coulsdon: Caterham Rotary Club, students in a local sixth form college, and officers from the London Borough of Croydon.

Like the initial trials, these too generated some very positive feedback from participants. For example, when asked 'what was the most interesting thing you have learnt from taking part', participants' responses indicate that the simulation helped them to see the complexity of the situation and the different perspectives involved:

"It was interesting to see that there are so many viewpoints in looking at resolving a single issue."

"Everyone has their own agenda but there is some common ground."

"That different agencies, authorities and interest groups have different, and in some cases conflicting agendas, which may prevent agreement and a unified response."

"A more overall perspective of the situation from the different viewpoints."

"How complex the cause of flooding is and how diverse the relative benefits of proposed solutions to combat the issue."

"A better appreciation of the importance of considering other's positions/challenges/constraints/points of view, rather than being stubborn about one opinion and not then achieving any outcome."

"The relative willingness to reach consensus."

Unlike the trial simulations, an interesting dynamic in one workshop was that a couple of the participants, probably because they had relevant professional backgrounds, found it challenging to stick to the roles they had been assigned. This meant that they brought their existing expertise/points of view into the simulation itself to a greater extent than anticipated.

A participant with relevant expertise also commented that they would have liked to see more technical information built into the scenario (particularly in relation to soil types and the geography of the area) to avoid a sense that certain solutions might make a bigger difference than they actually can. Similarly, someone commented that more detailed knowledge about available budgets would be helpful. There is a trade-off, however, between reflecting all of the technical complexity of real-life scenarios and keeping the materials accessible to a wider audience, like the student group. One of the helpful outcomes from this particular workshop were suggestions from participants about how

some of the solutions within the scenario might be amended to allow for the possibility of consensus – and the opportunity to do so is built into the scenario itself.

A very positive finding from all of the online simulation workshops we have run, including a couple of others with researchers and FCERM professionals, has been that the same package seems to have worked well for participants with varying levels of prior knowledge and engagement. In all of these simulations, participants have entered into the scenario and their roles, and in all of them, the simulation generated thoughts and questions for reflection in the debrief.

Challenges

In Caterham and Old Coulsdon, the greatest challenge has been getting local groups and residents to sign up to take part in a simulation. We deliberately framed these workshops in a broad way as 'community conversations about flooding and climate change'. We did not mention simulations or role play, although the invitation did say that participants were going to look at their real-life situation from a different, slightly distanced perspective. This written invitation was also accompanied by a short, animated film that was intentionally generic and focused on the idea of community conversations.

Unfortunately, the efforts by members of the steering group to recruit a range of community groups to take part, both via personal contact and through social media, did not translate into as many workshops as we would have liked. Potential explanations include the following:

- The proportion of people in the Caterham and Old Coulsdon area who are directly affected by flooding and who recognise it as an important issue is relatively low – an observation that had also emerged in the interviews we had carried out prior to designing the simulation.
- People's attention was more focused on the Covid crisis, giving lower priority to other issues.
- There was an element of 'Zoom fatigue'.
- These workshops were not directly linked to an actual decision-making process.
- Despite our efforts to reduce the barriers to participation, there is a hesitancy about engaging in simulations.[4]

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[4] It is also worth noting that a later attempt to run a simulation with an emerging flood action group generated some hostility from a potential participant. Unfortunately, this further confirms the challenge of 'selling' a simulation to (some) potential participants even when all of the simulations we have actually run were very well received by the diverse range of people who participated, including some who had initially been sceptical.

- Our strategy of trying to work primarily through existing groups rather than focusing on invitations to a general public was not the most effective way of generating interest and commitment.

In the light of these challenges, it is worth reflecting on a wider range of ways and contexts in which this and other simulations might be used.

4. Potential uses of this and other simulations

Contexts in which simulations may be helpful

While encouraging participation from the general public has been difficult within the timeframe of this project and in the context of a pandemic, the trialling we were able to do did suggest that simulations can work well in raising awareness of flooding and flood risk management among a wider community. Something that was part of our original plan, but that we were not able to test was the model used in the NECAP project, which involved a number of simultaneous simulations at a big event, with a shared facilitated debrief. This has the potential to generate much more momentum than the small online simulations that we were able to do under lockdown conditions.

Nevertheless, the process of developing and trialling the simulation and reflecting on the workshops we were able to run helped to clarify its potential uses for a range of contexts and audiences. These include the following:

- **Building 'readiness' with practitioners involved in FCERM and community engagement work** – developing their ability and confidence to engage in, and/or to facilitate challenging conversations with a range of stakeholders.
- **Accelerating learning for new flood action groups**. It was noted that this kind of exercise would be helpful in facilitating early consideration of how to navigate and negotiate a range of perspectives, options and stakeholders.

- In a similar vein, building shared understanding, relationships and the ability to appreciate the perspectives and constraints of others **within existing and newly formed multi-stakeholder groups that include both local residents and relevant authorities, as a basis for working together more effectively**.
- Using the simulation **as an educational tool in secondary, further and higher education contexts.**

How contextually specific do simulations need to be?

It is important to recognise that simulations can help to enhance readiness to engage in collaborative work on flood risk management and climate adaptation across several dimensions:

- in relation to **content** – improving literacy of climate change impacts, the causes and impacts of flooding, and the pros and cons of different potential responses

- in relation to **process** – stimulating reflections on the ways in which different stakeholders in FCERM communicate with each other, on community engagement and on decision-making processes

- in relation to **multiple experiences and perspectives** – enhancing understanding of, and empathy for, the interests, values and concerns of people who are

differently located within the complex systems and contexts that FCERM tries to respond to

Distinguishing these dimensions may be helpful in weighing up whether our existing simulation package is appropriate for use in different contexts, or whether the usefulness of a simulation hinges on it being close enough to the real-life context. While this should be considered on a case-by-case basis, we would suggest that tailoring may be most important if the objective is to enhance people's understanding of specific content. In relation to this dimension, the surface water simulation that we developed for Caterham and Old Coulsdon is probably less useful for a UK coastal context than the US-based coastal simulation we used for our initial trials. If, on the other hand, the objective is to stimulate shared reflection on process or on how multiple perspectives may be taken into account, our simulation package, supported by a well-facilitated debrief, can offer helpful experiential learning.

It is important to bear in mind that developing a contextually specific simulation takes considerable time and effort, particularly because it works best when created together with local residents and authorities. This in itself can be a process that stimulates important conversations and research. Steering group members fed back that working together on a shared outcome improved relationships and collaboration beyond the project. However, the costs will need to be weighed up against the benefits. In many contexts, it may make more sense to work with an existing simulation and to put resources into a well-facilitated and thoughtful debrief/follow-up discussion.

Conclusion

Overall, the process of developing and trialling a role play simulation has generated valuable learning, alongside creating a new tool to encourage engagement with flooding issues in a UK context. There is clearly potential for using this method with a range of audiences, both online and offline. We have been very encouraged to see how well the different groups of participants we trialled it with, from FCERM practitioners to sixth form arts students, responded to the same materials and discussions.

Taking part in a well-designed simulation can enhance the readiness of both community and organisation stakeholders to engage thoughtfully in real-life conversations about flood risk management and climate adaptation. This is both in relation to understanding the nature of the challenges and experiencing what a collaborative decision-making process might look like. When this is facilitated well, including a thorough debrief, it has considerable potential to open up challenging conversations and put important issues, including different perspectives and disagreements, on the agenda to be explored. As a member of the Caterham and Old Coulsdon steering group put it, simulations can provide an opportunity 'to test how honest we can be' and to get a better sense of the priorities and constraints that different stakeholders are experiencing.

There are outstanding questions about what it might take to engage the wider public in this kind of process, particularly in locations where experiences of and concerns about flooding are very unevenly distributed. These include considerations around framing[5] – what do we call this kind of exercise to both convey what it is and avoid putting people off? -, timing and follow-up.

In considering whether and how to use simulations, it is important to think carefully about where they might fit into a larger capacity-building, engagement or collaboration process. In Caterham and Old Coulsdon, steering group participants commented that working together on developing a simulation helped to build positive relationships and ways of working that went beyond the patterns that had been established in earlier interactions focused on flood risk management. However, the particular conditions of the pandemic made it difficult to embed the simulation into a wider and longer-term engagement process. We would recommend that this is given more detailed consideration in any future uses of this or other simulations.

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[5] For an in-depth discussion of framing, see the project learning report.

Glossary

Adaptation to flooding and coastal change – Anticipating appropriate action to prevent or minimise the likelihood and consequences of flooding and coastal change, both now and in the future.

Authority – An organisation with official responsibility for a particular area of activity. This particularly includes government organisations.

Climate adaptation – Changing lifestyles, economy, infrastructure and local places to make us more resilient to the future consequences of climate change.

Community – Residents, businesses and groups living or based in a particular area.

Flood and coastal resilience – The capacity of people and places to plan for, better protect, respond to, and recover from flooding and coastal change.

Partners – Individuals, groups and organisations that help to carry out a particular area of activity. This includes private and third sector organisations.

Practitioners – Individuals working within authorities.

Readiness – How prepared people, communities and organisations are, in this context, to engage in conversations about and planning for the long-term response to increasing flood and coastal erosion risks due to climate change.

Risk management authority (RMA) – Organisations that are responsible for managing the risk of flooding and coastal erosion. This includes public and private sector organisations.

Stakeholder – Any individual, group or organisation that believes they could be affected by, interested in or could affect or influence the project or issue.

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