Working with others to adapt to a changing climate: flood and coast

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8th July 2019

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Department for Environment Food & Rural Affairs

Cyfoeth Naturiol Cymru Natural Resources Wales

Llywodraeth Cymru Welsh Government

Environment Agency

Aims for today

1. Progress update
2. Evidence review – key findings, Q&A
3. Introduce pilot areas
4. Q&A/feedback
5. Next steps

Progress update

Flooding in Caterham on the Hill, 2017

Storm surge at Hemsby, 2013

The Guardian

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Evidence for new FCERM Strategy

The project is providing evidence for the Strategy's aim to create 'climate resilient places', specifically addressing:

Strategic objective 1.2: Between now and 2050 risk management authorities will help places plan and adapt to flooding and coastal change across a range of climate futures.

This includes:

- Identifying frontrunner places to develop adaptive approaches with local partners
- Developing a national framework to identify steps needed to take an adaptive approach

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Draft National Flood and Coastal Erosion Risk Management Strategy for England

Vision: a nation ready for, and resilient to, flooding and coastal change – today, tomorrow and to the year 2100.

Source: https://consult.**environment-agency**.gov.uk/fcrm/**fcerm-national-strategy**-info

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Key learning from an evidence review on community engagement on climate adaptation

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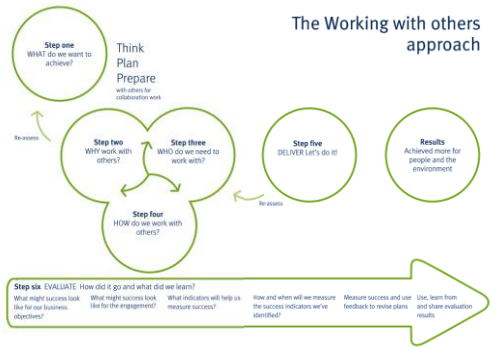
Review of existing expertise in risk management authorities

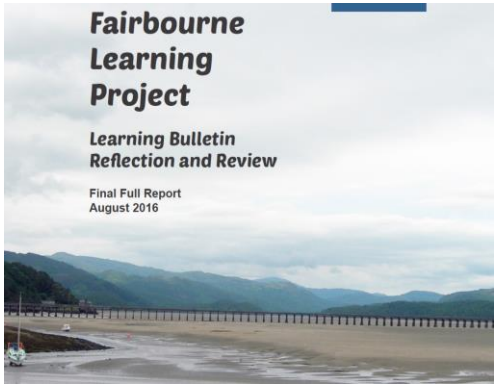
60+ reports, case studies and policy documents from the Environment Agency (EA), Natural Resources Wales, Defra and other RMAs were reviewed to identify lessons from past FCERM engagement.

Principles of good engagement are clearly outlined. But some challenges in engagement practice seem to persist, suggesting that evidence is not always feeding into policy and practice. This is particularly problematic in 'tricky' engagement contexts where options for future protection are limited.



Engagement steps in the EA's 'working with others' approach
Source: Environment Agency's Working with Others guide

Previous EA research on community engagement
Source: http://evidence.environment-agency.gov.uk/FCERM



A multi-agency project is working with communities in Fairbourne, Wales on flood & coastal adaptation
Source: Welsh Government/JBA Consulting

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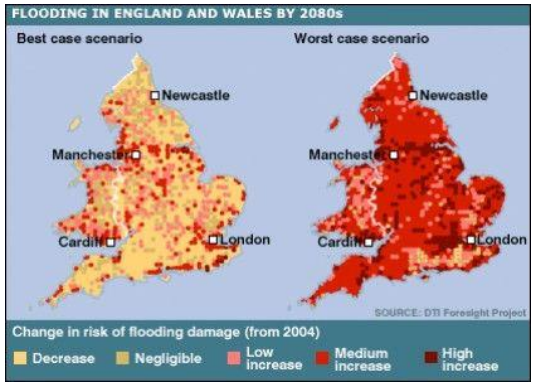
Understanding challenges in adaptation processes

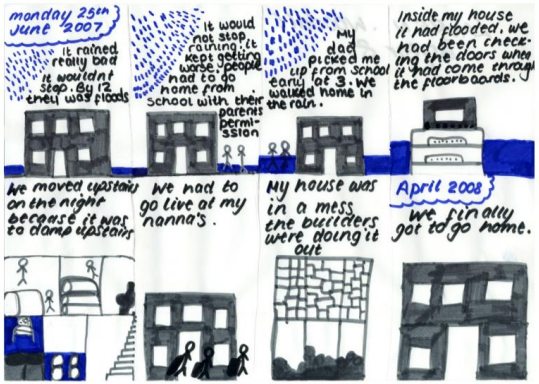
We undertook and extensive literature review (250+ publications) to build a fuller picture of the issues affecting engagement practice in areas where there are difficult adaptation choices.

The following slides summarise some key themes and raise some questions that emerged from this review.



A 2080s flood risk map – does this help promote 'readiness'? Source: http://news.bbc.co.uk/1/hi/uk/3648391.stm#map

Protest against management of moors for grouse shooting, Hebden Bridge. Local conflicts can affect collaboration. Source: http://www.hebdenbridge.co.uk/news/2014/045.html



A child's storyboard of their experiences during the floods in Hull. Emotions & memories impact engagement. Source: https://www.lancaster.ac.uk/lec/sites/cswm/hullchildrensfloodproject

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Challenge #1: ‘Readiness’

‘Readiness’ is the knowledge, skills and capacities that are needed to enable collaborative FCERM decision-making, it was a key theme in the evidence review. Research suggests that:

- Many communities and agencies are not yet prepared to engage in complex planning processes for FCERM, especially where climate change is a contributing factor.
- ‘Readiness’ has different dimensions: understanding the potential risks and impacts of climate change; being able to recognise and manage emotional responses to change; or capacity to engage in deliberations over complex future choices.
- Engagement processes need to include an assessment of ‘readiness’ before critical decision-making processes are initiated. This includes assessing the readiness of the RMAs and engagement professionals themselves.
- To build readiness within a community or across agencies, well-planned and inclusive processes to build shared understandings of local risks and adaptation needs can help identify realistic options for mitigation or adaptation.

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Challenge #2: Framing

Whilst engagement with information is a necessary part of building 'readiness', it is rarely neutral or objective. An analysis of the ways in which issues, options and people are 'framed' in FCERM language, policy and practice is helpful to engagement work and decision making.

- The ways in which information is presented tends to reflect the interests or assumptions of those producing it. Information is received and interpreted differently by individuals and stakeholder groups, in ways that are shaped by prior knowledge, ways of thinking, values and emotions.
- The language used by agencies to talk about flooding and coastal erosion can affect community responses. It may be helpful to reframe agency-centric descriptions to reflect locally relevant issues.
- Specific words/terms may mean different things to different stakeholders, creating potential for misunderstanding and disagreement and making collaborative decision making more difficult.
- Framing affects not just perceptions of relevant knowledge, but also how agencies, stakeholders and communities see and relate to each other.
- In the context of this project, it is important to ask what different people mean when talking about climate change, adaptation, engagement and success.

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Challenge #3: Climate change, emotions & mental health

Climate change predictions are genuinely worrying. Understandably, many of us avoid or suppress them. What would it mean to take the emotional and mental health challenges of engaging with climate change seriously in engagement processes?

- Fears and anxieties about climate change shape people's engagement with adaptation planning, and/or their reluctance to engage. Reflections from experienced practitioners in this field suggests it is helpful to explicitly acknowledge these emotions.

- There is a common – and often justified – sense of a mismatch between the scale of the problem and the perceived lack of urgency/seriousness in tackling it, including by government. This can generate complacency, anger and a sense of helplessness.

- Collaboration as a communal response has the potential to positively affect mental health, build community resilience, and mitigate people's sense of not having a voice.

- Climate change impacts are likely to further exacerbate patterns of injustice and marginalisation. To be inclusive and fair, engagement processes should explicitly acknowledge and seek to tackle this, even when it might generate difficult emotions.

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Challenge #4: Place attachment, culture & identity

People's emotional connections to the places in which they live and work can have a big impact on whether and how they engage in thinking about the future of those places. This poses challenges and opportunities for adaptation processes.

- People's emotions – positive, negative or mixed - about the places in which they live or work shape their willingness to take part in adaptation planning, their relationships with other local residents and/or organisations, their local knowledge and their responses to professionals or facilitators coming in from 'outside'.

- Engagement practices and adaptation planning needs to be sensitive to the meanings and emotions associated with particular places – not as problems to be overcome, but as indicators of what matters and resources that can be drawn on.

- Communities with strong place attachment and uncertain futures face particularly difficult challenges. In such settings, there might be a need for 'place detachment'. It is important to reflect on how this might be facilitated or negotiated responsibly and sensitively.

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Challenge #5: Power & politics

For social and political scientists, it is clear that engagement and adaptation processes are inherently and inescapably political and open to contention across several dimensions. For RMAs, this can be harder to accept and examine – naming the ways in which these processes are political and contested is itself controversial.

- Some kinds of knowledge are seen as valuable and legitimate in engagement processes around adaptation, while others are marginalised. It is important to notice and reflect on the effects of this dynamic.
- Power and politics also inform what questions are asked in these processes, and what is and is not open to negotiation.
- Questions over who has the authority to make decisions, at what level decisions should be taken, and where responsibility lies are all contested – often for legitimate reasons.
- Naming and examining these power dynamics, and exploring these questions together, is not easy, but it might help to avoid or transform some common conflict dynamics.

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Engagement challenges – questions to consider

1. How do we assess and build ‘readiness’ for collaborative decision making on future climate impacts - within a community, among stakeholders, among experts and engagement professionals?
2. How can we change our language to frame issues in a way that is understandable and meaningful to others (i.e. stakeholders and communities)?
3. How could the emotional and mental health dimensions of climate change adaptation be explicitly factored into engagement processes?
4. What might place-sensitive engagement look like in practice?
5. Is it possible to address power imbalances and create a genuinely collaborative approach to adaptation planning?

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Appropriate practices: Ideas and examples

This part of the report describes interesting approaches to engagement in tricky situations, focussing on practices that might be useful in complex adaptation scenarios.

Exploring coastal change and place attachment through photos, Australia
Source: https://doi.org/10.1002/geo2.28

Example of local storytelling through film from the 2015 floods in the Calder Valley
Source: www.youtube.com/watch?v=JoEZ2p0g2JU

Digital viewfinders used in California to engage people with visualisations of future scenarios
Source: https://climateaccess.org/blog/visualizing-climate-solutions

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Practice idea #1: Simulations and role plays

Research and experience suggests that role plays and simulations of realistic scenarios can help participants deepen their understanding of the complexities and trade-offs involved in decision-making, of the perspectives of different groups, and of dynamics of conflict and opportunities for collaboration.

- In places which are facing complex realities and difficult choices, simulations might be a helpful tool to build readiness, to help understand different stakeholder/community perspectives, and comprehension of different adaptation scenarios and choices.

- Simulations based on local scenarios present both benefits and challenges. While context-specific scenarios might work best, there is also potential for learning from simulations generated for similar settings elsewhere.

- Levels of willingness/reluctance to engage in role-plays and simulations is likely to vary among professionals, stakeholders and communities in England and Wales. It is important to take this into account when planning or designing such processes.

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New England Climate Adaptation Project

Building the Capacity of Coastal Communities to Prepare for Climate Change Risks

Danya Rumore, PhD Candidate
and the New England Climate Adaptation Project Team
MIT Department of Urban Studies and Planning

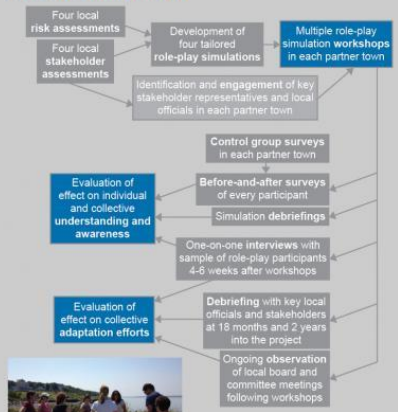
A Need for Action

Climate change presents a variety of risks for coastal communities, including possible impacts associated with sea level rise, more severe storms, and hotter temperatures. There are many things that at-risk coastal communities can do today to decrease their vulnerability to the impacts of climate change. However, **planning and preparing for climate change will require that towns and cities make collective risk-management decisions**, a challenging task given uncertainty about the timing and magnitude of impacts; disagreement among stake-holders about whether and how to adapt to climate change; and limited financial and technical resources.

In an effort to develop tools and approaches to help coastal communities move forward with adaptation, the **New England Climate Adaptation Project (NECAP)** is working with four coastal New England communities to:

1. *Assess local climate change risks*
2. *Identify key challenges and opportunities for adaptation*
3. *Test the use of role-play simulations as a means to educate the public about climate change threats and help communities explore ways of enhancing their climate resilience*

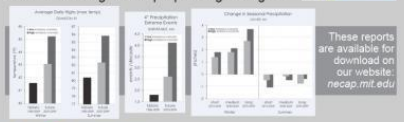
Research Methodology



Research Findings

Climate Change Risk Assessments

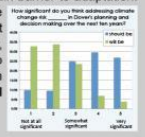
For each town, climate scientists at the University of New Hampshire developed projections of **temperature, precipitation, and sea level rise** for a "best case" and "worse case" climate change scenario. Local risks around **flooding, drought, heatwaves, loss of economic activity, and ecosystem changes** were evaluated, as well as options for addressing those risks through municipal planning strategies.



These reports are available for download on our website: *necap.mit.edu*

Public Perspectives

Key stakeholders in all of our partner communities said that lack of public concern about climate change is a main barrier to adaptation. However, results from our public polls indicate relatively high levels of public concern about local climate change impacts. Additionally, many people think their town should do something to prepare, although they often **lack confidence in the ability of their local government to take effective action.**



Role-Play Simulation Workshops

Over **500 people** participated in almost 30 NECAP workshops between June to December 2014. In small groups of seven, participants played the roles of planners, engineers, business representatives, environmentalists, and more as they attempted to reach consensus on adaptation planning recommendations for a fictional town much like their own. Participation in the workshops **increased participant concern about local impacts, sense of need for local adaptation action, and confidence in their local government's ability to manage climate change risks.**

These four role-play simulations are now available for download at *www.pon.harvard.edu/store/*

Next Steps

- Conduct **second public poll** to see if general town attitudes have shifted after the NECAP intervention in each partner town
- Hold **final stakeholder workshops** in each partner town to assess interest in local climate adaptation planning
- Write summary **case studies** for the results in each partner town
- Disseminate findings in the form of journal articles, popular media articles, and a **scholarly book**

Contact Information

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NECAP Project Manager, MIT Science Impact Collaborative
drumore@mit.edu | (208) 659-1415 | **http://necap.mit.edu**

This project is a collaborative effort involving a number of MIT DUSP graduate students, MIT undergraduates, and project partners. The NERRS Science Collaborative provides project funding. Larry Susskind, Ford Professor of Urban and Environmental Planning at MIT, and Pat Field, Managing Director of CBI, are the Principal Investigators on the project.

Use of simulations in the New England Climate Adaptation Project, 2014

Practice idea #2: Visualising change

Making anticipated changes to local landscapes visible can be a powerful tool in encouraging engagement with likely impacts and potential adaptation measures. Visual aids are already commonly used in engagement processes, but our review draws attention to a wide range of possibilities that may be worth exploring.

- While visualisation technologies are becoming increasingly sophisticated, there are clearly costs and trade-offs involved in using enhanced visualisation of future scenarios.
- It is worth thinking carefully about the contexts and audiences for which visualisation might be particularly effective as different audiences may need different types of visualisation.
- The physical settings (e.g. in situ, in public places, in closed settings) in which visual tools are presented and used can affect to their engagement value and how well they are received.
- Visual methods are not stand-alone, they need to be integrated into wider engagement strategies.
- This is a rapidly evolving field of practice. Additional training or professional development might be helpful, including the ethics of using visualisation.

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OWL digital viewfinders used in Marin County, California.

Figure 9: OWL users experienced dry conditions during the installation period (as shown in the picture at the top).

Two visualizations in the OWL depicted flood risks: the first visual showed a flood similar to the December 2014 event that resulted from a 20-year storm with king tides and current sea level.

A second risk visualization showed a flood from a similar storm and king tides on top of 3 feet of sea level rise.

The remaining two visualizations showed possible adaptation response options: an 8 ft.-high seawall protecting against the kind of flood shown above but cutting off the view and access to the waterfront.

The second adaptive option showed an eco-berm or horizontal levee with a bike path on top.

(Source: Visualizations created by Owlized)

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Practice idea #3: Engaging with narratives & stories

Stories are important ways in which individuals and communities make sense of who they are, where they have come from and where they are going. In encouraging meaningful engagement with potentially drastic change, it is worth paying attention to relevant stories (e.g. stories about major flooding or coastal erosion and stories about past experiences with RMAs).

- Incorporating opportunities to share existing place-based stories into wider engagement processes can help to deepen mutual understanding and trust.
- Stories that come across as moralising or patronising are unlikely to be effective. It is important to reflect on what kinds of stories and what ways of telling them work to promote engagement with difficult truths.
- 'Storying' climate change impacts and radical change is challenging. Some of these stories may not have happy endings for individuals, places or communities (or for the world at large).
- Communicating decisions via telling the stories of how they were reached could help to humanise RMAs and increase understanding of difficult choices.

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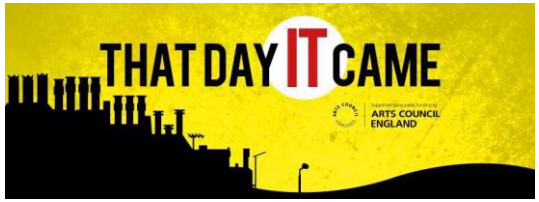

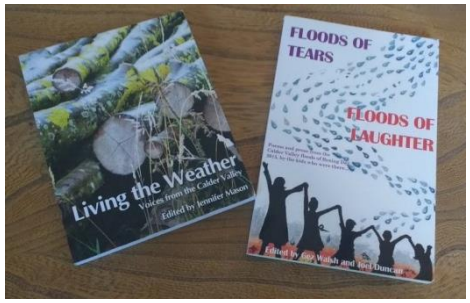

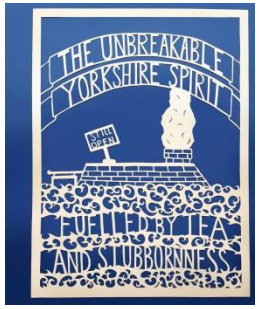

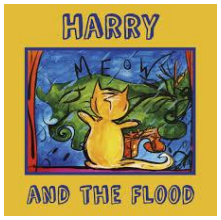

Multiple forms of storytelling following the Calder Valley floods of Boxing Day 2015.

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Practice idea #4: Tools for conflict analysis

Within FCERM policy and practice there is potential for contention and social conflict. The ability to identify and effectively analyse conflict causes and dynamics could be useful here, and there are a range of tools that can help with this.

- Conflict mapping tools can enhance understanding of different groups, drivers of conflict, and the wider systems in which conflict dynamics occur.

- The usefulness of approaches to conflict depends on context and purpose. It would be helpful to promote understanding of and access to a range of conflict mapping tools to enable practitioners to choose tools that are fit for purpose.

- The effort to understand what is going on in a conflict could in itself be a helpful engagement activity, promoting dialogue between different groups on the dynamics between them and on potential ways forward.

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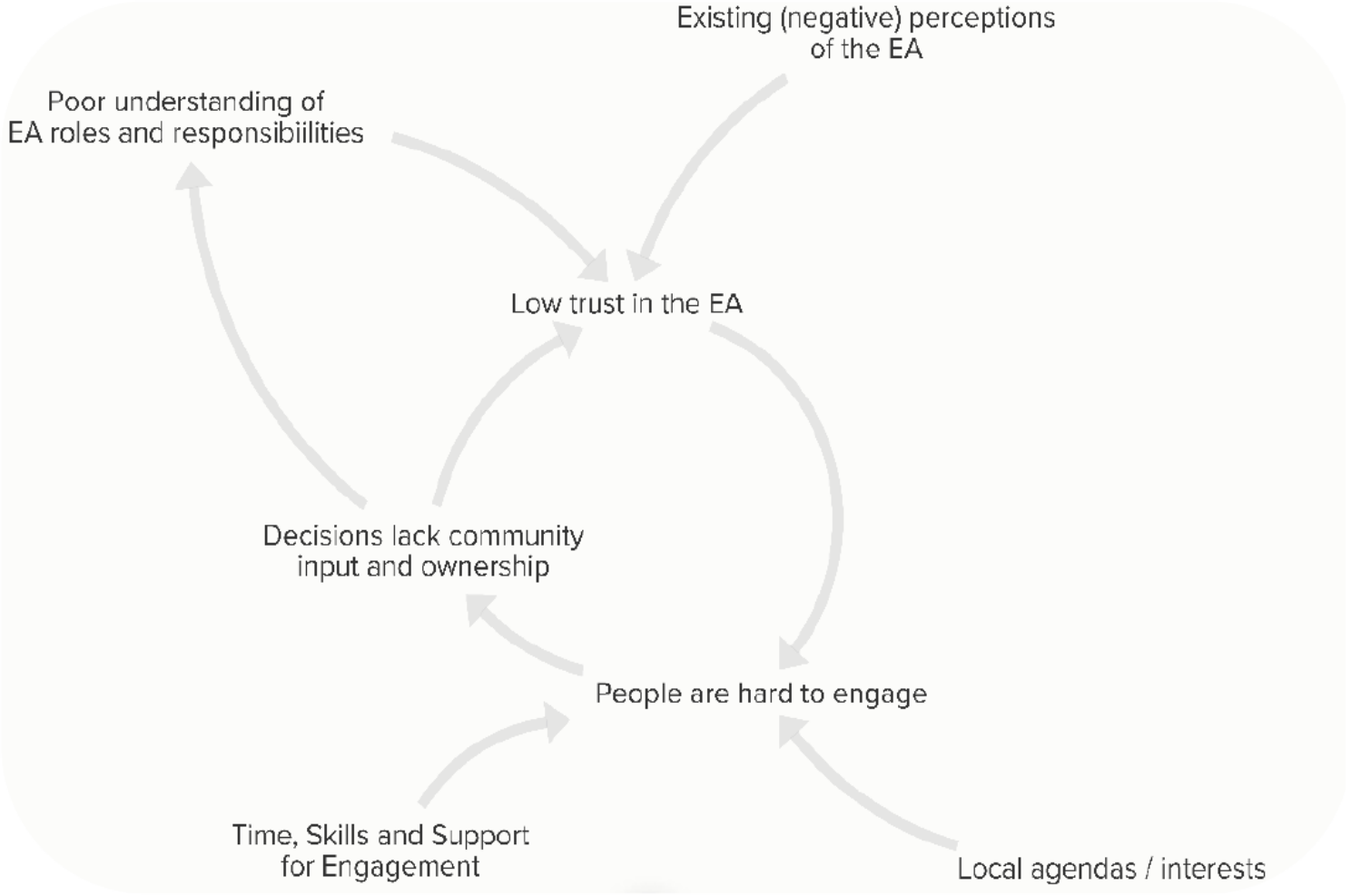

Causal loop showing dynamics of trust in engagement, produced with EA staff in 2017.

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Practice idea #5: Careful attention to process

Attempts to involve professional experts and people with other forms of knowledge in collaborative processes can take many forms. While there is not one right or wrong way, it is important that process design takes account of salient needs, expectations and ethical principles. Good process can make a tangible difference.

- All models of engagement have costs and benefits. It is important to be conscious of what these are in any given context.
- Often, there are trade-offs between the depth and quality of public engagement and the scale of participation. Decisions to limit or expand the number of participants affect process decisions, the kind of engagement that is possible and the perceived legitimacy of different processes.
- There are tensions between process and outcomes too. Often, good process makes a significant difference to how people assess outcomes, both rationally and emotionally.
- It is important to consider both representation (of organised groups/interests) and representativeness (i.e. the extent to which participants mirror wider dynamics in the wider community). Sometimes, these are in tension.
- The models, practices and processes that are used can enhance or hinder the development of local capacities that last beyond a particular engagement process.

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Practice ideas – questions to consider

1. In what contexts in England and Wales might role plays/simulations be a helpful tool to build readiness, to enhance understanding of different stakeholder and community perspectives and of different adaptation scenarios and choices?

2. What forms of visualisation might help people engage with likely future changes, and/or with options for adaptation?

3. What kinds of stories, and what ways of telling them, might work both as stories and as ways of promoting engagement with the difficult challenges facing particular places?

4. Could the effort to map and analyse what is going on in a conflict in itself be a helpful engagement activity, promoting dialogue between different players on the dynamics between them, and on potential ways forward?

5. What trade-offs are there between the depth and quality of public engagement and the scale of participation? Between process and outcomes?

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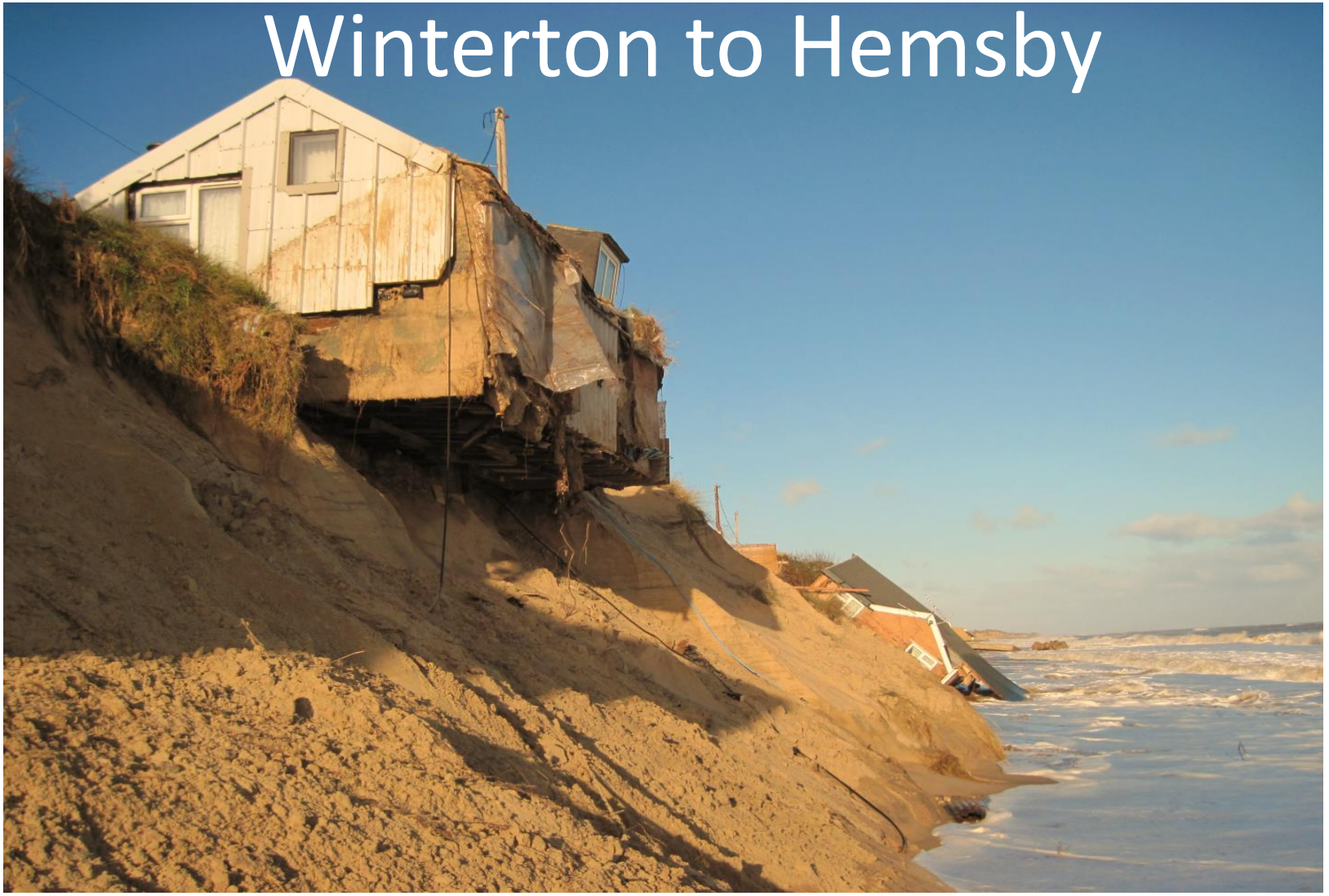
Winterton to Hemsby



Options for Coastal Change

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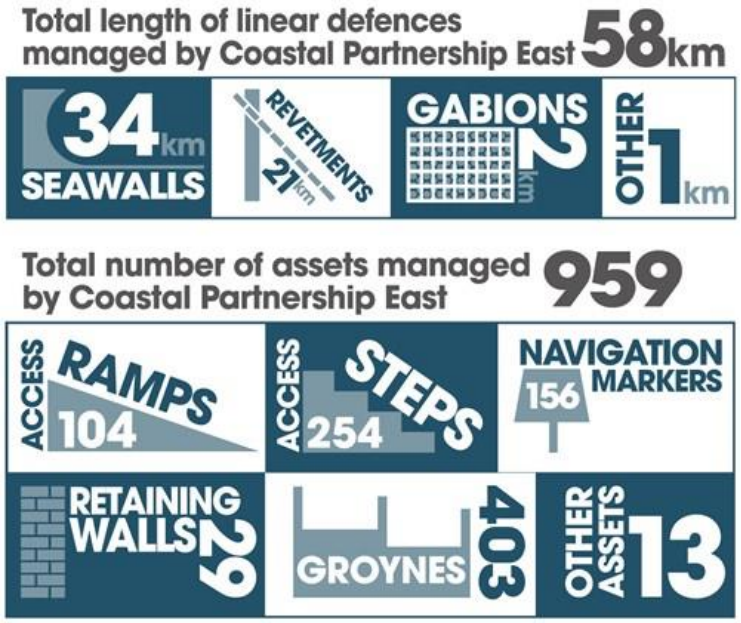
working in partnership along the coast

Coastal Partnership East

4 Themes

- Knowing our coast
- Delivering for communities
- Capability and capacity
- Funding and finance



working in partnership along the coast

coastal partnership east

Where are we?

Great Yarmouth Borough Council
Town Hall, Hall Plain, Great Yarmouth, NR30 2QF

Hemsby

1:340,000

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History/Background

This area of coastline, like many on the East Coast, has been changing over centuries and at times this change can be dramatic.

Storm damage in 2013

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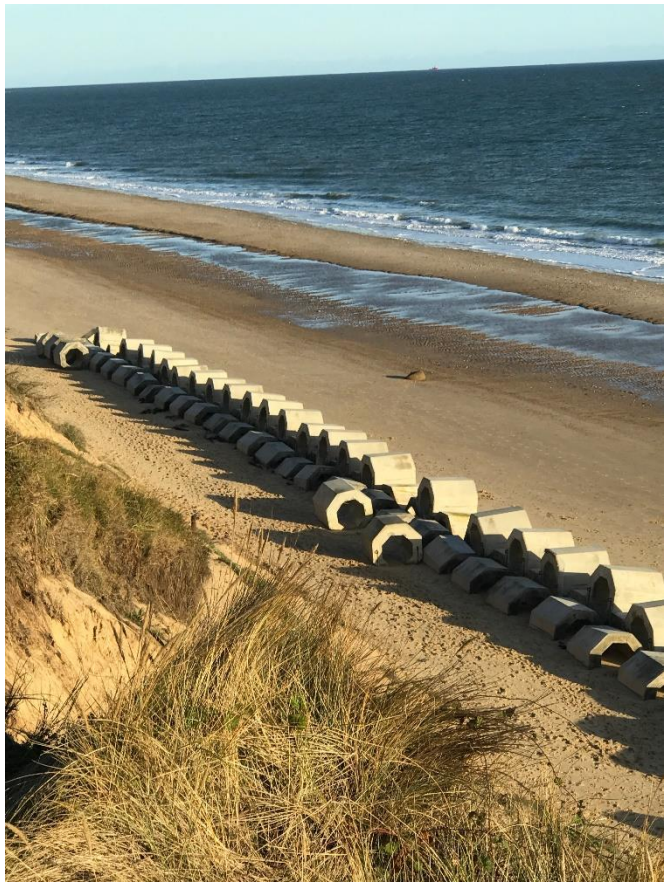
Hemsby Community Response



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Beast from the East 2018

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Winterton

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GYBC / CPE response

- Incident response
- Consultants commissioned for coastal process study
- 2 community drop-ins
- Community Liaison Group formed
- 3 strand approach developed

- Short term coast defence
- Long term coast defence
- Adaptative approach

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Adaptation

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Hopes and Challenges

- We wish to continue to engage with the community to explore and develop long term sustainable options for Winterton and Hemsby.
- To deliver a balanced approach between businesses, residential and environmental needs.

Bring Communities Together

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Bring Communities Together

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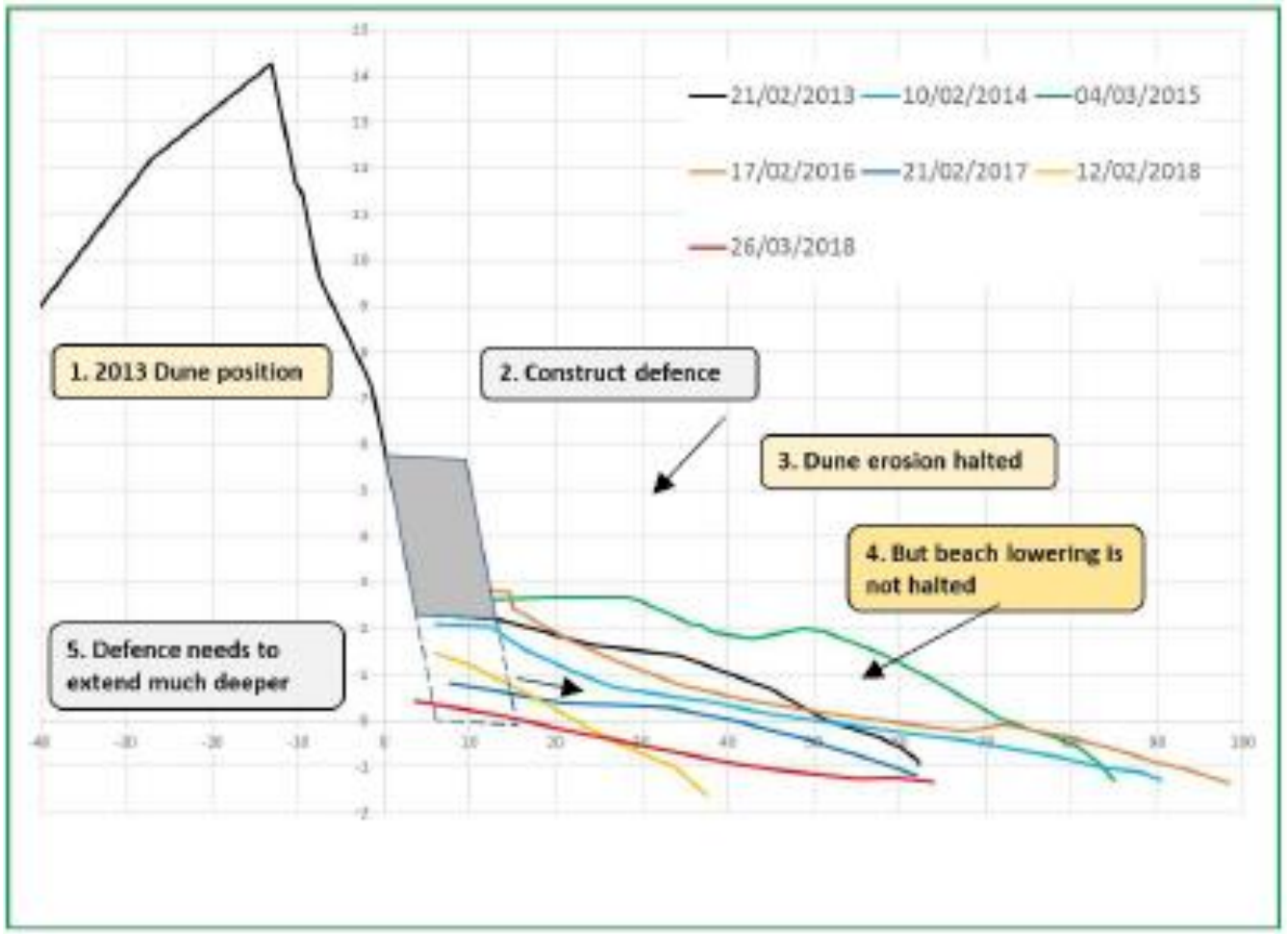
Technical Challenges



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Funding Challenges

Table 4 Level of FCERM GiA that may be attracted, for each approach.

Approach	Potential FCERM GiA (PV)	Partnership Contribution Required (PV)
Dune Face Protection (Linear Defences)	£ 3.0 Million	£10 to £15 Million
Beach Retention	£ 3.0 Million	£15 to £27 Million
Interim Solution	£1.6 Million	£2 to £7 Million
Realignment (defer until Year 10)	£2.4 Million	£10 to £11 Million

Other funding sources – CIC, Coast Re etc.

Environmental Challenges

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Engagement Challenges

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The Future

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Working together to adapt to a changing climate

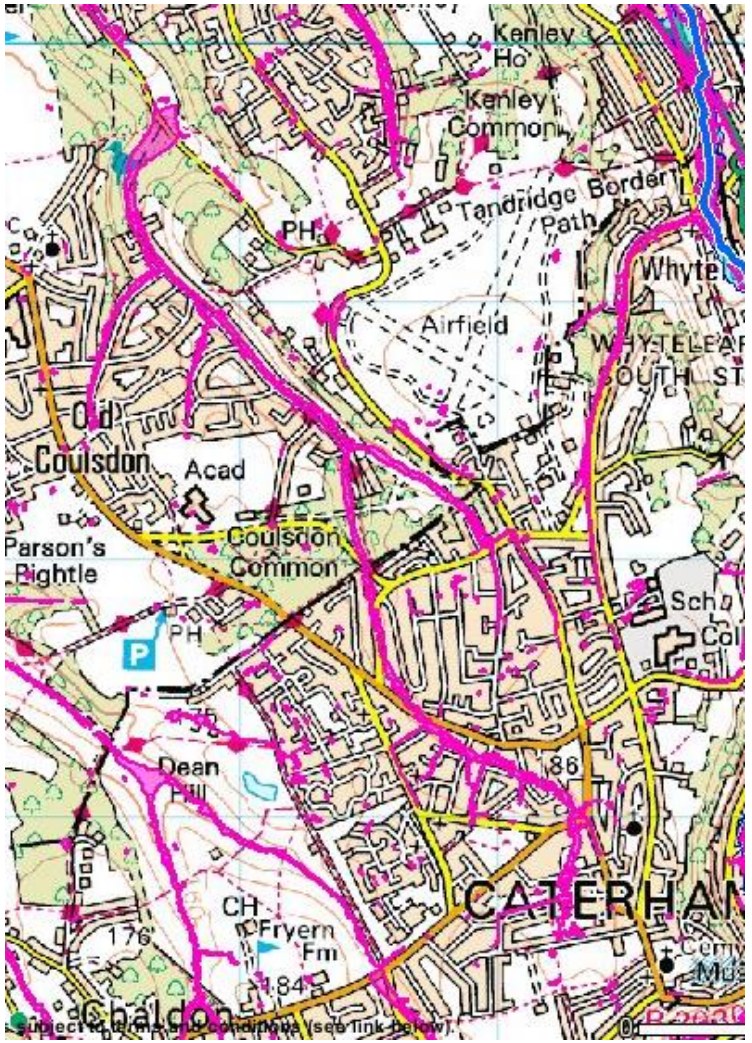
Surface water and foul flooding in the Caterham Hill and Old Coulsdon Catchment.

The Ground

The Catchment is characterised by a steep sided valley running from south to north consisting of a clay capped chalk. Predominantly a densely populated are there are small areas of common, notably in Coulsdon Common in the centre of the catchment.

Green space associated with properties has been reduced through permitted development with many gardens paved for parking or patios.

Flood risk is confined to a narrow flow path with four prominent tributaries to this flow path. Shown in pink on the map. A total of 350 properties are at risk from surface water flooding. In the vicinity of the main flow path is a culverted watercourse and two soak away chambers totalling approx. 1000 m^3 storage.



Flood Incidents

- Predominant incident in June 2016:
  - ❖In the order of 96 properties flooded internally
  - ❖36 roads reported to have flooded
  - ❖4 schools flooded
  - ❖The flood mechanism was surface water during a cloud burst storm, (72mm in 2 hours). This inundated the foul network, private and highway drainage networks. The resulting flood was surface water with foul.
- Previous incidents:
  - ❖Flooding from the culverted watercourse into properties at the top of the hill on 4 occasion in 20 years
  - ❖Frequent flooding of foul and surface water from a soakaway in the southern end of Coulsdon Common
  - ❖Frequent surcharging of the foul network in the northern section of the watercourse affecting the highway and properties.

Work done so far

Since the flood in 2016:

- The Community have formed a Flood Action Group with the support from the National Flood Forum to engage the authorities though multi-agency meetings.
- Thames Water have surveyed the foul network and cried out any minor repairs. Additionally they have adapted the foul storage chambers in Caterham Drive.
- SCC cleared out the “Money Pit” (a 1000m^3 soak away chamber in the middle of the catchment) reinstating 250m^3 of capacity.
- SCC delivered 2 targeted highway drainage network cleanses one in late 2016 and one in 2019. Clearing and surveying 3000m of surface water drains previously unmapped.
- LBC delivered a series of local improvement to the highway drainage network in Caterham Drive.
- TDC reviewed their local planning policy and have submitted a new stronger policy for drainage in planning and supported the other work through financial means.
- All of the authorities have formed a project board to examine the overall flood risk. This has found a series of 4 interventions being taken forward to OBC.
- Total tracked and planned spend in June 2019: £345,769.

Engagement Challenges

- Communities split over 2 LLFA boundaries.
- Diverse population in age, knowledge, the effect the flood had, interest.
- Engagement has been though one mechanism – the Flood Action Group. Which some community members may not be in contact with.
- High number of individual suffering from stress and other illnesses associated with the flood.
- Public focus has been on visible issues with little bearing on the risk such as gully cleansing or soak away lids lifting, not on the management of water across a large catchment.
- Initial public engagement was through public meeting, which set an accusatory and aggressive tone to engagement.
- Prior to the event in 2016, few residents were aware of their property's flood risk.

Engagement so far

- Multi-agency meeting organised with the assistance of the National Flood Forum and Flood Action Group
- Information gathering events in 2016 and in 2017.
- Participation in Parish and Residents association Fetes 2019.
- Direct conversations with complainants.

Programme Board

- Oversee and agree the development of capital and revenue options for reducing the risk of flooding.
- Provide peer support for officer in dealing with enquiries by having named staff supporting the programme.
- Coordinate the work of the partnership to meet the strategy for addressing flood risk in the catchment. Specifically maintenance, resilience, planning and capital intervention.
- Provide consistent support to the community.

Q&A

Is there anything you want to ask our pilot areas?

Have you got any feedback/ recommendations based on your own experiences?

Next steps

Pilot area work

Evidence review publication

Future webinars

Any feedback welcome!