

flood risk management:

a local issue of national importance

about

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About ICE

The Institution of Civil Engineers (ICE) is an international membership organisation that promotes and advances civil engineering around the world.

ICE is a leading source of professional expertise in transport, water supply and treatment, flood and coastal erosion risk management, waste and energy. Established in 1818, it has over 80,000 members around the world, including ove 60,000 in the UK.

ICE's vision is to place civil engineers at the heart of society, delivering sustainable development through knowledge, skills and professional expertise.

About this report

This report has been compiled through a process of workshop discussions, desk research, and in consultation with ndividuals and organisations that provided their expertise, views and knowledge of flood and coastal erosion risk management.

The aim of the report is to assess the likely impacts the Flood and Water Management Act (2010) (England and Wales) will have on the authorities responsible for the preparation for, protection against and response to flooding events. It identifies the areas most in need of attention for the full and successful implementation of the Act, including:

- Clarification of responsibilities
- Promotion of data sharing and partnerships
- Availability of funding
- Provision of skills and capacity

This report is issued to a wide range of stakeholders including politicians, civil servants, local authorities, trade and industry bodies, as well as the media.

Project Steering Group Members: Dick Thomas

In the formation of the

executive summary

Executive summary

Approximately 5.5 million properties in England and Wales are at risk of flooding. More than 5 million people live and work in 2.8 million properties that are at risk of flooding from rivers and seas; over one million of which are also at risk of surface water flooding. A further 2.9 million properties are susceptible to surface water flooding alone.¹

The 2007 summer floods cost the country a total of £3.2bn with an additional £660m in damage to critical infrastructure and essential services.² The UK is geographically small and is densely populated. By 2030 it is predicted that approximately 92% of the population will live in urban areas³ where the impacts of flooding would be greater.

While local flooding and coastal erosion risk should be managed at a local level, the national significance of the impact from flooding and coastal erosion should not be ignored. The interdependent nature of the country's infrastructure means that the failure of one system caused by a localised flooding event can generate a cascade effect across public services, impacting on multiple communities. The 2007 flooding event rendered transport, energy and telecommunications networks unusable across much of the surrounding area.

The Flood and Water Management Act 2010 (the Act) is being implemented in a complex climate. While the Act outlines greater responsibilities for local authorities, uncertainty over funding and

the spectre of unemployment create an atmosphere of apprehension. There is a general acceptance of the requirement for government spending cuts; however, it is important that the government does not underestimate the changing skills and number of staff required at the local level to manage flood and coastal erosion risk

Flood and coastal erosion risk management (FCERM) should include a combination of active measures, such as defence and urban design; passive measures, including the reinstatement of flood plains; and emergency management measures.⁴ The Act provides the opportunity to include the community in FCERM as well as improving the understanding of resilience. Structural measures, particularly defence works, should avoid disconnecting one part of a community from another and should preserve continuity between the community and rivers and coastline.

Organisations involved in FCERM will require ongoing guidance on their new responsibilities and support to help create lasting partnerships to manage flood risks that traverse administrative boundaries.

Civil engineers are well placed to assist in the successful planning, adaptation and mitigation of flood and coastal erosion risk. This briefing makes recommendations to central and local government and other related organisations to ensure the full and successful implementation of the Act.



The 2007 summer floods cost the country a total of £3.2bn with an additional £660m in damage to critical infrastructure and essential services.

I Environment Agency (2009) Flooding in England: A National Assessment of Flood Risk; Environment Agency (2009) Flooding in Wales: A National Assessment of Flood Risk

² Environment Agency (2009) Roboting in England. A Waldrah Assessment of Robotings in Vales. A Waldrah Assessment of Roboting in Vales. A Waldrah Assessme

The integrated approach required for effective flood risk management must take into account all types of flooding and coastal erosion risk.

introduction

Introduction

The severe flooding that struck the country in June and July 2007 affected hundreds of thousands of people, resulting in major human and financial costs for families and businesses, and the nation as a whole.

The floods also had an overwhelming effect on the UK's infrastructure networks, with electricity substations shut down leaving thousands without power, arterial roads closed, water and waste treatment plants affected, 25 London Underground stations closed and Network Rail estimating repair costs at £32 million.⁵

The event highlighted the major impacts floods can have on society and emphasised the importance of improving the way we deal with the management of flood risks.

In his review of the 2007 summer floods, Sir Michael Pitt called for 'urgent and fundamental changes in the way the country is adapting to the likelihood of more frequent and intense periods of heavy rainfall' and recommended that 'local authorities should lead on the management of local flood risk'.⁶ The Pitt Review resulted in 92 recommendations and, along with the widely reported effects of the floods, was the impetus for new legislation.

The Flood and Water Management Act (2010) (the Act) has included some of the major recommendations from the Pitt Review. The Act provides clarity over the roles and responsibilities of disparate flood risk management authorities. The legislation seeks to impel improved co-ordination and integration when managing all types of flood risk at the local level, which should improve effectiveness and efficiency in the management of flood and coastal erosion risk.

In summary, the Act:

- Places new responsibilities on local authorities to provide strategic management and co-ordination of local flood risk from groundwater, surface water runoff and ordinary water courses.
- Places new responsibilities on the Environment Agency (EA) to draft a flood and coastal erosion risk management strategy for England for ministerial approval. Welsh ministers will be responsible for drafting a Welsh strategy.
- Places a duty on flood risk management authorities to co-operate and act consistently within the framework of local and national flood risk strategies.
- Compels local authorities to establish and maintain a register of structures which have an effect on flood risk management in their areas.
- Introduces requirements for property developers to construct new Sustainable Drainage Systems (SUDS) once completed.

While local authorities have been empowered with new duties for the strategic management of local flood risk, it must be remembered that the EA maintains its existing legal obligations for the strategic management of national flood and coastal erosion risk contained in the Water Resources Act 1991 and Coastal Protection Act 1949.

'Urgent and fundamental changes in the way the country is adapting to the likelihood of more frequent and intense periods of heavy rainfall [are required]'

The Pitt Review

5 Institution of Civil Engineers (2008) Flooding: Engineering Resilience. London, ICE 6 The Pitt Review (2008) Learning lessons from the 2007 floods. London, Cabinet Office

responsibilities



RECOMMENDATIONS:

- 1. The Department for the Environment, Food & Rural Affairs (Defra) should provide clarity on the nature of the term 'significant' in relation to the asset risk register through national level guidance. It should also ensure that the ownership and condition of assets in the record are transparent.
- 2. In fulfilling a strategic role of the management of flood and coastal erosion risk, the Regional Flood & Coastal Committee (RFCC) should ensure that they obtain a representative from the coastal groups. This will help provide the integrated approach required for effective flood risk management.
- 3. Defra and the Environment Agency (EA) should review the Act implementation process so that Lead Local Flood Authorities (LLFA) have enough notice to facilitate the funding, skills and expertise required to deliver on their new responsibilities.

Roles and responsibilities

There are several hundred organisations with responsibilities pertaining to flood and coastal erosion risk management (FCERM) in the UK, including the Environment Agency (EA), Welsh Assembly Government, local authorities, water companies, private landowners, internal drainage boards and the emergency services.

Overlaps of statutory duties and permissive powers can lead to confusion over who takes the lead in any given scenario, to duplication of effort creating inefficiencies and to ineffective delivery of vital strategies. Sir Michael Pitt highlighted the importance of clarifying 'who does what' in his review of the 2007 floods to improve the certainty of planned outcomes and simplify lines of accountability.

At the local level, the Flood and Water Management Act (2010) enhances the role of local authorities in FCERM and provides these new duties through the creation of Lead Local Flood Authorities (LLFA).

The enhanced leadership role bestowed upon local authorities provides a valuable opportunity to develop an integrated approach to local FCERM. Through the production of a Local Flood Risk Management Strategy an LLFA can provide strategic co-ordination to the risk authorities involved in flood risk management at the local level, gain access to the expertise within water companies and internal drainage boards, and develop a better understanding of the risks present within their administrative boundaries. The designated LLFA has a duty to create and maintain a register of structures that are likely to have a significant impact on flood risk management in their area. Alongside this register the LLFA will also have to create a record of the ownership and condition of these structures. To ensure important sources of risk are not omitted, ICE considers that Defra should provide further guidance on what 'significant' involves. It is also unclear whether Lead Local Flood Authorities are obliged to register structures in their area that are of national significance. If these assets are considered nationally significant then the EA should retain responsibility for them. This ambiguity should be addressed through national level guidance provided by Defra and the EA.

Once structures and assets have been listed as sources of risk, ICE is unclear on the level of information that will be made public and, as a consequence, the impact this will have on local communities and property owners. This raises concerns that dwellings situated in areas newly listed at risk of flooding will be less likely to obtain home and/or contents insurance. Defra and the EA, in consultation with the LLFAs, should monitor the impacts of the new legislation and respond with efforts to minimise the impacts of such unintended consequences.

Section 11 of the Act states that when exercising their FCERM functions, a risk management authority is legally bound to 'act in a manner which is consistent with the national and local strategies and guidance'. ICE is concerned that while water companies must comply with national plans, they appear to be exempt from acting in this manner towards local strategies and guidance. Indeed, water companies are only obliged in the Act to 'have regard to the local strategies and guidance'. This legal ambiguity risks weakening the influence of local flooding strategies designed to unite all risk authorities in the area. Any authority less legally obliged to work together than others threatens to undermine the mutual trust required by organisations to share data and collaborate equally in their efforts to reduce flood risk.

One of the new responsibilities contained in the Act for the EA is the conversion of Regional Flood Defence Committees (RFDC) into Regional Flood and Coastal Committees (RFCC). This is a positive step towards the integrated management of all sources of flood risk, in this case incorporating coastal erosion risk with others sources.

The new RFCCs will provide a strategic role in advising the EA on priorities for their respective regions and a vital sub-national conduit for strategic decision-making at the local level.

ICE welcomes the inclusion of 'coastal' in the new title to reflect the inclusion of coastal flooding and erosion risk; however, our inquiry identified some concern that coastal erosion risk management experience will not be harnessed without a mandatory requirement for representatives from existing Coastal Groups [See Case Study 1, p9] to sit on the RFCCs. ICE is concerned that this will relegate coastal flooding and erosion risk as a priority and undermine the integrated approach to flood management enshrined in the Act. While ICE acknowledges that not all regions have coastlines, the integrated approach required for effective flood risk management must take into account all types of flooding risk.

The Act facilitates the transfer of responsibilities for flood risk management. This allows the local authority to designate the management of flood or coastal risk management to another risk management authority that possesses experience and expertise in flood and coastal risk management. This approach will enable the most effective use of capabilities and resource available best suiting local needs and circumstances. In some cases this will remove the financial and temporal costs required to employ for a new position or provide extra training. This pragmatic yet thorough approach to flood risk management is welcomed by ICE.

The government is implementing the Act in stages, which is sensible as local authorities will have a significant increase in their responsibilities. At the point of publication, Commencement Order No. 3, which executes implementation of most duties and powers for LLFAs and the creation of RFCCs, is in progress. The evidence obtained by ICE suggests that local authorities have not been provided with timely or clear guidance regarding implementation of this Commencement Order. There will be further Commencement Orders from government related to the establishment of new Sustainable Drainage Systems (SUDS) Approving Bodies (SAB). The national standards for SUDS are currently unclear. Further confirmation is required over who is responsible for the provision and ongoing maintenance of new SUDS projects. ICE would like Defra and the EA to review the implementation process, including the clarity of guidance and the time allowed for understanding new responsibilities.

Any authority less legally obliged to work together than others threatens to undermine the mutual trust required by organisations to share data and collaborate equally in their efforts to reduce flood risk.

partnerships



Recommendations:

- 4. Flood risk authorities should view the Act as an opportunity to form lasting, mutually beneficial partnerships that allow them to gain a better understanding of each other's strengths. LLFAs should recognise where expertise exists, and ensure that groups are provided with funds to manage risk and are encouraged to form effective partnerships.
- 5. The EA should ensure that all LLFA data sets are 'open source' and freely available to all risk authorities and non-statutory organisations, such as the Fire and Rescue Service, within and across administrative boundaries. This would help create a 'virtuous circle' of data and information sharing.

Data sharing and partnerships

As a result of the 2007 floods The Pitt Review concluded that as each risk authority carries out its own improvement works independently, investment decisions were made in isolation creating inefficiencies and, in some cases, an increase in the risk of flooding. With no clear co-ordination and structure, flood risk management and response efforts can be piecemeal, poorly prioritised, duplicative and inefficient. Co-ordination, partnerships, communication and data sharing are all vital to the achievement of a fully integrated approach to flood and coastal erosion risk management.

The creation of the Lead Local Flood Authorities (LLFA) will facilitate the transfer of flood and coastal erosion risk management (FCERM) from district councils to county councils. Where the skills and capacity for FCERM exist within a district council, these groups should be recognised for their expertise and provided with the responsibility and funding to continue their risk management duties.

The Act outlines a 'duty to co-operate' between risk authorities. This explicit compulsion to form working partnerships should help improve mutual understanding of each risk authority's strengths, a better appreciation of resources available and, through improved data sharing, a greater comprehension of the types of flood and coastal erosion risk that need to be managed. While supporting the 'duty to co-operate' ICE believes that this should not be limited to risk authorities such as local authorities and internal drainage boards. Nonstatutory organisations, particularly the Fire and Rescue Services, gather data during their response activities to a flooding event. When communicated to those involved in flood risk mitigation, this data can help risk authorities improve the way they prepare and protect their communities. The creation of a truly 'virtuous circle' of data and information sharing is vital to the achievement of a holistic approach to flood risk management.

A foreseeable barrier to data exchange is the reluctance for organisations such as water and insurance companies operating in competitive markets to make available commercially sensitive information. The data they collate can be of high value to understanding sources and consequences of flooding. Despite the force of the 'duty to co-operate' we believe the Environment Agency (EA) has an important role to play in harnessing this data and sharing it with local risk authorities in a commercially safe manner. The EA should also ensure that data formats are 'open source' and freely available to all risk authorities.

Data sharing, and partnership formation, should not be restricted by administrative boundaries. Coastlines, rivers and watercourses often cross these boundaries. Designated LLFAs must therefore unite with neighbouring LLFAs to manage flood risk in the wider flood and coastal erosion risk catchments and mitigate the possibility of negative consequences of one authority's positive efforts on another.

There are some good examples where, even before the Act received Royal Assent, local authorities had co-operated across their bureaucratic boundaries. Coastal Groups – local authorities working together to mange coastal flood risk from the shared shoreline – have been in existence since the mid 1980s (See Case Study 1). These Coastal Groups provide a pragmatic vehicle for sharing resources, data and knowledge; reduce duplication of effort and inefficiencies, improve good practice and further research and development objectives. These models have been adopted sporadically and a much needed culture of co-operation at the local level is still lacking.

ICE sees a strong case for the replication of the Coastal Groups model for inland flood authorities. Ideally, this will be fulfilled by the RFCC; however, where this does not occur, groups tailored to local requirements, with the embedded principles of the Coastal Groups, may be established. The Act provides local authorities with the blueprint for sharing data and working in partnerships. It would be contrary to the localised approach for either Defra or the EA to coerce local authorities into these actions: however, they must support local authorities with these practices while they adjust to their new flood and coastal erosion risk responsibilities.

Case Study 1: Coastal Groups

Coastal Groups first arose in the mid 1980s in response to the need for Intergrated Coastal Zone Management. These groups – made up of representatives of maritime district, borough and unitary councils, county councils, Defra, the Environment Agency and other maritime operating authorities – have been actively working to provide expert advice on coastal issues and have strived to influence strategic and sustainable policies and programmes to best manage the risk from coastal flooding and erosion.

Since October 2008 seven Coastal Groups have taken a strategic lead from Defra and have sought to further objectives in research and development, knowledgesharing and good practice. The four keystones of the Coastal Groups are Shoreline Management Plans, Coastal Monitoring, Effective Investment Planning and Partnership Engagement.

Coastal Groups have also been at the forefront of data sharing techniques. The strategy for a £30m national network for the delivery of regional monitoring was submitted by New Forest District Council and is being led and implemented by the Coastal Groups.

Data sharing and knowledge dissemination will be an instrumental part of the implementation of the Act. Coastal Groups all have established websites, which serve as information hubs between regions and have simultaneously provided those managing coastal issues with a community to share ideas and best practice.



The Act provides local authorities with the blueprint for sharing data and working in partnerships.

funding

Funding

Investment in flood and coastal erosion risk management is vital. Every £1 invested in flood and coastal erosion risk returns on average £8 worth of benefit.⁷ Furthermore, investment in FCERM has the potential to stimulate redevelopment and attract inward investment into local and regional communities.

Funding arrangements for local FCERM projects have traditionally been, and are currently, heavily centralised with little capacity for local influence. Such a centralised system has not provided a mechanism to acquire 'top up' finance from other local sources.

With a limited central pot of money, some priority projects for local communities receive funding, while others, despite demonstrating value to the community, do not gain approval.

In order to support the new responsibilities allocated to new Lead Local Flood Authorities, the government has provided a mechanism that allows a wider range of funding options for local FCERM. This should encourage and enable beneficiaries of FCERM to invest in future projects. At the heart of these new proposals is a move towards funding the 'outcomes' – a project is expected to deliver rather than focusing on 'meeting costs' of a project.⁸ Projects that can demonstrate long-term benefits, which will, over time, be greater than the initial cost, will receive funding approval.

Rewarding schemes for the future benefits they will deliver is a positive step towards a more efficient allocation of resources and should improve transparency. Our experts suggest that evaluation of schemes based on a 'payment for outcomes' formula should also reduce whole-life costs and gradually erode the unhelpful, inefficient distinction between capital 'new build' and revenue 'maintenance' projects.

When reviewing local FCERM funding proposals, Defra will not just approve traditional defence projects, but will prioritise applications that manage and adapt to growing flood and coastal erosion risk. Incentivising LLFAs to find alternatives to traditional defences is an important breakthrough in the move away from the expensive and unsustainable 'defend-all' approach.

Funding for projects should make allowance for the increasing need for investment to tackle the impacts of climate change, and new urban and rural development. This would improve delivery and value from investment to allow the UK to be prepared for these future challenges.

Flood

Recommendations:

6. The calculation for Flood Defence

consider benefits to vital regional

and national infrastructure assets

7. The formula for the 'Payment for

Outcomes' method must recognise

the full benefit stream of flood and

coastal erosion projects, including

8. Financing mechanisms for the long-

SUDS, whether they are new or

national standards to facilitate

of such systems in the future.

term operation and maintenance of

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the safe and efficient functioning

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of households affected.

Grant in Aid (FDGiA) payments should

and networks, as well as the number

When finalising the 'payment for outcomes' formula, ICE urges the government to reward the full current and future benefits stream that FCERM projects can provide. Cities, towns and villages that are located in flood plains deliver economic, social and cultural benefits to areas beyond their locality and to the nation as a whole. The Flood Defence Grant-in-Aid (FDGiA) calculation is based largely on the number of households affected; however, the formula should also consider benefits such as protection of vital regional and national infrastructure assets and networks.

Part-funded projects will require additional money to proceed. The Regional Flood and Coastal Committee (RFCC) can raise money from local authority payments to the Local Levy. There is also the opportunity to leverage funds from third party beneficiaries. The strategic role that the RFCCs fulfil in this area is very important. If extra money cannot be sourced, the cost of the project may need to be scaled back or abandoned altogether.

Alternatively, private finance can be used to buttress central government grants. While supportive of the principles of encouraging private finance into local FCERM projects, ICE is concerned that during a period of economic uncertainty, LLFAs will be unable to attract sufficient funding from non-governmental sources to ensure the progression of projects. The specific funding responsibilities for the operation and maintenance of SUDS require further clarification. The Act focuses purely on new build with no regard to the funding for retro-fit of SUDS into existing buildings and redevelopments. In the consultation on the National flood and coastal erosion risk management (FCERM) strategy for England, Defra suggested that private investment would contribute to the shortage of capital funding for accelerated SUDS projects; however, there is no mention of long-term maintenance funding. If LLFAs are expected to finance long-term maintenance they should be provided with clarity regarding funding mechanisms available.

Finally, while ICE supports the principle of greater local authority responsibility for flood and coastal erosion risk management, most flooding budgets will not be ring-fenced, which means local authorities could use flooding funds to make up shortfalls in other areas of expenditure. ICE urges local authorities to ensure FCERM remains a priority. Not investing now will result in larger costs in the future as the country copes with the increasing threat of heavy and regular flooding events.



Incentivising LLFAs to find alternatives to traditional defences is an important breakthrough in the move away from the expensive and unsustainable 'defend-all' approach.

7 Environment Agency (2009) Investing for the future: Flood and coastal risk management in England: A long-term investment strategy 8 Environment Agency – FCERM Appraisal Guidance

skills and capacity



Recommendations:

- 9. Existing FCERM expertise should be utilised and those local authorities with particular prominence should be allocated the status of 'centres of excellence'.
- 10.Defra should facilitate the retention of relevant skills and competencies within the flood and coastal erosion management supply chain through the provision of stable funding mechanisms.

Skills and capacity

The Department for the Environment, Food and Rural Affairs (Defra) has recognised in its draft Strategy for Skills and Capacity Building in Local Authorities for Local Flood Risk Management⁹, that new responsibilities for funding, project management, policy, planning, and asset and operational management will require specialist skills and competencies.

Defra and the Environment Agency (EA) should be commended in their efforts to assist those responsible for local flood risk management. The Defra Capacity Building workshops and e-learning tools have provided training in competencies such as collaborative working and preliminary flood risk assessment. The EA runs a graduate training programme and sponsors students on postgraduate engineering courses; however, these are beneficial in the medium to long-term.

ICE has previously raised concerns regarding the public sector's ability to recruit and retain flood risk management experts.¹⁰ There are local authorities that do possess a wealth of experience relating to drainage and managing flood risk due to their location, and as a result these centres of excellence could be used by a number of local authorities to service a wider geographical area. In utilising this existing skill set economies of scale could be achieved. It is important that local authorities seek out existing sources of skills and expertise. Not only will this allow them to develop the skills required for flood and coastal erosion management more efficiently, but it will also highlight

the training gaps that may exist. This will assist Defra in establishing training programmes in the future.

Although Lead Local Flood Authorities (LLFA) will be able to transfer some flood and coastal risk responsibilities to other risk management authorities, they may also be required to adopt specific responsibilities themselves. The engineering skills required for flood risk management vary and services can be provided by a range of qualified engineers; including Technician, Incorporated and Chartered grades. Implementation of the Act is underway and the skills to manage flood risk are required immediately.

Defra's Flood and Coastal Erosion Strategy outlined the skills and capacity required for the transfer to greater local responsibility for flood and coastal erosion risk management; however, there is insufficient mention of what actions will be taken to both retain and develop our national resource capacity and skills through the period of change. It seems inevitable that there will be at least a short-term hiatus in FCERM activity with direct impacts on the supply chain if not also in administrative functions.

Implementation of the Act is underway and the skills to manage flood risk are required immediately.

mage Courtesy of Yorkshire Council

Case Study 2: Cleveleys Coastal Defence and Promenade Enhancement Scheme

The new flood defence construction on the coast of Cleveleys, a seaside town in Lancashire, north-west England, uses a wave of concrete steps and a wide pedestrian promenade to hold flood waters at bay, while deliberately not distancing people from the beach front.

After decades of effective use, the Wyre Flood and Coastal Defence Strategy identified that the defences were coming to the end of their design life leaving Cleveleys at risk of coastal flooding. Without the project over 8,000 properties would have been at risk during a 1 in 200 year flooding event.

Wyre Borough Council exploited this opportunity to develop a project that would not only protect the area from flooding, but improve the quality of its beachfront and promenade. This defence project and its innovative design benefited the community by offering protection from coastal flooding and have been critical in sustaining the social and economic welfare of the town. Unlike traditional coastal defences, the project does not deter the community from the shoreline and beach area.

Large-scale improvements such as this can act as a catalyst to bring new investment and tourism into the areas, which will boost the local economy and create new employment. The project was designed to meet the current and future demands of local residents and visitors alike by:

- Safeguarding the town from coastal overtopping
- Improving the promenade for public benefit
- Boost the local tourism industry
- Entice private development
- Attract inward investment

The project is designed to withstand the 200mm sea level rise predicted to occur as a result of climate change.

Funding for the project came from the Department of the Environment, Food and Rural Affairs (Defra), the Environment Agency, North West Development Agency and Wyre Borough Council.

Not only has the area been transformed and revitalised, but has increased tourism and helped create a strong sense of community pride.

Sources:

Sustainable Cities Cleveleys: Taking steps against flooding – http://sustainablecities.dk/en/city-projects/ cases/cleveleys-taking-steps-against-flooding

UK Landscape Award (2010) Entry File 'Cleveleys Coast Protection Phase 2 – www.uklandscapeaward.org/ Entryfiles/1282923551UK-Landscape-Awards-2010.pdf



⁹ www.defra.gov.uk/environment/flooding/documents/manage/surfacewater/capacitybuilding.pdf 10 Institution of Civil Engineers (2008) Flooding: Engineering Resilience. London, ICE

recommendations



ICE urges local authorities to ensure FCERM remains a priority. Not investing now will result in larger costs in the future as the country copes with the increasing threat of heavy and regular flooding events.

Roles and responsibilities

- The Department for the Environment, Food & Rural Affairs (Defra) should provide clarity on the nature of the term 'significant' in relation to the asset risk register through national level guidance. It should also ensure that the ownership and condition of assets in the record are transparent.
- 2. In fulfilling a strategic role of the management of flood and coastal erosion risk, the Regional Flood & Coastal Committee (RFCC) should ensure that they obtain a representative from the coastal groups. This will help provide the integrated approach required for effective flood risk management.
- Defra and the Environment Agency (EA) should review the Act implementation process so that Lead Local Flood Authorities (LLFA) have enough notice to facilitate the funding, skills and expertise required to deliver on their new responsibilities.

Data sharing and partnerships

4. Flood risk authorities should view the Act as an opportunity to form lasting, mutually beneficial partnerships that allow them to gain a better understanding of each other's strengths. LLFAs should recognise where expertise exists, and ensure that groups are provided with funds to manage risk and are encouraged to form effective partnerships. 5. The EA should ensure that all LLFA data sets are 'open source' and freely available to all risk authorities and non-statutory organisations, such as the Fire and Rescue Service, within and across administrative boundaries. This would help create a 'virtuous circle' of data and information sharing.

Funding

- 6. The calculation for Flood Defence Grant in Aid (FDGiA) payments should consider benefits to vital regional and national infrastructure assets and networks, as well as the number of households affected.
- 7. The formula for the 'Payment for Outcomes' method must recognise the full benefit stream of flood and coastal erosion projects, including environmental, economic and social gains.
- 8. Financing mechanisms for the long-term operation and maintenance of SUDS, whether they are new or retro-fit, should be detailed within national standards to facilitate the safe and efficient functioning of such systems in the future.

Skills and capacity

- 9. Existing FCERM expertise should be utilised and those local authorities with particular prominence should be allocated the status of 'centres of excellence'.
- 10.Defra should facilitate the retention of relevant skills and competencies within the flood and coastal erosion management supply chain through the provision of stable funding mechanisms.

Glossary

ABG	Area-Based Grant
сс	County Council
CLG	Department for
	Communities &
	Local Government
CPA	Coastal Protection Act (1949)
CSR	Comprehensive
	Spending Review
DC	District Council
Defra	Department for
	the Environment,
	Food & Rural Affairs
EA	Environment Agency
FCERM	Flood and Coastal Erosion
	Risk Management
FDGiA	Flood Defence Grant-in-Aid
FWMA	Floods & Water
	Management Act (2010)
IDB	Internal Drainage Board
LA	Local Authority
LLFA	Lead Local Flood Authority
RFDC	Regional Flood
	Defence Committee
RFCC	Regional Flood &
	Coastal Committee
RSG	Revenue Support Grant
SMP	Shoreline Management Plan
SUDS	Sustainable Drainage Systems
SAB	SUDS Approving Bodies
WRA	Water Resources Act (1991)

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/Our vision

development through knowledge, skills and professional expertise.

/Core purpose To develop and qualify professionals engaged in civil engineering

To exchange knowledge and best practice for the creation of a sustainable natural and built environment

/Inter-Institutional Flood Group

The Institution of Civil Engineers is a member of the Inter-Institutional Flood Group which comprises the Chartered Institution of Water and Environmental Management, the Institution of Civil Engineers, the Landscape Institute, the Royal Institute of British Architects, The Royal Town Planning Institute and the Royal United Services Institute. The Group seeks to develop a consensus about the management of water. Westminster London SW1P 3AA

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