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Flood risk management and the roles of the private sector in England.

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This case study presents some insights into the how the private sector plays a key role in development processes across England and considers Disaster Risk Reduction (DRR) matters generally, and flood risk issues specifically. The following information draws upon a review of literature and research projects into DRR in England, all of which is then augmented by recent interviews with key stakeholders.

Flood risk in England

Flood risk in its various guises is a major problem in England and according to Government figures is a problem that has got worse over recent decades and is predicted to get even more severe, affecting more people and causing more damages. For instance, the Environment Agency (quoted in Bennett 2012) has calculated that:

- 0
one in six homes in England is at risk of flooding.
- 0
over 2.4 million properties are at risk of flooding from rivers or the sea in England, of which nearly half a million are at significant risk.
- 0
one million of these are also vulnerable to surface water flooding with a further 2.8 million properties susceptible to surface water flooding alone.
¹
- 5
5% of people living in flood risk areas knew they were at risk and for these three out of five of them had taken some action to prepare for flooding.

The impacts

It has also been acknowledged that flood damages in England amount to £1.1bn per year (NAO 2011) and the Association of British Insurers (ABI) have claimed that the cost of damage caused by flooding to property across the United Kingdom (UK) ² has increased by 200% decade on decade, rising from £1.5bn (1990 – 2000) to £4.5bn (2000 – 2010) (ABI 2010). These damages are widely predicted to rise further, due to increased urbanisation and an intensification of the hydrological cycle in the coming century (Huntington 2006), which in turn may lead to an increase in frequency and magnitude of intense precipitation events, which can cause flooding (Bates et al. 2008).

¹ It should be noted that pluvial flooding (typically associated with abundant rainfall in a localised area, and exacerbated by insufficient capacity of urban drainage systems) has also increased in prominence on the flood risk agenda in light of the Summer 2007 floods (Bosher et al. 2009). For instance the flooding that inundated the coastal city of Hull affected 8,600 homes and 1,300 businesses and has now largely been attributed to the city's drainage network being totally overwhelmed by heavy and prolonged rain (Coulthard et al. 2007).

² It is important to note that the systems and institutions that constitute the nations of the UK (England, Scotland, Wales and Northern Ireland) are significantly and increasingly different, especially with regard to local authority matters such as land-use planning and building standards.

Legislative framework

Within the UK, the resilience of the built environment has been given increasing attention over the past decade, with a range of non-legislative policies and incentives to aid in reducing the vulnerability of the built environment to the plethora of hazards, threats and major accidents that pose a risk to it (Bosher et al. 2007). However, some of these advances could be seriously undermined due to the proposed reductions to government spending on flood defences, with resources capped at £540m per annum over the next three years resulting in an 8% reduction since 2010 in real terms (Bennett 2012). Nonetheless, advancements have occurred in recent years particularly in relation to the areas of emergency planning and urban planning, each of which will now be briefly explained.

Emergency Planning

England has a well-established system for emergency planning that is set out within the Civil Contingencies Act (CCA) 2004 (Civil Contingencies Secretariat 2004). The CCA, which is presently under review, has two parts: 1) local arrangements for civil protection and 2) emergency powers. The CCA stipulates two categories of front line 'responders' (category one and category two responders) and identifies their duties and responsibilities relating to 'localised incidents through to catastrophic events' (Civil Contingencies Secretariat 2004, p.2). Category one responders, or 'core responders', are the emergency services, all principal local government authorities, National Health Service bodies and key government agencies. Category two responders comprise 'co-operating responders', that can consist of many private sector stakeholders such as utility companies, transport operators, and voluntary agencies. The CCA describes the duty of these agencies to cooperate in a Local Resilience Forum (LRF), typically defined by police constabulary jurisdictions, to undertake risk assessments and carry out proactive risk reduction activities accordingly.

Local risk assessment

Each local authority in England must produce a risk assessment (including flood risk assessments) under the CCA. A two-way flow of information is required as local risk assessments are subsequently reviewed and in turn, fed back into a National Risk Assessment (NRA). The CCA also places a legal duty on local authorities and other key agencies to maintain the local risk assessments in a Community Risk Register (Cabinet Office 2010) that becomes the basis for supporting the preparation of emergency plans and, in theory but not necessarily in practice, for supporting appropriate decisions regarding urban planning.

Urban Planning and flood risk

Urban planning in England is highly regulated to the extent that the planning system has often been accused of constraining development and in some cases stymying private sector investments (see Balen 2006; Evans and Hartwich 2006). The publication of "*Planning Policy Statement 25: Development and Flood Risk*" (PPS25) by the Government was intended to ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in

areas at risk of flooding, and to direct development away from areas at highest risk (DCLG 2006).

So why is flood risk getting worse?

In the UK, it has been argued that agreements between the government and the insurance industry have left an increasing number of vulnerable people without adequate cover against natural hazards such as flooding (Wamsler and Lawson 2011). There is currently an agreement between the Government and the insurance industry, called the '*Statement of Principles*' that obliges insurance companies to offer flood cover as part of standard policies in most cases. The agreement, that is due to expire in June 2013, does not guarantee cover for some properties, including properties that continue to have a significant flood risk. Nonetheless, while the agreement has been in place it has meant that many properties in flood prone areas have received flood cover as a standard component of their household insurance cover and some have proposed that this may have disincentivised property owners to proactively address or avoid flood risk (Cabinet Office 2008).

It has also been suggested that continued flood plain development in England has had an effect that has not really been fully appreciated by the English government. For instance, Crichton (2008) states that 'property developers'³ are increasingly using flood plains to build social rented housing for low-income families, homes for the elderly/disabled as well as schools and hospitals; to the extent that there are over 2,000 schools and 80 hospitals in flood hazard areas in England (Crichton 2008). This indicates that the legacy of ineffective planning policy and insurance problems in England have contributed to creating urban areas where some of the most vulnerable members of society (i.e. children, the elderly and the ill) inhabit highly flood prone areas and, in some cases, do not possess adequate insurance cover. In the wake of the 2007 floods in the UK, the government's subsequent report noted that the residents of public housing are often the least resilient and are most unlikely to have insurance (Cabinet Office 2008).

The key message is that despite a raft of guidance for planners and restrictions for developers it appears that the development of flood prone areas in England persists and in some regions has actually increased (DCLG 2011). This problem is highlighted in Table 1 that shows Government figures for the percentages of new dwellings⁴ built within areas of high flood risk between 1989 and 2010 (DCLG 2011). Table 1 shows that the average proportion of new dwellings built in areas of high flood risk has fluctuated annually between 7 and 11% with some regions such as London, Yorkshire and Humber and the East Midlands regularly surpassing these averages. The consequence of this is that on average nearly 1 in every 10 new dwellings is built in flood prone areas in England. In real terms this equates to approximately between 10,000 (based upon the 102,830 dwellings built in 2010)⁵

³ 'Property developers' (hereafter referred to as 'developers') have been defined herein as small- to large-scale commercial entities predominately involved in the business of realizing a financial gain from land that they have developed for residential or commercial purposes.

⁴ A 'Dwelling' in the context of this data is defined as a 'self-contained unit of residential accommodation'.

⁵ Green (2011)

and 17,000 (based upon the 175,560 peak of dwellings built in 2007)⁶ dwellings being built in high flood prone areas every year for the last two decades.

Table 1: Land Use Change in England: Percentage of new dwellings built within areas of high flood risk, by region, between 1989 to 2010

Percentage

Year	Regions of England									England
	N. East	N. West	Yorks & Humber	East Mids.	West Mids.	East of England	London	South East	South West	
1989	1	4	11	13	3	7	17	8	7	8
1990	1	4	13	12	2	6	16	7	6	7
1991	2	3	15	8	5	4	13	5	5	7
1992	5	3	11	7	4	5	19	6	7	7
1993	1	4	10	12	4	4	15	6	5	7
1994	2	4	10	9	4	5	17	6	8	7
1995	4	3	11	10	3	5	21	6	7	8
1996	2	2	9	10	4	4	25	5	7	7
1997	3	2	9	11	4	7	24	6	9	8
1998	1	3	6	4	4	5	23	7	7	7
1999	2	3	9	7	4	6	24	7	8	8
2000	1	5	11	9	2	6	22	7	8	8
2001	2	5	11	10	3	5	18	7	9	8
2002	2	4	11	12	3	7	20	6	11	9
2003	2	5	12	11	2	7	28	7	8	9
2004	1	3	9	11	4	7	27	6	7	9
2005	1	5	12	9	3	8	15	6	8	8
2006	1	4	15	12	4	9	19	8	7	9
2007	2	6	14	12	5	6	16	5	5	8
2008	3	2	14	10	4	5	23	5	7	9
2009	1	3	10	10	3	10	21	9	8	11
2010	2	8	11	7	4	4	21	5	7	9

Source: DCLG 2011. **Notes:** The data in the table above are based on records received from Ordnance Survey up to March 2011

⁶ Ramsch (2012)

The figures in Table 1 suggest that the publication of PPS25 in 2006 has had a negligible impact in reducing the proportion of dwellings being built in flood prone areas. Hence PPS25 has been criticised because it can permit development in flood plains if there is nowhere safer to build through an approach called 'The Sequential Test' (Crichton 2012). The planning policy requires Local Planning Authorities (LPA) to apply a sequential approach as part of the identification of land for development to determine areas of risk of flooding but it can be abused, as explained during an interview with an insurance expert.

"In practice this test can be, and has been, used by developers to get permission to build in flood prone areas because they have argued that there are no non-flood prone areas available to build upon. This argument has increasingly been used successfully to get planning permission in Greater London."

(Insurance and Flood Risk practitioner, London)

The role of private sector stakeholders in flood risk management in England

The Concept paper for the fourth session of the Global Platform for DRR (UNISDR 2012) states that around 85% of all investments worldwide stem from the private sector, including companies but also small and medium enterprises and individual investors. The private sector therefore has been identified as playing an important role in helping to incorporate DRR into the development (and redevelopment) of communities across the world. The important role of the private and private/public sectors in England has also been identified by Boshier et al. (2009) when mapping out the main types of stakeholders that should be involved with DRR in construction projects and also when their optimal inputs should be made (see Appendix 1). The key messages from Appendix 1 are a) there are many stakeholders that should/could be more involved in DRR related activities and b) that specific stakeholder optimal inputs should be targeted at times when the inputs can be most relevant. This may sound like an obvious statement but many risk managers and emergency planners consulted as part of this research reported that their inputs on any DRR related matters (i.e. flood risk assessments or flood mitigation) tended to be requested far too late in the process (i.e. when everything was planned and built, and any hazard mitigation measures were afterthoughts and subsequently tended to be less effective and more expensive).

Another pertinent observation from Appendix 1 is that private and private/public sector stakeholders (for instance, clients and architects can be both private and public sector) have a potentially critical role to play in whether or not DRR is incorporated into urban developments. The private and private/public sector stakeholders (in *Italics*) are listed in Table 2 which shows the particularly important pre-project and pre-construction stages where DRR inputs should be considered (Boshier et al. 2009).

Table 2: Summary of selective key public sector stakeholders that should be involved, and where optimal inputs should be made

Planning, design and construction phase	Formal specified input	Formal unspecified input
Pre-project stages [Including design brief, concept, technical design]	<i>Urban planners/designers</i>	<i>Emergency/risk managers</i>
	<i>Client</i>	<i>Architects/designers</i>
	<i>Developers</i>	Utilities companies
	<i>Civil engineers</i>	Structural engineers
Pre-Construction [Including proposals, planning, tender documentation and procurement]	<i>Architects/designers</i>	<i>End user</i>
	Engineering consultant	Professional organisations/institutions
	<i>Urban planners/designers</i>	Insurers
	<i>Civil Engineers</i>	
	<i>Emergency/risk managers</i>	
	<i>Developers</i>	
	Contractors	
<i>Client</i>		
Construction [Including project planning and construction]	<i>Utilities companies</i>	
	<i>Architects/designers</i>	<i>Client</i>
	<i>Civil engineers</i>	Materials supplier
	Engineering consultant	<i>Emergency/risk managers</i>
	Contractors	<i>Developers</i>
	Utilities companies	
Post-Completion [Operation, maintenance and change of use]	Specialist contractors	
	Insurers	Contractors
	Utilities companies	Structural engineers
	<i>Client</i>	
	<i>End user</i>	
	<i>Architects/designers</i>	
	<i>Emergency/risk managers</i>	
	<i>Developers</i>	
<i>Urban planners/designers</i>		

Key: Primarily Private sector stakeholders
Primarily Public-private sector stakeholders

Source: after Boshier et al. (2009)

Bosher and Dainty (2011) suggest that from the private sector, developers and clients are central to either helping or hindering the integration of DRR. However, discussions with representatives of the private housing sector in England indicate that the sector is disincentivised to adopt DRR measures unless these are regulated or at least incentivised through insurance benefits or a clear business case. At a time of economic recession it is understandable that most private sector companies will need to focus upon minimising the financial risks of development projects; a point articulated during an interview with the director of a construction company:

“From a business point of view we need to ensure that we do not ‘scare off’ the developer or client by saying we will be considering hazard mitigation issues. Nine times out of ten the developer or client will assume these measures will cost them more money; so they may ditch us and go for the company that they perceive as being better value for money, or in other words is perceived to be the ‘cheapest’ option. The developers and clients are the “keystones” to the attainment of building in resilience.”

(Director – Large construction company)

THE WAY FORWARD

In England, incorporating DRR to natural hazards has too often been an agenda which has been driven mainly by politicians and emergency planning professionals with little, if any, discussion with citizens, the business community, town planners, urban designers, and other built environment professionals (Coaffee 2008). One of the strategies required to help attain improved social, physical and institutional resilience to flooding is likely to include the revision of building codes, planning policy, and developing good practice guidance on a number of measures (such as the resilient reinstatement of flood affected buildings). It is therefore important that the wide range of built environment professionals (as detailed in Appendix 1) are consulted and actively involved in the revisions that will be required to make built assets in England more resilient to ever increasing flood risk. This case study concludes by providing two brief examples of how private developers can be ‘encouraged’ to incorporate DRR measures through a) **‘the carrot’** - incentivisation due to a suitably identified business case and b) **‘the stick’** that is associated with tighter regulation.

Examples of the ‘stick’ and the ‘carrot’

‘The stick’ – This would primarily refer to legislative requirements that can prohibit (or at least significantly limit) inappropriate development in flood prone areas; interestingly there are a number of lessons, in fact Crichton (2012) suggests that there are 42 lessons that can be learnt on this matter from England’s neighbours in Scotland, but just a couple of major lessons will be briefly discussed here. For example, the *‘Flood Prevention and Land Drainage (Scotland) Act 1997’* imposes a clear statutory duty on local councils to maintain watercourses, initiate flood defence projects, and issue reports every two years on all flooding problems and what they are doing about them. Therefore, where developments are proposed in flood prone areas, the local councils have been given an incentive to ensure that flood risk to new and existing developments is not increased. If it is, then the

developer is obliged to provide funds for the construction of flood defences or other flood risk management features such as sustainable urban drainage systems (SUDS). Crichton (2012) states that legislation in England is not as stringent as in Scotland, arguing that tighter regulation has been the case in Scotland since 1995, and this firm approach has meant that developers have now sold almost all their land banks in high-risk areas and accepted that they will never get permission to build there. Therefore, while PPS25 allows building in flood hazard areas if nowhere else is available, the Scottish Planning Policy does not permit the building of residential property in areas where flood risk exceeds the 200-year return period.

'Scottish Planning Policy 7: Planning and Flooding' (Scottish Executive 2004) is noted by to have been the first planning policy to be legislation and therefore mandatory in mainland Britain (Jones 2008). When comparing the different approaches to planning between Scotland and England, another important measure stands out, namely the existence in Scotland of Flood Liaison and Advice Groups (FLAGs) that act as a forum for the key public and private stakeholders to share knowledge and offer advice. Most Scottish local authorities set up FLAGs in line with the recommendations of the relevant planning guidelines, covering 94% of the Scottish population, and have consequently made huge contributions towards improving the flood risk mind-set (Crichton 2012). This type of community level liaison for flood risk issues does not systematically occur in England. There are other lessons from Scotland that could also be listed, related to better flood mapping, lower housing density, and obligations to keep watercourses free of debris but these are more suitably explained in Crichton (2012).

'The carrot' – approximately three years ago a large construction company was in the process of compiling a tender to bid for the redevelopment a large mixed use site (civic buildings, retail and residential) in Greater London. The construction company were partners on a programme of DRR-related research being conducted by academics in the UK. The academics advised the construction company that the proposed development had areas that were prone to flood risk and the nature of the development also made it a possible target for terrorist attacks and general criminal activity. A 'design workshop' was undertaken with the project team (consisting of architects, engineers, quantity surveyors and urban designers) involved in producing the tender documentation. During the workshop a range of structural and non-structural flood risk management, counter-terrorism and crime reduction solutions were suggested to the project team, many of which were eventually incorporated into the revised designs for the development.

When the tender documentation was later presented to the client, it was made explicit that (although not requested by the client) there were a range of risk reduction measures designed into the proposed development and that these had been incorporated at no extra cost. The tender was competitively priced and was ultimately chosen by the client; it was noted that the client liked the proactive risk reduction initiative that the construction company had taken and it was a key factor in their decision to award the construction company the project. The construction company clearly recognised the benefits of taking a proactive approach to

incorporating DRR at the earliest planning and design stage. When the research team asked the construction company if they could provide a figure as to how much extra money the risk reduction measures had cost, the response was *“effectively it did not cost anything extra because we designed the structural and non-structural features in at the earliest stage. If it did cost anything more we would have just used slightly less high grade marble in the entrance lobby to the main building”*. The director of the construction company explained that at a time where margins were tight and competition for business was fierce, they clearly recognised the benefits of being seen to be a market leader at incorporating various types of risk reduction measures and also in giving the client the impression that they were ‘getting something extra for nothing’ especially if these measures could lead to perceived reductions in the client’s insurance premiums.

Summary

Therefore, while presenting a very specific example of flood risk in England, this case study illustrates that the private sector can play a critical role in positive and negative ways. The realities of free-markets economics (that for instance put a value on flood prone land and provide a competitive market for insurers to provide flood insurance as standard) and the lack of incentives for the private (and even the public-private) sector to proactively consider DRR on developments have resulted in a legacy of inappropriately conceived developments in England. The English situation is in contrast to the Scottish example of how the legislative ‘stick’ can be used to place a greater onus upon the private sector to either incorporate flood risk management features into development or alternatively to decide not to build in flood prone areas.

However, there is also some hope that forward thinking private sector developers can see past the constraints of the ‘moral obligation’ consideration. Some developers are recognising that it could actually be a good idea to become a market leader in incorporating DRR into commercial developments with the hope that it will give them the cutting edge over competitors in the short term (i.e. under current legislative conditions) and the long term; for instance if and when in the future the legislative conditions determine that the ‘stick’ is more likely to be used.

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Appendix A: Stakeholder identification and DRR inputs: Who should be involved and when should the inputs be made?

Generic planning/ design/build phases		Pre-Project phases				Pre-Construction phases				Construction phases				Post-Completion phase			
		Appraisal	Design Brief	Concept	Design development/ Tech. design	Outline proposals	Production information	Tender documentn	Tender action	Project planning (mobilisation)	Construction to practical completion	Monitor cost procurement and quality	Post practical completion	Evaluation	Operation	Maintenance	Change of use
Sector (public/private)	DRR inputs	Hazard Identification				Mitigative adaptations				Hazard Identification review							
		Preparedness planning								Preparedness planning (including response)							
		Recovery planning															
	Architects/designers																
	Client																
	Civil engineers																
	Developers																
	Utilities companies																
	Emergency/risk managers																
	Engineering consultant																
	Urban planners/designers																
	Specialist contractors																
	Contractors																
	Structural engineers																
	Emergency services																
	Local authorities																
	End user																
	Insurers																
	Government agencies																
	Quantity surveyors																
	Materials supplier																
	Professional orgs/institutions																
	General public																
	Trade org./representation																

KEY

- Formal specified input
- Formal open/unspecified input
- Informal input
- No input required



- Mainly public sector
- Mainly private sector
- Public-private sector



These are the key stages for DRR inputs