Adapting to a climate of change – Capacity building for flood risk management

LANDF♦RM event: E8512

Sponsored by: Interpave

Report of a workshop organised by LANDF♦RM held at Mappin Hall, University of Sheffield on the 26th November 2008

LANDF♦RM is a new network primarily for local authorities to share experiences and discuss policy and research outputs regarding drainage and flood risk management. LANDF♦RM is funded by the Environment Agency, Mouchel and Interpave.

Speakers	Jonathon Chapman	Environment Agency
	Liz Sharp	Pennine Water Group
	Tony Poole	City of Bradford Metropolitan and district council
	Judy Payne	Hemdean Consulting
Chairman	Martin Osborne	Mouchel

THE ISSUES

The Pitt review of the 2007 summer floods made a number of recommendations which should be followed to enable relevant stakeholders in the UK to improve long term planning, and the respond during future flood events.

In particular local authorities (LA's) were identified as key stakeholders with a number of different departments involved in various aspects of flood risk management. Central to the recommendations in the Pitt review was the idea of working in partnership between different stakeholders. However this often requires new and improved relationships be built within and between LA's and with other key stakeholders such as water utilities and the Environment Agency.

In some organisations there is a rigid, hierarchical structure of operation with set procedures and regulations for carrying out various duties in a consistent manner. Now that there is an impetus for Local Authorities to play a larger role in flood risk management (FRM), and deliver leadership they find themselves needing to adapt and create new roles within their organisation and new relationships with other stakeholders.

There is a need for capacity building within local authorities to ensure that they have the knowledge and skills to ensure they can use their available resources to meet the recommendations of the Pitt review and be an effective part of a co-ordinated effort in flood risk management.

LEARNING POINTS

1. The EA and local authorities each have considerable roles and responsibilities in FRM. A strong two way relationship between these bodies is essential for tackling FRM in the most efficient manner.
2. Local authorities need to increase their capacity to deal with FRM. This may involve training staff and acquiring new skills but most importantly it will involve realising, as organisations, the multiple benefits of good FRM and to reflect this in policy.

3. There are concerns about the funding that will be made available to local authorities to tackle FRM and produce surface water management plans. The official government response to the Pitt Review is about to be released.
4. Health and safety should not be used as 'an excuse to do nothing', with sustainable drainage. Countries such as Holland show great examples of drainage as an open part of the urban environment.
5. FRM is currently driven by compliance with legislation in the UK. As local authorities improve their capacities it is expected that policies will be centred on the wider environmental and social issues after going beyond legal requirements.
6. Increasing capacity for FRM is best achieved through horizontal information sharing networks, through which a number of possible platforms exist via the internet.

JONATHAN CHAPMAN, ENVIRONMENT AGENCY

Legislative change – what it might mean for local authorities

- *Jonathans role with EA involves the Strategic Overview role, urban drainage and flood risk management. He is currently involved with an initiative involving research into the implementation of a framework for integrated urban drainage, with other stakeholders.*

The 2007 floods were not a one-off and more than 50,000 people were affected. The Pitt review into the 2007 floods made a number of clear recommendations about how roles and responsibilities should be split between stakeholders. However, currently there is a wide variation in the relationships between the EA and local authorities (LA's) depending on both location and people specific factors.

For flood risk management to be an effective and meaningful process it is vital for the EA and LA's to co-operate, share data and have a two-way communication with each being well aware of their responsibilities and duties. Where this is not the case, a situation arises where the EA would seem overbearing and prescriptive, telling a local authority what they can and cannot do rather than working together from a common understanding. He emphasised that the EA is keen to genuinely *work with* Local Authorities

There is little previous experience of effective partnerships and multi-agency working as outlined in the Pitt review and it is a challenge to address these recommendations adequately. Furthermore as the government has not yet published its response to the Pitt review, and with the Floods and Water Bill looming on the horizon, there is inertia between stakeholders waiting to see what the Government line is.

The EA's role in flood risk management is to be focused at the national scale with a strategic overview vision. This will include the gathering of data from different stakeholders to provide a national level flood map that includes coastal and river flooding as well as surface water and groundwater flood risks, and to maintain and update this map as required.

The amount of data to be gathered is extremely large and the required quality of data can only be achieved by tapping into the local expertise of LA's. Rather than creating new roles within stakeholders it is preferred to build upon existing roles. Local authorities have been required to carry out strategic flood risk assessment of their district for several years, and to compile a surface water management plan (SWMP) which should help consolidate the currently fragmented responsibility that there is for surface water drainage, as indicated in Figure 1 below.

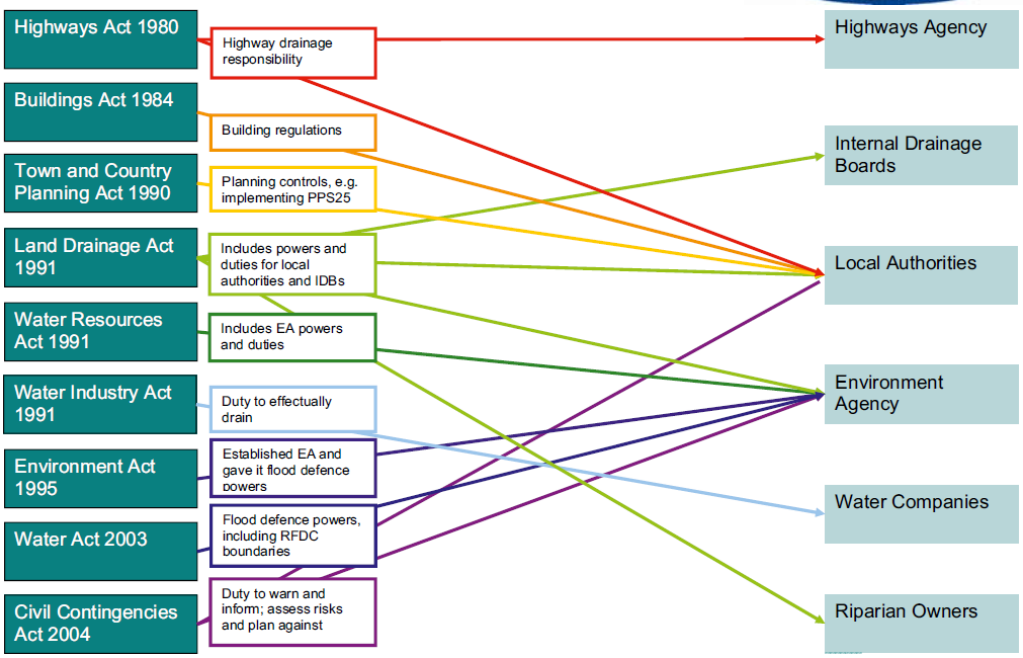

Figure 1 – relationships between stakeholders, responsibilities and legislation in flood risk management.

From Figure 1 it is evident that the EA and local authorities both have considerable spheres of influence in legislation relevant to flood risk management and that they do overlap considerably. The potential exists for the EA to apply its technical expertise indirectly via guidance and advice to LA's who can use their local knowledge and relationships to carry out more detailed assessments at the local -scale.

There is a requirement for LA's to step into the unknown and take a proactive approach to flood risk management, providing leadership at the local level, and working with other delivery agents (including the EA) in producing SWMP's that can help safeguard people and communities from future flood events. Good flood risk management (FRM) has multiple benefits such as helping adapt to climate change, improving emergency responses and improving infrastructure resilience. The challenges around surface water management are relatively new. Stakeholders need to embrace this, and learn and adapt as we go. We can actively influence what good practice will be in the future, we must not sit back and wait for someone to parachute in a magical plan in the future.

DISCUSSION

Q? You said the EA are to oversee a national data-set, is this something the EA are actively pursuing?

A? We are trying to collect our own data and using others data while trying to ensure that we don't duplicate effort. But some groups are reluctant to share data and see it as commercially sensitive information.

Q? With these proposed legislative changes in the Floods and Water Bill, it is evident that the EA is lacking in skills and that LA's are limited with resources, has the government said anything about addressing these shortfalls?

A? There are skills issues right across Flood Risk Management.

Q? I am concerned about the EA charging for existing datasets, is this likely to continue?

A? The EA is required to recover costs from certain activities. This is indeed one of the issues with data sharing when acquiring new data, the understanding of who owns

the Intellectual Property rights (IPR) to that data and who owns what if that data is used to create a third party product such as modelling software. It is essential to understand who owns data, and what can be done with it.

Q? Local authorities vary widely in their current practice. To what degree do you expect the requirement to produce surface water management plans (SWMP's) to help LA's to achieve a more consistent approach?

A? The EA are focused on managing big rivers and coastal areas. The degree of local knowledge required to carry out the numerous SWMP's means that LA's will be required to play a lead role in SWMP's. Defra is likely to say soon how SWMP's will be produced, together with any further guidance. This should help ensure a consistent approach is taken.

Q? What is the future of surface water data? The EA currently restrict access to this.

A? Yes, the restrictions are currently in place due to commercial reasons and the fact that the data was produced so quickly. An improved dataset without these restrictions will be available in 2009.

LIZ SHARP, PENNINE WATER GROUP

Capacity building for flood risk management

- *Liz's work involves looking at the social and institutional aspects of flood risk management. She was involved in the Aire and West Garforth Integrated Urban Drainage Pilots and is also working on an EPSRC funded project called URSULA with Sheffield University.*

What does capacity for flood risk management mean?

To answer this question it helps to imagine what we would see with a local authority that had no flood risk management capacity. Occurrences such as traditional development in floodplains, upstream developments contributing to local flooding, sewers backing up and frequent and potentially catastrophic flood events would be evident. Whereas with a local authority with excellent capacity for FRM we could expect to see examples of development with sustainable drainage systems which manage both the quantity and quality of water and contribute to local amenity. Local people would be aware of the water management system and actively involved in flood prevention and be prepared for floods to occur. Any developments existing in flood plains would be retro-fitted to ensure they are flood resilient to minimise damage to property and the time until families can return to previously flooded properties.

a)

b)

Figure 2 – Examples of what good be expected in a local authority with a) low FRM capacity and b) high FRM capacity.

What aspects to capacity are there?

There are three main components to FRM capacity; human resources, organisational strength and directive reform (Brown 2008). Human resource capacity considers the knowledge, training, skills and abilities of individuals within an organisation. However even good human resources are not very useful if there is poor organisational strength where poor communication between local authority departments and key stakeholders in FRM can prevent the human skills being used effectively. Even if an organisation possesses good employees and communicates well as an organisation, if there is no political or legislative incentives to tackle FRM in a detailed and holistic manner, then funding may not be available to use this capacity for FRM. Laws and government guidance could further help build FRM capacities by encouraging an environment of information sharing and examples of good practice.

How does capacity vary between organisations?

No such studies of local authority capacity for FRM have been carried out in the UK however it is useful to look at a previous study which used a series of methods to categorise the integrated water management capacity of councils in New South Wales, Australia by Rebekah Brown (Brown 2008). The study defined five different categories of capacity numbered 1-5, with one being the lowest and five the highest.

1. **Project phase**
   An organisation in this category is only motivated to act by compliance with the minimum requirements of legislation. In the case of LA's in the UK, this would be equivalent to complying with the need for a strategic flood risk assessment (SFRA). To comply, the LA would simply contract out the completion of the SFRA to consultants and have the assessment sitting on a shelf in the office gathering dust.

2. **Outsider phase**
   A local authority in this category would have some employees or perhaps one entire department trying to learn and improve FRM by creating good working relationships with other stakeholders such as the EA, water companies and consultants. Attendance at workshops such as LANDF♦RM to try and learn from other LA's who may be further ahead in FRM. However LA's at this stage would be beset by internal conflicts between other LA departments who refuse to change their established procedures and see FRM as contrary to their interests.

3. **Growth phase**
   The growth phase is basically a progression of the outsider phase and can be reflected in bigger budgets and attention given to FRM and sustainable drainage in council reports. Management in the LA would be beginning to pay attention to the importance of the economic and reputational impacts of flooding on the council. However there would still be some tension between departments about the allocation of roles and responsibilities with regards to FRM.

4. **Insider phase**
   LA's at this stage would have a competent working knowledge of flood risk assessments and experience with end-of-pipe solutions. The initial employees in the outsider phase who were trying to convince other departments to adapt to tackle FRM in an integrated manner now play a key networking and knowledge brokering role between departments. Not only would the LA have project collaborations between planning, highways and drainage departments but also foster links with research institutes and NGO's. The 'environment' is recognised by senior figures in the organisation as a priority issue.

5. **Integrated phase**

Organisations operating within this phase would have shifted from a technical to a holistic approach and would be recognised as leaders in the field of FRM. An emphasis on community and environmental governance throughout the organisation would be apparent and have led to congruent policies which recognise the multiple benefits of good FRM that reach into other disciplines. A local authority at this stage could actually feel restrained, rather than supported, by government and the EA as they would have already gone beyond the requirements of any legislation.

The results from the Australian study are summarised in the table below. At the LANDF♦RM workshop, 13 local authority representatives were asked which category they would consider their own organisation to be in and the results also given below;

Table 1 – capacity of Australian councils for integrated water management compared to opinions of UK LA's representatives of their own organisations.

Organisation Category	Australian study	LANDF♦RM workshop
1 – Project phase	21/45 (47%)	1/13 (8%)
2 – Outsider phase		5/13 (38%)
3 – Growth phase	19/45 (42%)	4/13 (31%)
4 – Insider phase		2/13 (15%)
5 – Integrated phase	5/45 (11%)	1/13 (8%)

The above table does not represent a true comparison between UK and Australian water management capacity though. First of all, the Australian study was independent and thoroughly investigated and secondly, any LA sending a delegate to the LANDF♦RM workshop is almost by default going beyond the Project phase. However there will actually be many LA's in the UK in the project phase that were not present at the LANDF♦RM workshop.

How do we increase capacity for FRM?

Sending employees on training courses is easy to do and is an essential part of capacity building but alone, it will have at best a limited effect. Focusing on ticking the boxes of new directives and regulations can also have little or no benefit if it is simply contracted out to specialists. Networking and partnership working are essential in increasing FRM capacity, more so than technical capacity. The ability to bring intra and inter-organisational networking cannot be over emphasised. There is a need for inter-organisational alliances with horizontal power distribution that promotes information sharing.

In the UK, Planning Policy Statement 25 *Development and flood risk*, the Water Framework Directive (WFD) and the need for surface water management plans are driving LA's to build capacity in FRM, but it is important that LA's see this as an opportunity to shape corporate policy to link to other agendas, to improve local amenity and to build relationships and learn with other stakeholders, rather than just another hoop to jump through.

DISCUSSION

Q? With FRM there seems to be the chance to improve water quality as well as reducing flood risk, but in the UK I don't believe there is significant enough public pressure to improve water quality, if it would be cheaper to simply minimise flood risk. Is legislation strong enough to force us to improve water quality as well?

A? The WFD highlights the importance of water quality and will increasingly attempt to link FRM to water supply management and water quality. However at the moment integrating water quality and flooding regulations would represent too big a shift in focus from the status quo and so initially we are just tackling FRM in the strictest sense, as the minimum requirement.

Q? FRM is not always about urban development. For example in Sheffield some 97% of our recent flooding was due to fluvial flooding from agricultural land. The solution is to decrease runoff from rural areas which is not strictly within the local authority remit.

A? This is about flood prevention, but there are ways a local authority can prepare better. Simply considering the source, pathway receptor model should be used to decide upon the best land management. Even if the land use upstream cannot be altered to reduce flood risk, it is still possible to implement solutions downstream by designing for exceedence (CIRIA have produced a design manual, CIRIA report C635).

Q? Can the aspects of 'building capacity', be applied to sustainable communities and the economy?

A? The answer is probably yes, however it is difficult to answer. Sustainable communities should be economically sustainable as well, not just socially and environmentally, they should both converge with building capacity for FRM.

Q? In the Australian study you mentioned by Brown, is there anything that LA's could use from that report to carry out a self assessment of where they are in terms of FRM capacity?

A? The report by Brown outlines the methodology used. However it is best applied as an independent assessment rather than self assessment. The publication details are; Brown, R. 2008, 'Local Institutional Development and Organiszational Change for Advancing Urban Water Futures' Environmental Management, 41, 221-233

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TONY POOLE, CITY OF BRADFORD METROPOLITAN DISTRICT COUNCIL

Capacity building for FRM – responding to the challenge and learning alliances

- *Tony is the principal drainage engineer with Bradford district council and is currently trying to extend an EU funded project called SKINT which is looks at the role of urban drainage in flood risk management.*

There a number of challenges with capacity building for FRM, namely; working with other disciplines, changes in legislation, a lack of resources, climate change uncertainty and health and safety.

Flooding affects everyone and the way in which water passes through our society involves the inputs of several key stakeholders including local authorities, water companies, drainage boards, the EA and members of the public. Within local authorities different departments all have their own remits which influence FRM including; planning, building control, highways and emergency planning. But each stakeholder has their own language and protocols and it is necessary for them to communicate clearly and identify the roles and responsibilities of each stakeholder in not just meeting legislative requirements but achieving a robust water management strategy.

Legislation is changing in the field of water management. Defra are due to pass the Floods and Water Bill next year, transposing the EU Floods Directive into UK law. The Water Framework Directive will have impacts on all aspects of water management and there seems to be a never ending stream of consultations from the government on these impending regulations. The overall aspirations of the government are towards sustainable development but we need clear guidance on the stance the government is going to take. Without this it would be unwise to commit resources to any particular endeavours for a local authority. We need more examples of best practice so that we go from the requirements of regulations to putting in solutions on the ground. Not just examples of technical solutions, but of intra and inter-organisational working. For example, rainwater harvesting and grey water re-use have indirect but important influences on FRM. Trying to implement such schemes in schools

however becomes bogged down in various planning and building regulations. The building regulation system may seem to be complete when applied individually to individual aspects but there is a need for building regulations to be harmonised with the FRM priorities and other sustainable development agendas that the government is trying to push through.

There is a lack of resources particularly within the EA and LA's to implement good FRM across the UK in a short timeframe. Generally in the UK we seem to suffer from a skills shortage in most disciplines however with FRM, there are probably sufficient skills, just that some of those skills are missing or not be influential enough in key organisations.

With financial resources, it is realistic to say that the funds allocated will be influenced by the relative occurrence and impact of flood events, particularly in a time when the global economy is heading towards a recession. With the government requirement for LA's to produce SWMP's there is a need for funding to carry out this extra work. Defra claim there will be funding allocated for devising SWMP's however there is uncertainty from DCLG as the funding may be calculated only based upon work that is considered 'above and beyond' the normal day job. If this proves to be the case there will be a possible knock-on rise in council taxes. Historically, funding in many disciplines often lags behind the demands of the discipline; therefore we have to be realistic and make the best of the situation with the limited resources currently available rather than use it as an excuse to do nothing. If housing insurance providers began to refuse to insure properties in areas without adequate SWMP's and drainage systems on the ground then the government would be forced to quickly come up with resources for carrying out SWMP's.

One driver for improved FRM is climate change uncertainty. However because of the nature of the uncertainty, perhaps long term solutions may not be the best answer. A more sensible approach would be to adaptation that responds to new information as it becomes available. Adaptation to changing regulations and environmental conditions will be most robust if stakeholders work together as part of a learning alliance with links to new research.

Health and safety is a major issue with FRM and there is a growing sense of a 'compensation culture' developing in the UK over the past 10 years. It is possible that health and safety concerns can stifle innovation due to uncertainties with new drainage solutions and it in some cases it can seem to be an excuse to do nothing. One example of health and safety hindering FRM is with proposed retention basins as part of a SUDS scheme; the first question asked by planners and developers will inevitably be, "What if a child drowned in this basin?". Public perceptions in the UK are not well disposed to making space for drainage water in the built environment. If we can look to other countries, for example Holland, where there are numerous examples of schemes incorporating visual and aesthetically pleasing drainage systems into housing schemes and even playgrounds.

Figure 2 – Example of making space for water in a dutch housing estate

Figure 3 – example of incorporating stormwater management into a school playground (Enschede, Holland).

Such systems help residents better understand the natural water cycle and their own impact on land drainage because they can see the process as opposed to traditional drainage systems, which aim to remove water from the built environment as quickly as possible. Another example of a welcome change in thinking in the UK would perhaps be to see roads as more than just a means for vehicles to travel but as strategic conveyance tools for flood routing in extreme flood events that overwhelm the exiting drainage system. This could be achieved with some well placed gullies and piped systems.

At the City of Bradford Metropolitan and District Council we are taking a pro-active approach to FRM and looking to form a learning alliance with all the councils and stakeholders in the Yorkshire and Humberside region. We hope to use this alliance to allow us to apply a multidisciplinary approach to FRM, to maximise funding opportunities and to engage with national and international stakeholders to pool knowledge and keep up to date with new ideas and research. Our first meeting will be 28th January 2009 at Wakefield town hall.

DISCUSSION

Q? Is there a problem that FRM is just too big for some LA's to handle? How can we get those LA's up to speed with FRM?

A? Simply by getting the right staff in, and if not permanent staff then train existing staff, but for those staff to make a difference there needs to be support from senior management to give priority to FRM. Even if funding is an issue they need to see the potential medium to long term savings from proper FRM. Even highways people should be beginning to see the lower costs associated with well designed SUDS than traditional gullies and kerbstones.

Q? Does health and safety create problems when trying to incorporate 'shared surfaces' into developments?

A? Yes! People raise all sorts of objections when you intend to run drainage water through a play area, worrying about children drowning. However very little, if any

concerns are raised with play areas next to roads. A change in public perception towards those typical of Dutch residents could help facilitate a radical change in residential drainage designs.

Q? What do you think the government and elected members can do to help LA's?

A? Well, the environment is fourth in their list of priorities right now. The government likes to see a reflection of its spending in performance indicators but in FRM there are not any concrete indicators so this further discourages investment.

Q? SWMP's are similar to SFRA's, there is a risk they will be contracted out and end up just sitting on the shelf. How can we ensure that a whole catchment can get up to the integrated phase rather than just one LA within a river catchment?

A? There is no duty to share data and each LA has to see the benefits of sharing data to help themselves and their neighbours to create the most robust SWMP for a given catchment. A major problem is the difference in technical capacities between LA's.

JUDY PAYNE, HEMDEAN CONSULTING

Knowledge management and capacity building

- *Judy is a specialist in knowledge management, collaboration and learning. She is a director of the Henley Knowledge Management Forum at the renowned Henley Business School and is currently researching the relationship between people and technology and the use of social software tools.*

We understand that there is a need for capacity building in stakeholder organisations in order to tackle the issue of FRM. But what we should then ask is, '*How can we work together to build capacity and manage knowledge?*'

The short answer is to collaborate. But, collaboration can not be forced, it has to be voluntary. People don't collaborate just because they are told to. Collaboration is difficult as it conflicts with our normal way of working. Consider that even from a young age, we are encouraged and rewarded for doing our homework by ourselves. Organisations that are good at knowledge sharing and collaboration talk about how they do it. Collaboration and knowledge sharing don't sit comfortably with hierarchies and bureaucracy. Traditional vertical hierarchies and command-and-control cultures are good for information and financial management, but to be good at knowledge management organisations need horizontal, informal, networking structures as well. Traditional ways of working are not conducive to sharing knowledge and experiences because everything has to be approved through formal channels. The current FRM environment seems currently to be dominated by compliance with legislation and a hierarchical arrangement of stakeholders.

Trust is important for collaboration and will help facilitate knowledge sharing in an environment where it is not felt that people are trying to gain advantage over each other. Trust can be built by socialising and working together and although not always practical, face to face interactions tend to build trust much quicker.

In the age of the internet, a number of potentially useful knowledge management tools have arisen. These can range from simple common servers and document management systems to more dynamic tools such as social networking sites, wikis, Skype and many others. The obvious example for FRM capacity building is the LANDF♦RM web forum which is hosted by CIRIA and free to join.

Networks (such as LANDF♦RM) can perform various overlapping functions. Most frameworks that describe networks are based on phases that networks go through as they develop – like the model Liz presented for individual authorities. An alternative approach, the Network Function Approach (NFA) has been developed by Ben Ramalingham, initially for use in

humanitarian organisations managing aid programmes. This model is based on functions rather than phases and is a different way of looking at networks that complements the model presented by Liz. The framework describes six functions that a network can perform: Community building, Filtering, Amplifying, Learning and facilitating, Investing and providing, and Convening. These are described in more detail in the handout. Different networks have different mixes of the six functions.

GROUP DISCUSSION

Q? Over the next few years, how should effort be balanced between these functions? Allocate 100 'effort points' between the functions.

A? Table 2 – Opinions of groups present at LANDF♦RM workshop as to where effort was needed to move forward in capacity building for FRM

Function	Ideal functional focus							Total	Mean
Community building (promoting and sustaining the values and standards of a network of individuals or groups)	25	15	18	40	17	10	25	**150**	21
Filtering (organising and managing information)	20	15	10	5	17	20	20	**107**	15
Amplifying (disseminating, making ideas understandable)	15	10	20	5	17	30	20	**117**	17
Learning and facilitating (acquiring new knowledge and developing abilities)	20	30	12	10	17	15	15	**119**	17
Investing and providing (making sure members have the resources they need to do their work)	15	15	10	30	17	15	10	**112**	16
Convening (bringing together different people and groups)	5	15	30	10	17	10	10	**97**	14

Q? Who (if anyone) currently performs the community building function? Are there existing networks that provide them? List existing networks and their activities.

A? **LANDF♦RM (CIRIA)**

- Disemminates/shares information
- Discussion
- Networking
- Hold seminars, workshops and training courses
- Electronic Forum
- Publish guidance and best practice documents

Coastal groups

- Strategic collaboration
- Development of shoreline management plans
- Integration of shoreline management plans

Local authority regional networks

- Discussion
- Sharing information
- Progress good practice

- Provide support and mentoring
- Producing strategic flood risk assessments

CIWEM / ICE / IWA
- Hold conferences and workshops/seminars
- Continuing Professional Development programmes for members
- Lobbying – consultation response
- Technical visits
- Large memberships, bring together people from different disciplines/backgrounds
- IWA in particular has international aspect i.e. held International conference on Urban Drainage

ADA
- Networking
- Engagement with policy makers

Universities
- Undertake research in liaison with commercial companies and government sponsored research councils.
- Disseminate results at academic conferences and publish in peer reviewed journals

EA
- Provide a lot of information and guidance documents on website
- Broadcast flood issues
- Advertise
- Publish information leaflets

Q? Who (if anyone) currently performs the amplifying function? Are there existing networks that provide them? List existing networks and their activities.

A? **CIRIA**
- Design manuals
- Websites
- Seminars

EA
- Website
- Broadcast
- Advertise
- Leaflets

Local authorities – (emergency services)
- Broadcasting
- On site
- consultation

Q? Who (if anyone) currently performs the convening functions? Are there existing networks that provide them? List existing networks and their activities.

A? **LANDFORM**
- Bringing different organisations together
- Web forum and integrative functions

Local Resilience Forum
- Statutory or interested parties re flood

Universities

- Dissemination processes from research

CIWEM
- CPD courses which integrates people from different disciplinary and professional backgrounds
- Conferences, workshops and seminars (mostly London and some are expensive)

IWA
- International Conference on Urban Drainage

Q? Who (if anyone) currently performs the filtering functions? Are there existing networks that provide them? List existing networks and their activities.

A? **LANDFORM/CIRIA**
- Seminars
- SUDS newsletters

Yorkshire Land Drainage Forum
- Sharing best practice – via discussions, presentations, documents, best practice
- Lobbying officials
- Forum for sharing national international work

Water UK – SIN (Sewers)
- Consistent voice for UK water companies
- Share best practice

CIWEM/ICE professional bodies
- Magazines/newsletters
- Forums

Q? Who (if anyone) currently performs the investing and providing? Are there existing networks that provide them? List existing networks and their activities.

Local Resilience Forum
- Provision of joint planning, training/exercising.
- Duties of CCA 2004

EA flood warning teams
- Data provision
- Training
- Flood warning
- Ops team

Q? Who (if anyone) currently performs the learning & facilitating? Are there existing networks that provide them? List existing networks and their activities.

Education
- Research
- Training/conferences
- Dissemination

Organisations (CIWEM, CIRIA, LANDFORM)
- Forums
- Literature
- Training and CPD

Q? Which functions and activities are currently missing? List the missing functions and your ideas for activities.

A? **Community building**

- There is a lack of a single effective voice to bring together stakeholders in FRM.
- Training, mentoring and extending linkages

Filtering

- A need for a database of information sources and a portal to access such a database, potential for LANDF♦RM to do this.

Investing and providing

- There is a lack of sharing of information, knowledge management and successful real-life mechanisms to tackle FRM in the UK.

Learning and facilitating

- Not enough or any overlap between networks.

Amplifying

- Would benefit from more promotion and sharing of data, forums to facilitate networking.

Convening

- Would benefit from input from global leaders in FRM to the UK stakeholders.
- Should be more local resilience forums with EA support.