

Review of Response to Flooding on 27th and 28th June 2012

PEDU

September 2012

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EXECUTIVE SUMMARY

- (i) The torrential rain of 27th and 28th of June 2012 was exceptional and the volume and pace of the downpours exceeded the design capacity of local drainage infrastructure. There is no evidence that infrastructure did not perform to expected standards.
- (ii) Since 2007, only 2010 did not have a serious local flooding incident. Given the frequency of excessive weather episodes it would be prudent to look again at the investment priority allocated to counter flood measures and programmes.
- (iii) Considering the apparent increase in the incidence of flooding, it seems anomalous that Northern Ireland remains without a flood alert and warning system. Effective preparations and deployment of flood counter measures by responding organisations, businesses, property owners, and the general public need to be triggered by a credible alert and warning system.
- (iv) On 27th June 2012, 80% of calls to the Flood Incident Line (FIL) were abandoned. The line was overwhelmed and despite ramping up operator numbers the call abandonment rate between 7.00pm and 10.00pm remained at this level. The deficiencies in the FIL response capability were known before 27th June and steps have been taken to address these in the new NI Direct strategic partner contract which is to be implemented from 1 November 2012.
- (v) Effective emergency response requires certainty about roles and responsibilities. Ambiguity between flood response agencies about their respective roles is unhelpful. While this review found no evidence that any of the flood response agencies were tardy in the discharge of their individual operational response to attend to their drainage assets, there was uncertainty about which should be the lead agency. Reducing the number of interfaces and barriers between central government's flood response organisations would be a useful step towards resolving this. Moving Rivers Agency to DRD, would unite all lead flood response agencies under a single command and could streamline protocols for working together.
- (vi) The experience of 27th and 28th June 2012 illustrates the valuable role that Local Councils can play in handling local emergencies. While some difficulties and frustrations were apparent at the interface with central government's flood response agencies, the Belfast Resilience Forum demonstrated its value on this occasion and replicating it across all council areas would be beneficial.
- (vii) There appears to be a demand from the local public to have access to counter flood advice, information and facilities to protect their families, homes and businesses. Other jurisdictions are active in promoting counter flooding initiatives at community, home owner level, and indeed in schools. Similar initiatives would be useful in Northern Ireland.
- (viii) There have been a number of useful reports on flooding and water based emergencies. It would be useful for all of the recommendations of these

reports to be consolidated into a single counter-flood strategy for Northern Ireland.

Summary of Recommendations

Investment in Flooding Counter Measures

Para 58 It is recommended that Rivers Agency, Roads Service and NI Water work with their parent departments to review current flood defence expenditure priorities and report to the Executive on their adequacy to meet the potential threats over the next 10 years.

Developing a NI Flood Alert System

Para 65: A good deal of information on drainage patterns and flood hot spots is already available within the flood response agencies. It is recommended that this resource is investigated to see how it could be used with Met Office forecasts to identify local flooding threats.

Para 66: It is recommended that when considering the options for building a local flood alert and forecasting service, consideration should also be given to how flood alerts can be best communicated to responding organisations and the public.

Improving Operational Flood Response

Para 72: A key structural reason behind the question of who should be Lead Government Department for flooding incidents arises because Rivers Agency is in DARD while the Roads Service and NI Water are within DRD. In this context it is recommended that consideration is given to the consolidation of all of the flood response organisations under one departmental ambit – i.e by the transfer of Rivers Agency from DARD to DRD.

Para 74: It is acknowledged that local government in Northern Ireland is currently under-going a period of substantial reform initiated by the Review of Public Administration. While recognising this context it is recommended that OFMDFM give urgent consideration to proposals for formalising the role of Local Government in Northern Ireland in civil contingency matters. This should include consideration to extending Resilience Fora across the full width of local government.

Para 79: It is essential that the telephone scripts of FIL are no longer than they need to be, and we note that FIL and the three organisations have been working together with a view to streamlining the process – it is recommended that this process should be accelerated.

Para 80: In the context where District Councils are given a statutory emergency planning and protection role it is recommended that a process is developed whereby calls to FIL for property and personal assistance can be immediately relayed to local councils.

- Para 81: While flood notifications received by FIL are immediately passed to other organisational systems, in some cases there is also a need to contact a duty officer by telephone to alert them to the fact that the notices have been sent and need attention. While NI Water officials have some limited access to mobile communications that allow them to access FIL notices immediately, this is not the case in the Roads Service and Rivers Agency. It is recommended that the three flood response agencies and FIL explore options for improved electronic communications.
- Para 87: It is recommended that Rivers Agency complete its work on *Individual Property Flood Protection Using Resistance and Resilience Measures* urgently and incorporate it into a comprehensive strategy, for consideration by the Executive. This work should specifically include the promotion of self-help initiatives, and consideration of a scheme to help householders flood proof their property.
- Para 89: *Exercise Eluvies* was scheduled for a re-run in 2014. Given the experience of June 2012 it is recommended that consideration is given to running the next exercise sooner, and that tests and exercises should be held more frequently until evidence of improved responses in real situations is evident
- Para 92: To make use of the momentum given to this issue by the recent floods, it is recommended that the relevant lead departments come together to produce a consolidated action plan for all of the reports' recommendations (see Annexes 6-8) for implementing the improved flood defence framework. This work should also embrace the recommendations of this report.
- Para 93. It is also recommended that PEDU should review the consolidated action plan and report on its implementation to the Executive in March 2013.

SECTION ONE – BACKGROUND AND TERMS OF REFERENCE

Terms of Reference

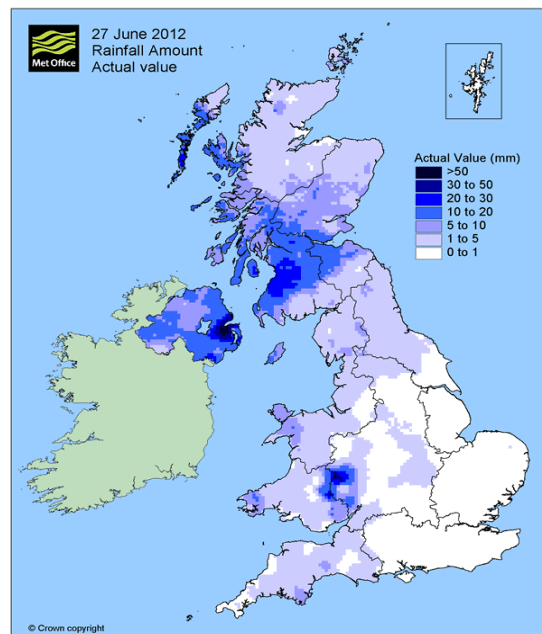
1. At its meeting on 5 July 2012 the Executive agreed that PEDU should be asked to review the response of government agencies to the severe incidence of flooding on 27th and 28th of June 2012. The final two paragraphs of the Executive press release (extract below) have been used as the terms of reference for this report.

“The Executive also agreed that the Government’s Performance and Efficiency Delivery Unit (PEDU) will carry out a thorough review of the response to recent flooding incidents.

PEDU has been tasked to make recommendations to improve co-ordination and efficiency across all government agencies.”

Background

2. The volume and pace of the rainfall on 27th June 2012 was exceptional. It was also remarkable by the fact that the most intense downpours fell over relatively localised areas – this is illustrated by the map below (courtesy of the Met Office) which shows the rainfall pattern on 27th June 2012.



3. Some 44mm of rain fell in 3 hours in the evening of the 27th, suggesting a return period of between 50 and 100 years - however the Met Office emphasise that this is not to say that it will not happen again for another 50 or 100 years; merely that the annual risk of such an event is between 1 and 2 per cent.

4. Based on the number of claims being processed through the Emergency Financial Assistance Scheme, the indications are that around 1,600 households were damaged by this flooding event.
5. The core objective of this review is to examine the response of central government's lead flood response agencies to the flood event of 27th and 28th of June 2012, with a view to identifying where this could be improved.

SECTION TWO – ORGANISATIONAL CONTEXT

Flood Response Organisations

6. The key central government organisations with operational roles in responding to flood emergencies are:

The Rivers Agency (DARD)
NI Water (DRD)
The Roads Service (DRD)

This report refers to these organisations collectively as the flood response agencies. Each has its own emergency response plans and resources, but none has any statutory obligation to respond to flooding incidents outside of a duty to maintain and protect their respective infrastructure assets. In addition to these organisations, the Department of Finance and Personnel (DFP) sponsors the Flood Incident Line (FIL), which is the main contact service for the public to report incidences of flooding.

7. Local Government also has an important role to play. DOE's Local Government Circular 07/06 provides guidance on the powers provided by Article 29 of *The Local Government (NI) Order 2005* which covers the powers of district councils in relation to emergencies. A key point is that district councils have only a discretionary power to use their resources to plan for or mitigate the impact of flooding (or any other emergency). There is no mandatory requirement for local government to engage in civil contingency planning or co-ordination in their areas.
8. Within the greater Belfast area a local resilience forum was established in 2004 to respond to local emergencies. Annex 1 provides information on the Forum and its range of members. The Forum met in the Belfast Emergency Control Centre (ECC) on 27th and 28th of June to co-ordinate and deliver assistance to property owners affected by flooding in the greater Belfast area. While the Belfast Forum is the only one presently within Northern Ireland, consideration is being given by OFMDFM to rolling out additional fora across the region, as well as introducing a statutory basis for district councils to take on a civil contingencies role. This was a headline recommendation of the report that followed the 2010 *Freeze/Thaw* emergency.

Roles and Relationships

9. In terms of finance and manpower, DARD's Rivers Agency is the smallest of the three lead central government organisations. Nevertheless, DARD is the "competent authority" for Northern Ireland in respect of the EU Directive on Flooding and the Agency discharges the day to day responsibilities that come with it. The Agency explained that this role is intended to give it the lead role in respect of flooding "on a dry day" - i.e. it leads in the co-ordination and planning of measures to alleviate the threat of flooding. However, the Agency also works with partners such as NI Water, Roads Service, DOE, NI Fire and Rescue Service, and local councils to develop response plans to be used in the event of flooding incidents. It has occupied a central role in the development of flood defence strategies, and at an official level chaired the

Flood Strategy Steering Group of senior officials. This is drawn from local partner organisations with a flooding response role.

Plans and Protocols

10. There is a wide range of documents recording the best practice, principles and protocols directing the response of relevant organisations to emergencies in Northern Ireland. The *Guide to Emergency Planning in Northern Ireland* provides a comprehensive presentation of the overall approach which has been adopted. Below this there are a set of more detailed protocols and these are listed in the Bibliography of this Report.
11. The term “emergency” is defined in the protocols as:

An event or situation which threatens serious damage to human welfare, the environment or the security of Northern Ireland or the UK as a whole. (NI Civil Contingencies Framework - refreshed 2011)
12. Where local and small scale incidents arise these will be dealt with by the most appropriate agency or organisation independently. Where an emergency or essential service provider anticipates or detects an issue with multi-agency impacts, the PSNI can convene and chair a sub-regional multi agency conference call or meeting to co-ordinate the response where there is a threat to life. In all other circumstances the relevant District Council can convene and chair a sub-regional multi-agency conference call or meeting to co-ordinate the response. This allows for sharing information and co-ordination of remedial action and can draw in support from other agencies, including the central government agencies as appropriate. Emergencies are classified as follows:
 - Local Level – emergencies where the outcomes are such that the response can be delivered entirely by organisations operating locally/sub-regionally; or
 - Strategic Level – emergencies where the extent or severity of their impact is such that strategic level intervention and co-ordination by central government is required.
13. Following discussion and agreement between the responding agencies in the Belfast ECC, it was determined that strategic co-ordination was not required for the flooding incident of 27th and 28th June, and the event was therefore categorised as a Local Level emergency.
14. Where two or more of the organisations dealing with the emergency agree on the potential need to escalate the response from local to strategic an assessment group will be established to determine whether the event requires escalation to another level. In this situation OFMDFM’s Civil Contingencies Branch or, if more appropriate, a lead government department will convene a meeting of key responders to make a joint multi-agency risk assessment.

Tests of Protocols and Plans

15. On 21st September 2011 *Exercise Eluvies* was conducted to test a multi-agency response to a major flooding event within greater Belfast. The event was also used to familiarise key agencies with the Met Office's warning systems. Some of the key findings were:
 - Communications problems remained between tactical and strategic response groups and the public (particularly in respect of organised events);
 - All organisations should explore the practicalities of using social media (Facebook / Twitter) to relay information to the public;
 - Community and Household Emergency Plans should be promoted to inform and assist communities in the protection of their properties;
 - The Flood Incidence Line's resilience was limited when faced with large numbers of calls; and
 - Resource constraints on the ground were becoming key limitations of the ability to respond to major flooding incidents.
16. The *Eluvies* Action Plan set the date for a rerun of the exercise at December 2014. The Belfast Resilience Flooding Working Group has been charged with monitoring and co-ordinating the Action Plan from the *Eluvies* exercise. It met most recently on 29 August 2012 in the Belfast Emergency Control Centre and amongst other things discussed a new sandbags protocol.

Alerts and Warnings

17. Even with steady vigilance there will always be a lead time to mobilise resources to respond to incidences of severe weather. Obviously the more warning that is received about the approach of threatening and damaging conditions, the better prepared relevant organisations and the public can be to act and have remedial measures prepared. However, the Met Office did not have a weather warning in place when the first spells of torrential rain began to fall on 27th June. When it did issue a warning in the evening of 27th, it was the lowest level yellow alert (*be aware*). It produced an amber alert (*be prepared*) for Thursday 28th June at 22.10 on the 27th June.
18. The Met Office told us:

“...while the National Severe Weather Warning Service (NSWWS) has a remit to take into account the impact of severe weather including, as in this case, heavy rain, the Met Office does not issue flood warnings. The severity of warnings issued under the NSWWS banner (yellow/amber/red) depends not just on the likelihood of the severe weather event but also its impact on a significant area and in this case the heavy downpours were restricted to a small area. The NSWWS is designed to ensure that the severe weather warnings will have a widespread and significant impact and that the public is aware and can take action. It is hoped that

the design of the warnings will reduce the number of false alarms and give the public increased confidence in the output.”

19. While the Met Office does not issue flood warnings, it should be noted that it does, for a charge, offer an extended weather warning service, which facilitates the preparation of flood warnings by other agencies. The service has been taken by England, Scotland and Wales, where the Met Office works closely with the Environmental Protection Agencies in the respective jurisdictions (more detail on the service provided is contained in Section 4 of this Report). While this extended service was offered to Northern Ireland, Rivers Agency explained that it was not taken here because in their view it was not well suited to the local topography where river lengths and flood plains are comparatively shorter than in GB.

Counter-Flood Assets

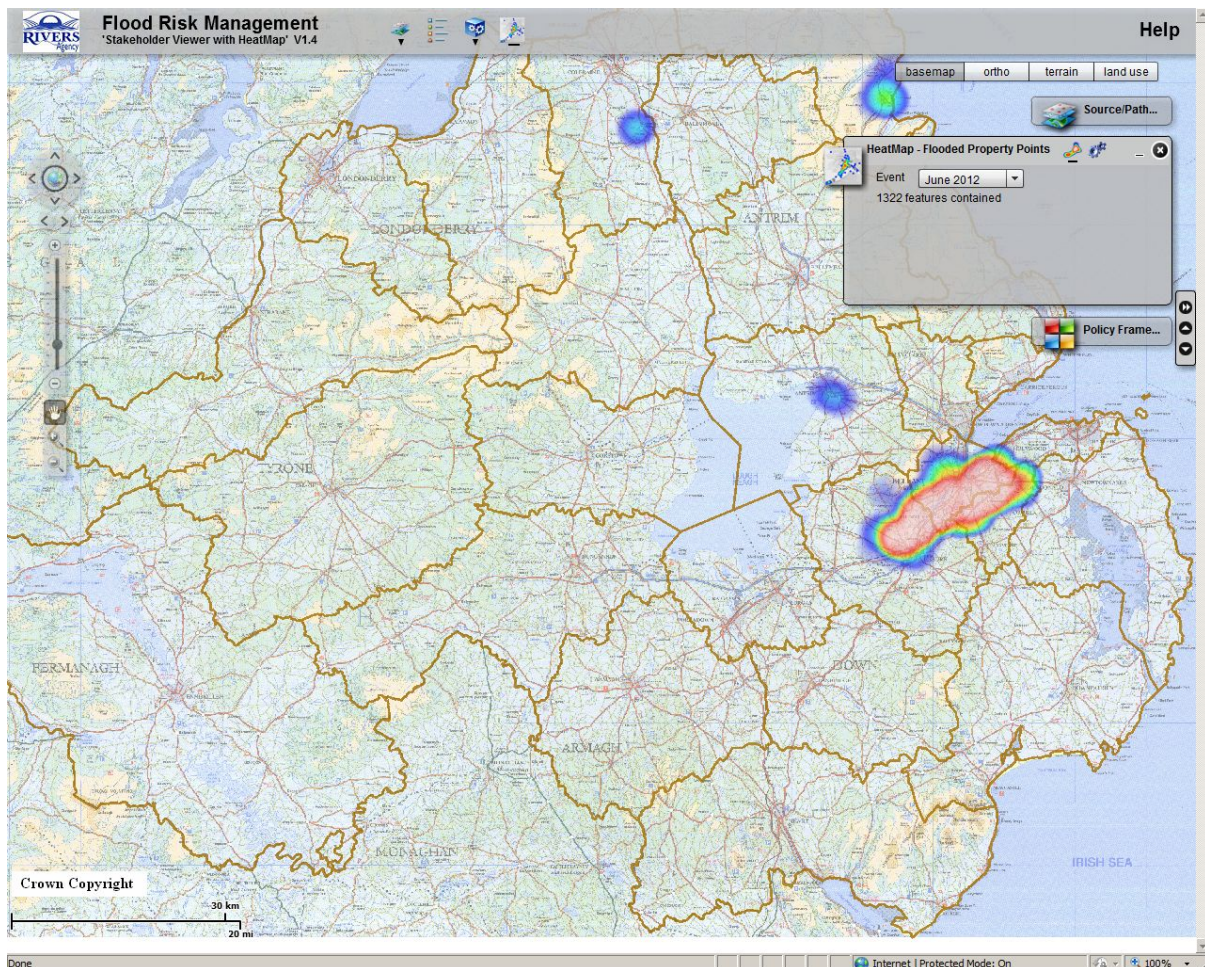
20. The Rivers Agency, NI Water and the Roads Service each have their own procedures for maintaining and protecting the integrity and functioning of their infrastructure. Rivers Agency has water level recorders along strategically important waterways to monitor river levels and a maintenance programme to keep culverts clear. Similarly NI Water and Roads Service have procedures to maintain the drainage and sewer network and road gullies.
21. The Flood Incident Line (FIL) is operated by DFP, and is the principal point of contact for the public to report incidences of flooding to central government. FIL passes reports received to the three flood response agencies for active response. However, each organisation also has its own contact services which the public can also use to report problems and seek assistance about the respective services.
22. Belfast City Council also operates a contact service. It was based on the volume of calls for assistance to this service that the Council took the lead and opened its emergency control centre (ECC) in Belfast City Hall at 8.10pm on 27th June.

SECTION THREE – CHRONOLOGY OF EVENTS ON 27th AND 28th JUNE 2012

Impact of the Floods of 27th and 28th June 2012

23. The full scale of the damage of the June floods continues to unfold. Based on the numbers of existing and anticipated claims for emergency assistance, the indications are that in the region of 1,600 properties were affected. Figure 1 below shows the main area of damage. This map is built from a log of reported flood incidences and those availing of the emergency payment scheme (note, however, that where flooding occurs in non-populated areas or in commercial locations, this will not show on the map).

Figure 1: Map of Areas Impacted by 27th and 28th June Flooding



First Reports on 27th June 2012

24. From 18.30 the Flood Incident Line, the three flood response agencies and Belfast City Council contact services began to receive increasing and large volumes of calls reporting flooding and requesting assistance.
25. At 19.00 the Rivers Agency opened its Lisburn Office to deal with the flood reports both from FIL and its own contact lines. At 19.37 and 19.57 they were alerted, and responded, to reports of river overflows in the Mount Merrion and

Sandhill Park areas respectively. The media was carrying reports of flooding and heavy rain in Belfast.

26. The Roads Service's Eastern Division (Belfast) received its first flood related call at 18.44 and this was followed by increasing numbers of calls from FIL and its own contact lines. From 19.10 responding crews reported back to the Roads Service's Lead Communicator (LC) about the scale of the incidents. At 20.00 the LC contacted all of the Roads Service "out of hours" emergency call centres to assess the overall situation. At the same time arrangements were put in place to increase the number of call handling staff at the Eastern Division's call centre (BelRo) to deal with the developing situation.
27. From 19.00 the Head Office Duty Officer (HODO) in NI Water was liaising with the Wastewater Duty Officer regarding media reports of flooding. The Customer Services Duty Officer (CSDO) contacted the HODO at 19.30 to report receipt of a high volume of calls relating to flooding. The NI Water internal alert protocol was activated at 19.30 and the CSDO took steps to increase the number of call handlers in their Capital House Call Centre.
28. From around 19.00 officials in the Belfast City Council monitored the escalating numbers of distress calls to their own contact lines, and liaised with their emergency contacts in the three flood response agencies to take views and share their assessment of the position. Based on this the Belfast City Council opened its Emergency Control Centre at 20.10 and invited all the relevant agencies to attend.
29. Between 20.00 to 22.00 each organisation applied its separate resources to attending to incidents passed to it from FIL or its own contact lines. However on the evening of the 27 June 80% of calls made to the FIL could not be answered. (See Table 1 below). The call centre was at that time operating with its standard "out of hours" complement of 2 call operators and one team leader. The current contract obliges the FIL to provide 2 call handlers out of hours and to make 'best endeavours' to ramp up the service when needed. In this context FIL performed within its contracted requirement. Nevertheless, as the table shows, despite ramping up the numbers of operators the call abandonment rate between 7.00pm and 10.00pm remained at the 80% level.

Table 1 – FIL Performance 27th June 2012

TIME	CALL HANDLERS	CALL VOLUMES		
		Offered	Handled	Abandoned
4:30 PM	Normal working hours arrangements	5	5	0
5:00 PM	2 + 1 Team Leader	3	3	0
5:30 PM	2 + 1 Team Leader	1	1	0
6:00 PM	4 + 1 Team Leader	5	5	0
6:30 PM	4 + 1 Team Leader	44	11	33
7:00 PM	4 + 1 Team Leader	146	17	129
7:30 PM	4 + 1 Team Leader	146	18	128
8:00 PM	5 + 2 Team Leader	170	31	139
8:30 PM	6 + 2 Team Leader	199	23	176
9:00 PM	6 + 2 Team Leader	221	32	189
9:30 PM	7 + 2 Team Leader	217	35	182
10:00 PM	8 + 2 Team Leader	163	36	127
10:30 PM	8 + 2 Team Leader	81	40	41
11:00 PM	8 + 2 Team Leader	80	32	48
11:30 PM	8 + 2 Team Leader	41	16	25
		1,524	307	1,217

30. On the evening on 27 June, those callers who got through to call operators had to wait on average nearly 17 minutes to speak to a call handler, and that between 9pm and 9:30pm the average waiting time was over 26 minutes. Once through to a handler, the average call handling time on 27 June was 4mins 32 seconds, and on 28 June this reduced to 3mins 19 seconds.
31. Since 2009 FIL has typically received 3000 calls per year. On the evening of 27th June 2012 it received just over 1,500, with over two-thirds of these coming in the three hour period between seven and ten pm. While more than 1,200 calls were abandoned on the evening of 27th June, the severe but localised nature of the flooding might suggest that many of the abandoned calls were re-dials from members of the public unable to connect from a previous attempt, rather than each representing a new incident. Table 2 below shows the volume of calls handled by FIL between 27th June and 2nd July, along with information on how they were distributed to the relevant organisations.

Table 2: FIL Record of Call handling and allocation 27 June – 2 July

Date	CALL VOLUMES			INCIDENTS LOGGED THROUGH CALLS HANDLED				
	Offered	Handled	Abandoned	Flooding			Non Flooding	
				Roads Service	Rivers Agency	NI Water		Total
27.06.12	1,517	300	1,217	170	33	59	262	38
28.06.12	1,004	954	50	121	30	43	194	760
29.06.12	147	141	6	11	2	1	14	127
30.06.12	54	52	2	4	0	0	4	48
01.07.12	34	32	2	0	0	1	1	31
02.07.12	87	85	2	1	0	2	3	82
TOTALS	2,843	1,564	1279	307	65	106	478	1,086

32. Throughout the incident and in the course of the following days FIL handled a significant volume of non-flooding calls, with only 31% of handled calls to the FIL in the period 27th June to 2nd July involving a member of the public reporting a flooding incident. The non-flooding category in Table 2 includes any call which is not reporting a flooding incident. While a statistical breakdown of the 1,086 non-flooding calls is not available, it is understood that a significant proportion of these calls relate to requests for sandbags from householders concerned about the flooding risk to their properties. On 28th June, the FIL also received a significant number of calls requesting information on the £1,000 emergency payment as well as calls from concerned citizens asking about weather forecasts.
33. While it is understandable that the public would turn to the flooding line for information on sandbags, weather forecasts and general advice on flooding, it is recognised that the remit of FIL more limited. It provides a single point of contact for the public to report incidents of flooding.

Night of 27th June 2012

34. The ECC situation report at 22.00 on 27th June 2012 recorded that, within East Belfast, rivers were running out of their banks, and waist high flooding was being reported in Orangefield. The main areas affected by floods were Sydenham, Lower Falls, Poleglass, Cairnshill, Orangefield, Ladas Drive and Castlereagh. There were also reports of flooding in the Ulster Hospital.
35. The 23.30 ECC situation update records that the Ulster Hospital problem had been brought under control. FIL had ramped up its number of operators to 10, but still calls were being abandoned. Rivers Agency recorded that it was near fully stretched on the ground responding to incidents. The Roads Service and NI Water were also working on the ground to ensure that essential infrastructure was operating to capacity to deal with the flood water.
36. As the situation developed the set protocols required that a lead department should co-ordinate the government response to the emergency and provide a lead spokesperson to keep partner organisations, Ministers, the media and public informed of the key areas affected, the programme of remedial action under way, and how to get help. On previous occasions, Rivers Agency had been the default lead, unless it was clear that the cause of the problem lay within the remit of another organisation. On this occasion officials in Rivers Agency felt that the primary cause of the flooding was more likely surface water rather than river spill. Throughout the evening, although the individual operational response continued within each organisation, the debate over “whose water” was causing the flood, and thus who should take the lead, remained unresolved. Recognising the difficulty caused by the absence of a lead government spokesperson, DRD explained that in the light of Rivers Agency uncertainty, it agreed at 23.15 to take the lead spokesperson role.
37. The ECC log records frustrations throughout the night around the debate of who should supply sand bags to the public and how they were currently being distributed. The extract below from a Belfast City Council report on the issue illustrates some of the difficulties.

“Many Councillors were contacted by members of the public who were in desperation trying to get hold of sandbags to prevent water entering their properties. Apparently, agencies were advising residents that the councils would co-ordinate this, although there was no firm agreement with Belfast City Council at that time. When the Council contacted the various agencies on 27th June, the position was that Northern Ireland Water would use sandbags to protect its infrastructure and only deliver to the public where its infrastructure was causing a specific problem. Rivers Agency would only deliver to the public where it knew rivers to be the cause of the flooding, and Roads Service agreed to do what it could but their staff were largely deployed on clearing flooded roads and gullies. Because of this, the Council did step in and brought in a contractor to deliver the limited sandbags it was able to acquire from the above agencies on the Wednesday night to identified flooding hotspots which were

affected. Over the following days, the Council secured more sandbags from River's Agency and in the end delivered approximately 7,000 to 443 properties." (Belfast City Council Report)

It should be noted, however, that the Rivers Agency has informed us they dispute the view attributed to them in the Council report, and that throughout the flooding incident their aim was to support the distribution of sandbags in as open and helpful a manner possible.

38. Notwithstanding the on-going challenges, all partners in the ECC agreed that it would not be helpful to escalate the status of the emergency above Local Level. The decision to escalate an event needs to be taken with care. The view of the flood response agencies is consistent that the Local Level categorisation was correct. While the impact of the floods in the greater Belfast area was severe, any further escalation would have required responding organisations to divert resources from front line remedial works in locally impacted areas to service the crisis management group associated with higher level emergencies. The decision taken to maintain Local Level status reflects the judgement that a focus on local remedial action was the priority.
39. A stock-take meeting in the ECC at 01.00 on 28th June focused on trying to improve the distribution of sandbags. The Council, Roads Service and a private contractor were used to deliver sandbags from Airport Road to affected areas. By 4.30 sandbag distribution continued. By 7.30 PSNI were reporting concerns about displaced manhole covers on Roads. But Rivers Agency reported that all rivers were now back within their banks. At the request of DRD a NI Water spokesperson went on Radio Ulster to provide an update.
40. By 9.30 the ECC was reporting that Council lorries had obtained access to Rivers Agency's depot to get sandbags, but there was a need to prioritise their distribution as stocks were becoming depleted. The Council helpline had started to record cases where vulnerable people were at risk from flood incidences and the Red Cross undertook to visit those most in need.
41. By 12.00 on 28th June all responding organisations were entering the recovery stage. The City Council machinery was not able to deal with some of the heavy debris on streets and Roads Service stepped in to assist. NI electricity were visiting Sicily Park to help and advise residents. Due to the number of houses impacted at Orchardville this area rose to the top of the "most affected" area table.
42. By 16.00 the situation in Orchardville remained a priority. A problem with the supply of sandbags arose again. The supply from the private sector contractor was becoming depleted. Rivers Agency again released a supply to the council from their depot but the need to prioritise distribution was noted. By 19.00 it was raining again and the sandbag supply was diminishing. However, the rainfall was not as severe as the previous evening and the emergency standing was stood down on 29th June.

SECTION FOUR – FLOOD DEFENCE: GOOD PRACTICE ELSEWHERE

43. This section looks at flood alert processes and counter-measures in other jurisdictions, and examines how good practice might be incorporated into the local response framework. In the light of the connection with a common Met Office, and comments from responding organisations, the flood defence frameworks in England and Wales and Scotland were examined.

England and Wales

44. The Environment Agency for England and Wales produces flood warnings and forecasts for their regions. Annex 2 provides an illustration of the information available from the England and Wales system. Flood warnings are published and citizens can get information about the flood status in their area by searching by post-code, river, or town. A flood risk forecast is also published and this can be interrogated by region and a raft of information can be accessed about the status of local rivers and flood threats. There is also a section providing advice to citizens about how to protect themselves and their property in the event of flooding.

Scotland

45. The Scottish Government has taken a number of key steps over recent years to improve flood risk management. These steps have included increasing investment in flood protection by local authorities, the creation of a new flood forecasting service for Scotland, investment in research to improve understanding of more natural approaches to tackling flooding and the introduction of the Flood Risk Management (Scotland) Act 2009.
46. Within Scotland, Local Authorities are responsible for flood defences and are the first line of response during flooding incidents. The Local Authorities work closely with the Scottish Environment Protection Agency (SEPA) and Scottish Water to deliver on flood risk management, and the Flood Risk Management Act formalises the requirement for co-operation between the organisations.
47. Annex 3 shows the type of information available to Scottish responding organisations and residents. Flood alerts are made available at a sub-regional level, and drill down is possible to neighbourhood level.
48. SEPA is Scotland's flood warning authority with responsibility for warning and informing the public and strategic partners on the threat of flooding through the Floodline service. Flood warnings in Scotland fall into three categories:
1. **Flood Alerts** are produced for areas where formal flood monitoring schemes are not in place. For these areas SEPA works with the Met Office to examine weather forecasts and will issue a Flood Alert message for a wider geographical area, normally matching local authority boundaries.
 2. **Flood warnings** are produced by the Flood Forecasting Service and are more accurate. When SEPA are confident that flooding is forecast, they will issue flood warning messages direct to customers

through the new Floodline direct warning service, as well as publish the information on the recorded telephone and website service. SEPA aim for minimum three hours before flooding to give householders time to put defences in place. Warnings closer to incidents are not seen as particularly helpful.

3. **Flood Guidance Statements** are not public. Rather they are issued to organisations which can interpret the data and make their own conclusions on risk. The statement includes information on both Surface Water and River Flood Risk.
49. The Flood Forecasting Service (FFS) is a virtual collaboration between SEPA and the Met Office which combines hydrological and meteorological information to deliver a more accurate and timely flood warning service. As the flood risk is significantly lower in Scotland than in England and Wales, SEPA and the Met Office deliver the FFS through IT links between their offices, rather than through a physical co-location of environment agency and met office staff.
50. The Scottish Government offers no flooding payments similar to the £1,000 emergency payment offered by the NI Executive. Instead, the Flood Risk Management (Scotland) Act charges the SEPA and the responsible authorities with raising public awareness of flood risk to ensure businesses and householders can assess their own risk and where necessary take appropriate and proportionate actions to protect themselves.
51. The Scottish Government has provided seed funding to the Scottish Flood Forum with the intention that the organisation will eventually become a charitable organisation and challenge government on flood risk management. The Flood Forum is a small organisation which has been particularly effective in demonstrating the benefits of domestic flood protection measures to householders and Local Authorities. The Forum also encourages and supports the establishment of Community Groups to empower residents to contribute to the management of flood risk at a local and neighbourhood level. The Moffat Community Flood Resilience Group is seen as a best practice example, with local residents taking proactive steps such as monitoring a problem drain and notifying authorities or land owners of potential blockages.
52. The Scottish Government also encourages Local Authorities to give grants to householders for flood defences. There have been schemes where Local Authorities buy flood defences in bulk and sell on products to householders at either cost or a subsidised level. As in Northern Ireland, while there is a public perception that sand bags are an effective flood defence, this view is not shared by flood management officials. Instead there is a drive to ensure householders consider more modern and cost effective methods of protecting their homes. For example individual air brick covers can be purchased for as little as £25.
53. Scottish planning legislation has also been amended to ensure that where householders install hard standing to gardens and driveways it does not contribute to the risk of surface flooding. This is easily achieved by either the

use of permeable materials or the installation of a soak away. Not only does this reduce the risk of surface flooding in neighbourhoods, it also makes homeowners more aware of how they can impact flood risk at a very localised level.

54. Scotland also has a telephone access point for the public to report flooding. Scottish Floodline is a subsidiary of England and Wales Floodline. This means that it can tap into bigger pools of operators during severe incidents. Floodline has a broader remit than FIL, offering flood alerts and flood warnings, and providing advice and information on minimising the impact of flooding on homes and businesses.

Summary - Key Features of Good Practice

55. Common features of the flood defence measures in England, Scotland and Wales are:
- Working with the Met Office to marry forecast weather patterns with geological/hydrological and other information to improve the capacity for forecasting floods with ever increasing precision.
 - The issuing of flood alert warnings so that responding organisations and the general public can be prepared.
 - Clarity around roles and responsibilities for responding to the various threats from flooding.
 - Provision of help, advice and information to the public to enable them to protect themselves and their property.

SECTION FIVE – CONCLUSIONS AND RECOMMENDATIONS

On Long Term Flood Protection

56. Clearly the intensity of the rainfall on 27th June was exceptional. The expectation of its occurrence of once in 50 to 100 years indicates the strength of its extraordinary incidence.
57. The risk of flooding can, of course, be greatly mitigated where flood defence infrastructure is in place, well maintained and operating. The flood response agencies told us that there were no significant technical failures contributing to the flooding i.e. the infrastructure operated to its design capacity, but the incident on 27th and 28th of June exceeded this specification. The judgement of the relevant flood response agencies is that the threat of flooding of the scale experienced on 27th and 28th June cannot simply be eradicated by improving the design specification of our infrastructure - the cost would be prohibitive. The current strategy for incidents of this scale is alleviation as opposed to absolute prevention.
58. While it is accepted that the cost of complete eradication would be prohibitive, between 2007 and 2012 there was only one year (2010) when Northern Ireland did not suffer a significant flooding incident. While the apparent increased frequency of these events may be temporary, the human misery arising from the experience of flooded homes, the cost of emergency payments and of repairs to flood damaged property and other assets, suggest that the relative priority of additional investment in anti-flood measures needs to be re-assessed. In particular the frequency of recent flooding incidents suggests that some revision may be needed to the design capacity of flood defence infrastructure. It is recommended that Rivers Agency, Roads Service and NI Water work with their parent departments to review current flood defence expenditure priorities and report to the Executive on their adequacy to meet the potential threats over the next 10 years.

Predictive/Forecast Measures in Northern Ireland and Associated Response

59. The preceding sections of this report have outlined the Northern Ireland framework for responding to flood incidences and a chronology of the events on 27th and 28th June 2012. The key issues that have emerged are around:
 - The lack of early warning about the full severity of the coming rainfall and no detailed information about where it was likely to fall;
 - Even if better rainfall information had been available, there was no process in place to use it to predict potential flood risks;
 - Even if both of the above had been available, there was no process in place for translating the information into a flood alert and communicating that to responding organisations and the general public;
 - Even if a flood alert had been issued, the lack of clarity between the three flood response agencies over who should be the lead

- spokesperson would have impaired the timeliness of communications and information to the public; and
- Uncertainty about roles and responsibilities for supporting local residents and distributing sandbags and other assistance led to delay and distress.
60. The Met Office issued a yellow alert on Monday 25th June, but it forecast rain on the 28th not the 27th June. Confidence in the forecast pattern of the emerging weather was not high enough for forecasters to make the initial yellow alert valid from the Wednesday evening instead of the Thursday morning. Revised yellow and amber alerts were respectively issued at 19:12 and 22:10 on the 27th (see Annex 4). All of these warnings and alerts included reference to a risk of flooding. The modifications and changes in the severity of the forecasts by expert meteorologists serves to demonstrate the volatility and pace of change in the developing weather pattern.
61. Mobilising and deploying flood defences costs money, and even with weather warnings in place expert judgement is needed before taking a decision to gear up for forecast severe weather conditions. All of the central government counter-flood organisations maintain a rota of duty officers to organise their emergency response as and when required. However, since there was no weather warning in place each organisation faced the evening of 27th June on a normal business footing. Clearly, moving to an “always on” response service where crews are in constant mobilisation mode would be costly. But beyond the expense, to respond with mobilisation to every threat and warning could impair the credibility of alerts. The “cry wolf” impact of causing alarm when “danger” passes relatively harmlessly is difficult to mend. Roads Service told us that the Public Weather Service Adviser had issued 16 'Information', 'Alert' and 'Warning' notices in June 2012 prior to the flooding incident– none of which resulted in an incident of serious flooding.
62. Given the qualifications surrounding the Met Office warnings; the context that 16 notices had already been issued in June; the indication that any warning was yellow (be aware) rather than amber (be prepared); and the fact that the alert applied to the full width of Northern Ireland; it is understandable that the responding organisations did not move more in advance to deploy flood defence resources. Nevertheless, it does bring into sharp relief the risk associated with the unavailability and accuracy of flood forecast information in Northern Ireland, particularly when compared to the position elsewhere.
63. Northern Ireland is the only part of UK without a flood forecast/alert service. Such a service would marry the Met Office weather pattern information to local topography and issue a public warning where a threat of flooding has been identified. As outlined in Section Four, the Met Office does work with other jurisdictions to compile flood alerts and rainfall forecasts. We understand that the Met Office did offer its extended service to Northern Ireland but this was declined as it was assessed by Rivers Agency to be unsuited to the particulars of the local topography. While it is outside the scope of this Review to undertake the technical evaluation of the potential effectiveness of this service, a key issue is whether such a service would have provided an

effective early warning of the impact of the torrential rain on 27th and 28th June.

64. It does seem anomalous that Northern Ireland should continue not to have a flood alert and forecast service with:
 - A robust predictive capacity to allow alert notices to be issued at least 2-3 days in advance. (See alerts issued by English Environmental Protection Agency which apply to “Today; tomorrow; and next day”); and
 - More detailed and low level weather and flood forecasts. The SEPA model issues alerts at a sub-regional level and allows drill down to see threats to neighbourhoods.
65. A good deal of information on drainage patterns and flood hot spots is already available within the flood response agencies. It is recommended that this resource is investigated to see how it could be used with Met Office forecasts to identify local threats. Even if the previous offering was not suitable, looking again at the “virtual” partnering with the Met Office in line with the SEPA model would be a useful start.
66. But beyond the gathering of information on flood threats, it is of equal importance that this information should be shared and communicated both to flood response organisations and the general public. An effective local flood response will need speedy action not only from flood response agencies, but also the general public. Without an appropriate warning system it is unlikely that either can be put “on guard”. Therefore, it is recommended that when considering the options for building a local flood alert and forecasting service, consideration should also be given to how flood alerts can be best communicated to responding organisations and the public.

Performance of Flood Response Agencies

67. This review found no evidence that, once notified of a problem, any of the flood response agencies were tardy in their individual operational responses to attend to their infrastructure assets during the flooding incidence. But this assessment does not stretch into areas where the need was to work with others, and it is clear from reviewing how they worked together, and with the Belfast ECC, that there is a need for better clarity of roles and responsibilities in key areas where they need to co-operate.
68. Particularly disappointing on 27th June was the delay in identifying who should be lead government spokesperson. Contention exists around whether Rivers Agency is the “default” lead and too much time was lost on 27th June 2012 on a debate around “whose water” was causing the flooding. This debate impeded the performance of an effective communication response to keep the public informed from an early stage. Arguably, it was also damaging to the co-ordination of remedial actions associated with the distribution of sandbags to the public.

69. From interviews with relevant officials, and a review of the event logs associated with the flooding of 27th and 28th June 2012, it is clear that there were differing opinions about which organisation should be in the lead. Both Roads and NI Water were clear that Rivers was the default lead agency in the prevailing circumstances, however this view was not shared by Rivers. Eventually DRD agreed that it would be nominated as lead government department. But this was done in exasperation at the debate rather than by way of acceptance that they were the correct lead department.
70. The lead organisation and spokesperson is pivotal a role and debate or delay in identifying it is deeply unhelpful. The Lead Government Department (LGD) should be co-ordinating the Executive response to flooding and providing information and reassurance to the public. On 27th June this role was most effectively taken by Belfast City Council. It is outside the remit of this report to evaluate the BCC response, but the general opinion is that it was good. From interviews with BCC personnel and a review of the log of events it is clear that the Council found it difficult to work with the central government agencies and had particular frustrations around:
- Getting information about what the individual agencies were doing and at what locations;
 - How to get access to supplies of sandbags;
 - How to co-ordinate the distribution of sandbags between the flood response agencies and with the Council;
 - How to consolidate information about how members of the public were being impacted;
 - How to ensure that incidents reported from the variety of helplines were not being responded to either in duplicate or not at all;
 - How to ensure that vulnerable people were being prioritised for assistance.
71. The idea that, in times of emergency, the assets and resources of all the organisations should be placed under a single “commander in chief” for direction and prioritisation during the crisis drew a cool initial response from the organisations concerned. The argument against this is that each service has different skills sets and technical requirements. Nevertheless, regardless of whether or not the organisations maintain autonomous operational routines in emergency response situations, there needs to be a better way to communicate with each other and the ECC about what they are individually doing and where.
72. It seems clear that during the emergency of 27th and 28th of June the Belfast Resilience Forum took the lead in public protection measures, with support from the flood response agencies. Any improved future arrangement for handling flooding incidents will need better clarity on the central government side about who is the default LGD. This should displace any wasteful debate around “whose water” is causing the flood and enable the LGD to step up quickly to work with other responding organisations. A key structural reason behind the question of who should be LGD arises because Rivers Agency is

in DARD while the Roads Service and NI Water are within DRD. In this context it is recommended that consideration is given to the consolidation all of the flood response organisations under one departmental ambit – i.e by the transfer of Rivers Agency from DARD to DRD. This would both remove the scope for any debate (and loss of time) about who is in the lead, and also create the capacity to generate operational synergies during a response. It would also simplify any new protocol and practice on the stocking and distribution of sandbags.

Public Protection Role

73. The flood response agencies each pointed out in interview that they are not “blue light” services, and have no statutory duty to respond to general appeals for assistance from the public arising from extreme weather conditions. In an incidence of flooding their primary and initial role is to ensure that their infrastructure assets are protected and operating as required. This is obviously an essential task, which if neglected, would have made the flooding much worse.
74. Flooding has a traumatic impact on property and people, and those affected do not really care how “localised” the problem is, “whose water” caused it, or how the flood came about. This has have been recognised in Scotland and prompted the production of its Flood Risk Management Act (2009) and the development of the Scottish Flood Forecasting Service. A key aspect of this legislation is to place a statutory duty on Scottish Local Government to take a lead role in working with responding organisations and co-ordinate protection of local communities. It is acknowledged that local government in Northern Ireland is currently under-going a period of substantial reform initiated by the Review of Public Administration. While recognising this context it is recommended that OFMDFM give urgent consideration to proposals for formalising the role of Local Government in Northern Ireland in civil contingency matters. This should include consideration to extending Resilience Fora across the full width of local government. This was also a key recommendation of the 2010 Freeze Thaw Report

Reporting Problems – Flood Incident Line (FIL)

75. Section Three of this Report already highlighted the difficulties experienced by those operating and using the Flood Incident Line. In the normal course of business the FIL receives around 3,000 calls p.a. In the absence of any flood alert notification it is understandable that FIL would have not have expected 27th June 2012 to follow anything other than the normal business pattern. However, on that day it received 1,500 calls in a five hour period. FIL was not designed to deal with this level of calls.
76. Even before the event on 27th June, it had been recognised that FIL needed improvements. Recognising the deficiencies in the service, and prompted by the experience of the flood incident of October 2011, a review team had been established to identify and bring forward improvements. This recommended enhancing the FIL service, and adding an Emergency Response service. These have been included within the requirements for the new NI Direct Strategic

Partner contract, planned to be awarded in October 2012 and operational from 1st November 2012. The Strategic Partner will be contracted to provide the skilled resource and capability to support the delivery of a 24/7*365 day Flooding Incident Line Service on behalf of Rivers Agency, Road Service and NI Water.

77. The new arrangements will also allow for consideration of the following:
- The potential to use the NI Direct SMS (text) service to allow citizens/interested parties to register to receive update information on any future flooding/civil contingency incidents.
 - Use of post code related automated messaging at the first point of contact on phones to manage the volume of calls received, particularly repeat calls, and prioritise calls pushed through to agents for handling. (This would allow callers to be told at the start of their call which incidents have already been logged, but still leave an option to report it again.)
 - Improved and integrated communications between NI Direct, flood response agencies and Local Government during an incident.

A resolution on each of these matters should address many of the unsatisfactory issues experienced with FIL in June 2012.

78. There have been comments from within FIL, and by others, that the script which they are required to use for each call is too long. The aim of the script, which is prescribed by the three flood response agencies, is to allow the operator to get as much information as possible on the flood incident and ensure that it is then directed to the proper operational organisation for response. This is important because the skills and engineering solutions needed to deal with river culverts, road gullies, drainage sewers, and pumping stations are different. The response needs to match the problem.
79. On 27th June the average call duration to FIL was 4 minutes and 32 seconds. While this does not appear excessive, it is essential that the telephone scripts of FIL are no longer than they need to be, and we note that FIL and the three organisations have been working together with a view to streamlining the process – it is recommended that this process should be accelerated. A review of a sample of the calls to FIL on 27th June indicates that, while it does not appear to be an overly long process to gather the information required, more difficulty surrounds managing the needs of callers, who are often – understandably - worried, angry or distressed. Indeed the immediate concern of many callers is not to trigger a response to fix drainage infrastructure, but rather to get help in the protection of their homes and property, and/or to highlight the inability to get practical help, information, assistance and advice. But FIL is neither an information nor advice line, and such dialogue merely prolongs the call and often adds to the frustration of the caller - without any meaningful response being available from FIL. Calls often appear to end in frustration because the operator cannot say when help will be coming, what will be done, and if the caller may expect to be visited personally.

80. The events of 27th and 28th June indicate that the most effective recipient of calls from distressed householders about protecting their own property was the local council. In the context where District Councils are given a statutory emergency planning and protection role it is recommended that a process is developed whereby calls to FIL for property and personal assistance can be immediately relayed to local councils.
81. The award of the new strategic partner contract also offers an opportunity to improve communications between FIL and the other organisations. It is worth noting that at present not all central government contacts are available by mobile communications and they are not always immediately available to respond. While flood notifications received by FIL are immediately passed to other organisational systems, in some cases there is also a need to contact a duty officer by telephone to alert them to the fact that the notices have been sent and need attention. While NI Water officials have some limited access to mobile communications that allow them to access FIL notices immediately, this is not the case in the Roads and Rivers. It is recommended that the three flood response agencies and FIL explore options for improved electronic communications.
82. Taken together, the recommendations to improve the FIL service via the new NI Direct contract; consolidating central government lead counter flooding organisations under a single department; and formalising the role of resilience fora across local government; should help to improve the co-ordination of future multi-agency responses to flooding incidences.

Protection of Individual Properties

83. The information in Annex 5 shows the distribution of emergency flood relief payments (£1,000) since 2007. To date, the total cost of claims is in the region of £4 million. While this may not match the weight of the misery caused to flooded households, neither does it represent any investment in ensuring that the problem does not arise again – indeed Annex 5 also highlights that the incidence of recurring payments is around 10%.
84. With the exception of Orchardville, the areas affected by the flooding on 27th/28th were known “flooding hotspots”. Where there is a known risk of flooding in an area it is clear that a proactive strategy of flood-proofing property is better than retrospective, and perhaps multiple, compensation payments.
85. Rivers Agency has produced a useful draft paper on *Individual Property Flood Protection Using Resistance and Resilience Measures*. Resistance measures, designed to keep water out of property, such as flood guards for doors and air bricks and inflatable bladders for w/c U bends could be fitted to individual dwellings for a cost of £2,000 - £4,000. Resilience measures, which reduce the damage that water can do once it enters a building, such as fitting plastic architraves and skirting, and placing electrical outlets at higher elevations are considerably more expensive to retro-fit, but have a broadly similar cost if undertaken during construction. The Rivers Agency study also looks at the potential for changes to building regulations and planning guidelines to build flood resilience into future building work.

86. Household­ers themselves can take measures to protect their property. The SEPA site provides practical advice on what tenants can do in the event of a flood (for example, a bin liner full of soil down a toilet bowl can help prevent sewage influx.) While some information on domestic flood protection is available on the Belfast City Council and NI Direct websites there is limited emphasis within Northern Ireland on encouraging businesses and household­ers to protect their properties. Better information should be available about where and how to get personal assistance to protect homes and other property. This could be done by regular public information campaigns, standing advisory fora, community groups, and the promotion of self-help strategies. Based on the Scottish model it would seem that a partnership with District Councils is the best way to take this forward.
87. Around 50,000 properties in Northern Ireland are estimated to lie within a flood risk area and a risk based approach to offering flood proofing assistance, over a reasonable period of time, should be capable of being developed – especially in the context where there is emerging data about which properties are particularly vulnerable to flooding. It is recommended that Rivers Agency complete its work on *Individual Property Flood Protection Using Resistance and Resilience Measures* urgently and incorporate it into a comprehensive strategy, for consideration by the Executive. This work should specifically include the promotion of self-help initiatives, and consideration of a scheme to help household­ers flood proof their property.

Learning the Lessons

Tests and Exercises

88. Section 2 of this report refers to *Exercise Eluvies*; a test of the procedures for responding to a major flood event in greater Belfast. It is notable that many of the key findings from *Eluvies* subsequently featured again as issues needing attention after the experience of the 27th and 28th June 2012. It seems clear that performance risks within the counter-flood arrangements were known but had not been adequately mitigated in time to enhance the June 2012 response.
89. *Exercise Eluvies* was scheduled for a re-run in 2014. Given the experience of June 2012 it is recommended that consideration is given to running the next exercise sooner, and that tests and exercises should be held more frequently until evidence of improved responses in real situations is evident.

Reports and Investigations

90. In advance of this review there were at least three very relevant reports on water based crises already completed:
- *Review of the Operational Performance of the Rivers Agency (October Flooding Events) 2011* (See Annex 6 for main recommendations);
 - *Surface Water Flood Management Roles and Responsibilities Report* (December 2011) (See Annex 7 for main recommendations);

- *Action Plan on Freeze Thaw incident of 2010* (See Annex 8 for main recommendations)

91. The recommendations made by these reports still appear valid. Indeed it is reasonable to suggest that if a number of key recommendations had been fully implemented they would have improved the efficiency and effectiveness of the response to the June 2012 flooding events. All of the recommendations of these reports have merit, but it is worth reiterating the following:

Freeze/Thaw Report 2010:

- ...to establish additional Local Resilience Forums in NI.
- ...to place Mandatory Civil Contingencies duties on District Councils
- ...identify how telephony/ website resource across the public service organisations could be better aligned and co-ordinated to facilitate mutual aid for communications.

Review of Operational Performance of Rivers Agency (2011):

- ...all Local Councils agree to play a part in the emergency response to flooding.
- ...sandbag reserves should be stored over a wider number of locations, preferably close to identified flooding 'hot spots'.
- ...capacity and funding within the Rivers Agency is progressively increased, so that the Agency is equipped to deal with larger scale events.

December 2011 Report – Surface Water Action Plan.

- The issue of lead department for flood emergency situations needs to be clarified, not only for surface water events but for all flooding.

92. To make use of the momentum given to this issue by the recent floods, it is recommended that the relevant lead departments come together to produce a consolidated action plan for all of the above reports' recommendations for implementing the improved flood defence framework. This work should also embrace the recommendations of this report.

93. It is also recommended that PEDU should review the consolidated action plan and report on its implementation to the Executive in March 2013.

94. A summary of all recommendations, together with an owner and target date for the action is set out at Annex 9.

ANNEXES

Belfast Resilience Forum

(Source: Belfast City Council Web)

Belfast Resilience Forum was initiated by the PSNI with the support of OFMDFM. It is a local resilience forum (LRF) which brings together representatives from more than 50 different organisations from the public, private and voluntary sectors.

It is responsible for organising and developing multi-agency emergency plans for the Belfast City Council electoral area.

It was set up because of the need for a co-ordinated approach to major emergencies in addition to what is offered by individual emergency services.

Our role is to prepare emergency plans for major disasters, both manmade and natural, such as:

- severe weather
- fire
- industrial accidents
- major transport accidents
- widespread human and animal health problems

Background

Our aim is to promote and encourage an integrated approach to major incident planning for the whole of Belfast.

To achieve this, Belfast Resilience facilitates communication between key members of staff from each of its member organisations

It also establishes links with other groups, such as the Civil Contingencies Group Northern Ireland

One of our successes has been bringing together the commitment and knowledge of a wide and diverse group of people and organisations.

Structure

Belfast Resilience has a Steering Group which is responsible for the overall strategic direction of emergency planning for the city.

The Steering Group is supported by a Planning and Development Group which identifies key areas of work. This work is then delivered through a number of smaller working groups

ANNEX 1

Members of Belfast Resilience Forum

The following organisations are members of the Belfast Resilience Forum:

Emergency services

- Harbour Police (Port of Belfast)
- Maritime and Coastguard Agency
- Northern Ireland Ambulance Service
- Northern Ireland Fire and Rescue Service
- Police Service of Northern Ireland

Health services

- Belfast Health and Social Care Trust
- Department of Health, Social Services and Public Safety
- Health and Social Care Board
- Public Health Agency

Industry

- Belfast City Centre Management
- Belfast Harbour Commissioner
- Coach operators
- Freight transport operators
- Translink
- Stenaline
- George Best Belfast City Airport

Local and regional government departments and agencies

- Belfast City Council
- Civil Contingencies Policy Branch (Office of the First Minister and Deputy First Minister)
- Coroners Service for Northern Ireland
- Department of Agriculture and Rural Development
- Department of Enterprise, Trade and Investment
- Department of Justice
- Department for Regional Development
- Department for Social Development
- Executive Information Service (Office of the First Minister and Deputy First Minister)
- Forensic Science Service
- Health and Safety Executive Northern Ireland
- Identity and Passport Service
- Land and Property Services

ANNEX 1

- Northern Ireland Assembly
- Northern Ireland Housing Executive
- Northern Ireland Office
- Rivers Agency of Northern Ireland
- Roads Service Northern Ireland
- State Pathologist's Office

Utilities

- BP
- BT
- Northern Ireland Electricity
- Northern Ireland Water
- Phoenix Gas
- Premier Transmission Ltd

Voluntary and faith organisations

- Belfast Area Partnerships
- British Red Cross
- Bryson Charitable Group
- Chinese Welfare Association
- Cruse Bereavement Care
- Methodist Church in Ireland
- Presbyterian Church in Ireland
- Radio Amateurs' Emergency Network (RAYNET)
- Salvation Army
- Samaritans
- Simon Community
- St John Ambulance
- Victim Support Northern Ireland

Other organisations

- Community Relations Council
- Met Office
- Ministry of Defence
- Odyssey Trust
- Queen's University Belfast

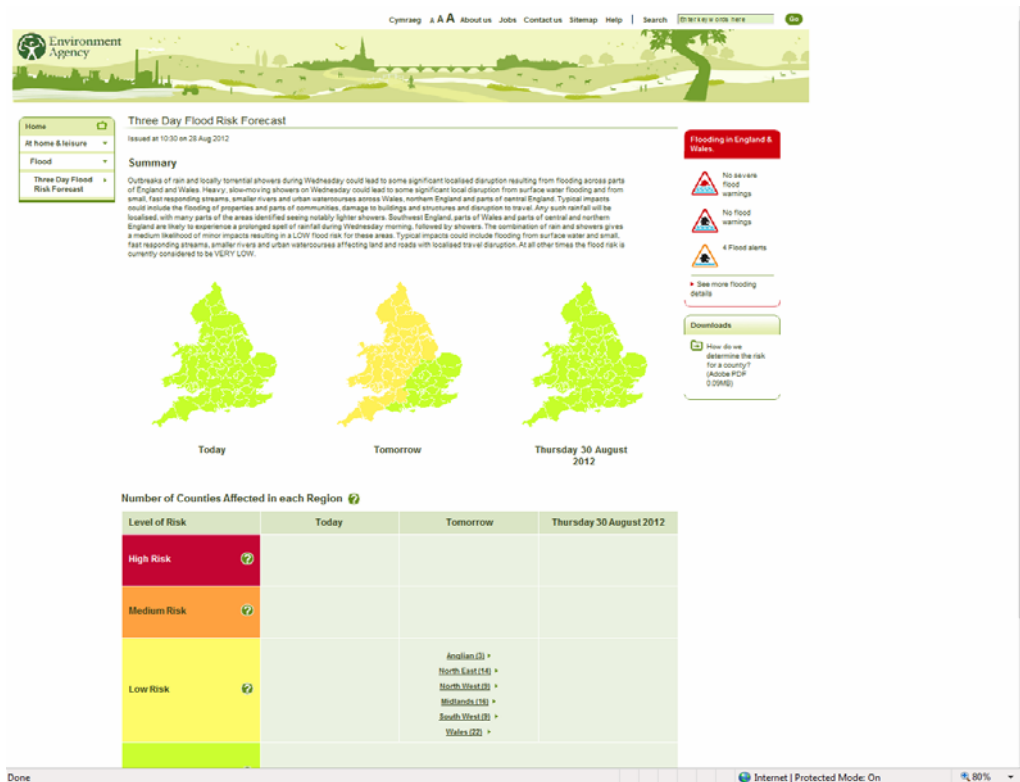
Flood Alert Information England and Wales

Search for alerts by Postcode, Town or river.

Number of Flood Warnings in Force by Region
 12:55 on 28 Aug 2012. This information is updated every 15 minutes.
 Please refresh the page to make sure you see the latest warnings

Status	South East	Midlands	North East	North West	South East	South West	Wales	Totals
Severe Flood Warning Severe flooding. Danger to life.	0	0	0	0	0	0	0	0
Flood Warning Flooding is expected. Immediate action required	0	0	0	0	0	0	0	0
Flood Alert Flooding is possible. Be prepared.	0	0	0	3	0	1	0	4
Warning no longer in force Flood warnings and flood alerts that have been removed in the last 24 hours	0	0	0	2	0	0	9	11

Screen Grab – E&W Showing Flood Alert Warning.



Screen Grab – E&W Showing 3 Day Flood Risk Forecast



Screen Grab – E&W Advice to Citizens

Flood Alert Information Scotland

The screenshot shows the SEPA website page titled "Multiple areas were found for Glasgow." The page features a navigation menu with categories like Home, News, Publications, Consultations, Application forms, Vacancies, and Contact us. A sidebar on the left lists various topics including Air, Climate change, and Flooding. The main content area displays the headline "Multiple areas were found for Glasgow." and a "SIGN UP NOW" button. Below this, a list of sub-regional areas is provided:

- Cambuslang Road and Morriston Park
- Carmyle
- Clevedon Park
- Dalbeth
- Dalmarnock Bridge
- Glasgow Quay Walls
- Greenock and Port Glasgow
- Kelvinbridge Underground
- Pollok
- Pollok Country Park
- Pollokshaws
- Renfrew
- Shawlands, Langside and Cathcart

A callout box with a blue border and a pointer to the list of areas contains the text: "This area sets out the sub-regional areas affected by the flood alert".

Screen Grab – Scottish regional Flood Alerts

ANNEX 3

Details for Glasgow Quay Walls | Scottish Environment Protection Agency - Windows Internet Explorer

http://floodline.sepa.org.uk/floodupdates/info/group-id/5006

You are here: Home Page > Flooding > Flood Updates > Glasgow Quay Walls

Details for Glasgow Quay Walls

Click here to view the Alert message that has been issued for the wider area.

There is currently no FLOOD WARNING issued for Glasgow Quay Walls

The area highlighted in red indicates the target area that SEPA will issue a flood warning for.

SIGN UP NOW
TO GET FREE WARNINGS
DIRECT TO YOUR PHONE

This shows the areas affected by the flood alerts at the lowest level.

Done

Internet | Protected Mode: On 130%

Inbox - Microsoft O... Roads Flood Report V1.2 - ... Environment Agenc... Details for Glasgow ... 15:03

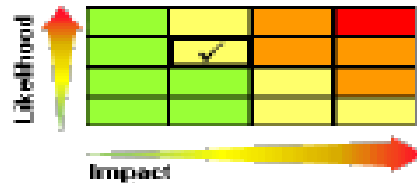
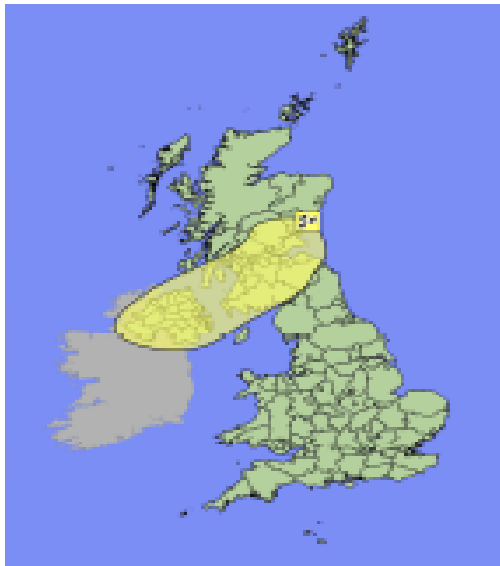
Screen Grab – Scotland – Drill Down to Key At Risk Area

MET Office

Weather Warnings



National Severe Weather Warning Service



Chief Forecasters Assessment
 Heavy rain is expected to spread northwards and eastwards across Northern Ireland and southern Scotland through the course of Thursday. Some torrential downpours are possible in places, but the location of these is uncertain. Around 15-25 mm of rain is expected to fall quite widely, with some areas perhaps receiving as much as 40-50 mm.

Note also that further heavy rain is also possible during Friday, though at this stage totals for Friday look like being rather less.

The Met Office have issued a Yellow Alert of Rain

Valid from 06:00 on Thu, 28th Jun 2012 until 23:59 on Thu, 28th Jun 2012

Rain is expected to become heavier during Thursday with some locally very heavy thundery downpours. The public should be aware that localised flooding may develop in some prone areas as the day progresses.

For more details please go to:
http://www.metoffice.gov.uk/weather/uk/uk_forecast_warnings.html

Issued by the Met Office at 12:14 on Mon, 26th Jun 2012

Updated by the Met Office at 10:58 on Tue, 26th Jun 2012

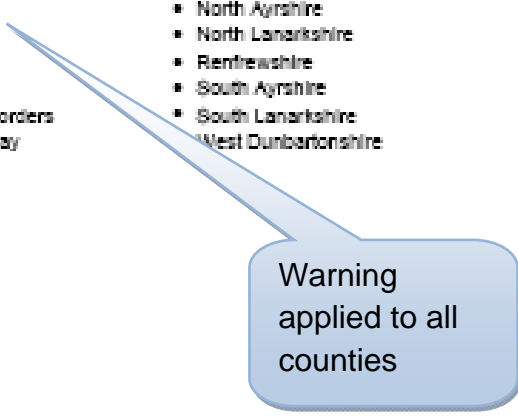
This alert was issued on the Monday but applies to Thursday 28th – also note next page for wide area it applies to.

For enquiries regarding this warning please contact the Met Office Weather Desk
 Phone: 0870 900 0100 Fax: 0870 900 5050 E-mail: enquiries@metoffice.gov.uk
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ANNEX 4

For the following areas

- Central, Tayside & Fife
 - Angus
 - Clackmannanshire
 - Dundee
 - Falkirk
 - Fife
 - Perth and Kinross
 - Stirling
- Northern Ireland
 - County Antrim
 - County Armagh
 - County Down
 - County Fermanagh
 - County Londonderry
 - County Tyrone
- SW Scotland, Lothian Borders
 - Dumfries and Galloway
 - East Lothian
- Edinburgh
 - Midlothian Council
 - Scottish Borders
 - West Lothian
- Strathclyde
 - Argyll and Bute
 - East Ayrshire
 - East Dunbartonshire
 - East Renfrewshire
 - Glasgow
 - Inverclyde
 - North Ayrshire
 - North Lanarkshire
 - Renfrewshire
 - South Ayrshire
 - South Lanarkshire
 - West Dunbartonshire

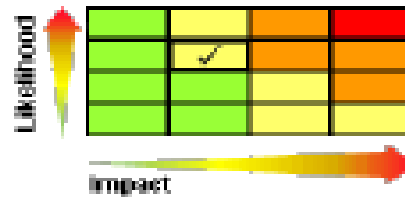
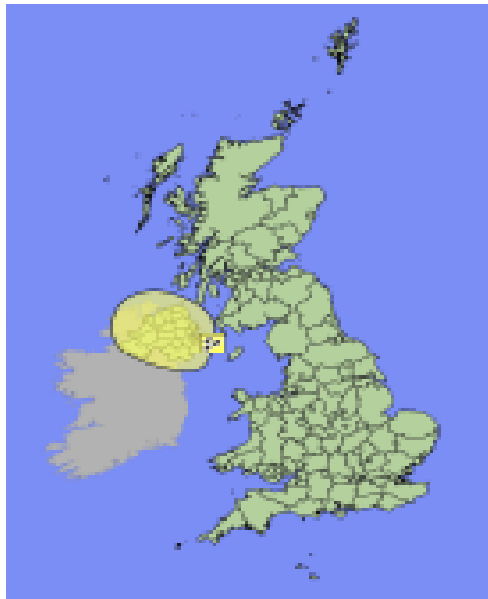


Warning
applied to all
counties

For enquiries regarding this warning please contact the Met Office Weather Desk
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National Severe Weather Warning Service



Chief Forecaster's Assessment
Showers are expected to give 20-30 mm
in the hour in places through the evening.

The Met Office have issued a Yellow Warning of Rain

Valid from 18:15 on Wed, 27th Jun 2012 until 23:00 on Wed, 27th Jun 2012

Thundery showers over Northern Ireland are likely to continue this evening. The public are advised to be aware of the risk of localised surface water flooding.

For more details please go to:

http://www.metoffice.gov.uk/weather/uk/uk_forecast_warnings.html

Issued by the Met Office at 18:12 on Wed, 27th Jun 2012

This alert was issued on the night of the floods. See next page for area it applies to.

For enquiries regarding this warning please contact the Met Office Weather Desk

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ANNEX 4

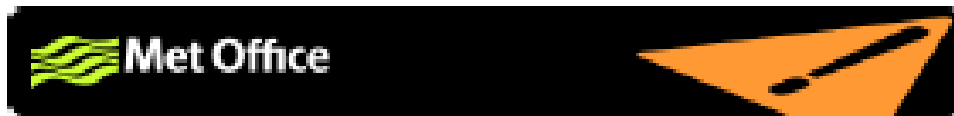
For the following areas

- Northern Ireland
 - County Antrim
 - County Armagh
 - County Down
 - County Fermanagh
 - County Londonderry
 - County Tyrone

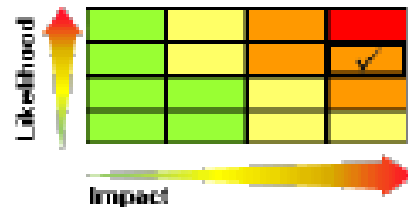
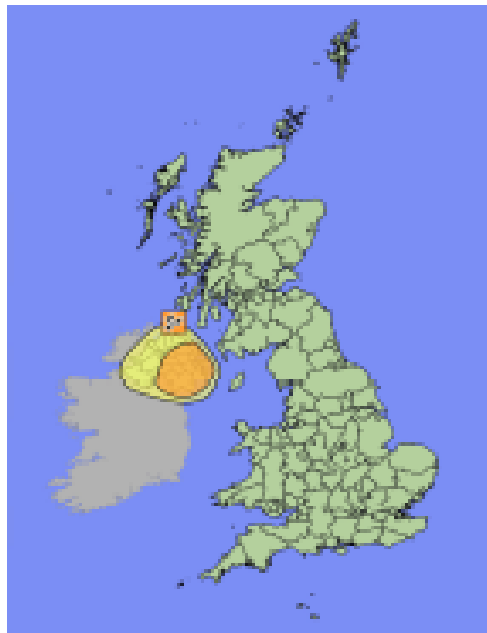
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National Severe Weather Warning Service



Chief Forecaster's Assessment
 Further areas of heavy rain will move north across Northern Ireland, with some places receiving 15-25 mm within a few hours during Thursday morning. Additionally, slow moving heavy, thundery showers will develop during the afternoon which could produce 20-30 mm of rain within an hour. There is uncertainty as to where the heavier downpours will occur, but the greatest risk for further disruption is likely to be in the east.

The Met Office have issued an Amber Warning of Rain

Valid from 04:00 on Thu, 28th Jun 2012 until 21:00 on Thu, 28th Jun 2012

Areas of thundery rain will move north to affect Northern Ireland during Thursday morning, with the potential for slow moving torrential downpours to develop through the afternoon and lasting into the evening. Following the downpours of Wednesday evening, the public should be prepared for further flooding to occur.

For more details please go to:
http://www.metoffice.gov.uk/weather/uk/uk_forecast_warnings.html

Issued by the Met Office at 22:10 on Wed, 27th Jun 2012

This alert was issued on the night of 27th – but again the area of application is County level.

For enquiries regarding this warning please contact the Met Office Weather Desk
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ANNEX 4

For the following areas

- Northern Ireland
 - County Antrim
 - County Armagh
 - County Down
 - County Fermanagh
 - County Londonderry
 - County Tyrone

For enquiries regarding this warning please contact the Met Office Weather Desk
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ANNEX 5

Claim data taken from 2007 to 2012 - Schemes of Emergency Financial Assistance

Council	Total No of Claims up to 2011	Claims to date from Householders re: June - Aug 2012 Scheme
Antrim	193	1
Ards	24	
Armagh	15	7
Ballymena	167	
Ballymoney	11	
Banbridge	106	
Belfast	990	640 ¹
Carrickfergus	4	
Castlereagh	770	
Coleraine	14	4
Cookstown	13	
Craigavon	135	
Derry	7	1
Down	152	
Dungannon	48	
Fermanagh	9	
Larne	15	
Limavady	4	1
Lisburn	474	
Magherafelt	27	
Moyle	27	5
Newry & Mourne	54	
Newtownabbey	145	2
North Down	12	9
Omagh	143	
Strabane	30	
TOTAL	3589	670

Approximately 10% of households which have claimed under the scheme have done so on more than one occasion

¹ Belfast City Council Total Number of claims could increase to 1,630.

Recommendations from...

Review of the Operational Performance of the Rivers Agency (October Flooding Events) 2011

As a result of my investigations I identified a number of issues, and to address these I have made the following recommendations:-

- I recommend that capacity and funding within the Rivers Agency is progressively increased, so that the Agency is equipped to deal with larger scale events.
- I recommend that all Local Councils agree to play a part in the emergency response to flooding.
- I recommend that the Rivers Agency explore the willingness of Community Groups to be part of the organised flood response.
- I recommend that sandbag reserves are stored over a wider number of locations, preferably close to identified flooding 'hot spots'.
- I recommend that sandbag reserves are increased over time.
- I recommend that the Minister receive an early briefing, in future, as soon as it is decided to take pre-emptive action to prepare for a possible flood.
- I recommend that an alternative means of telephone communication to the IPT telephony is included in the Agency's Emergency Plan, as a back-up.

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Recommendations from...

Surface Water Flood Management Roles and Responsibilities Report (December 2011)

SURFACE WATER FLOOD MANAGEMENT ACTION PLAN

Recommendation
An overview role for surface water flood risk must be established within government
The issue of lead department for flood emergency situations needs to be clarified, not only for surface water events but for all flooding
An inter-agency working group including DRD, DOE, Rivers Agency, Roads Service, NIW, NIAUR and DFP should be established to develop a strategy for surface water management. The group will consider the technical deficiencies identified in respect of surface water, the need for 'design for exceedance', SuDS and the need for future legislation.
Building regulations or the associated technical guidance need to include reference to flood resistance and resilience measures. These new regulations or guidance must apply to both new development and where redevelopment is taking place in areas with a known surface water problem.
The limitations of the natural and manmade drainage systems and the relevant government agencies in Northern Ireland need to be understood and acknowledged by everyone impacted <i>upon</i> by a flood event. This includes the public, their representatives and central government. Individuals affected by flooding need to take appropriate action to manage the risk they face from surface water flooding throughout the life of a flood event. Such guidance is available on consumer group websites.
Interim guidance on the application of the surface water flood map should be developed and referred to in the revised version of PPS15. PPS15 should also indicate that more detailed surface water flood risk information will emerge in the future when the flood risk management plans are in place.
'Design for exceedance' must be included in the revised PPS15.
The indicative surface water flood map should be made available to facilitate the applicant's assessment of flood risk. However, ultimate responsibility for dealing with this risk will remain with the applicant.
Flood alerts appropriate to Northern Ireland's flood risk to be introduced using

ANNEX 7

Recommendation
existing Met Office weather warnings, the flood maps and operational knowledge. This recommendation should not be limited to surface water flooding alone but for all sources and should be led by the overview body recommended in 1.1.
All drainage infrastructure providers must respond to all calls for assistance from those affected during flood events. The cause of flooding (rivers, roads, sewers, etc) should be identified and the relevant Agency contacted.
The role for local government during emergency events needs to be further developed and implemented either using the existing EPCOs or other co-ordinating mechanism.

Recommendations from...

Freeze/Thaw Report WINTER RESILIENCE - ACTION PLAN

(Note: these recommendations exclude those allocated to NI Water which were subject to separate reporting mechanisms).

Actions
Develop a protocol for escalation of the response from local to strategic level to include trigger and inter-agency communication arrangements.
Develop a local / tactical level mechanism for anticipated / actual emergencies which will provide for: <ul style="list-style-type: none"> (i) multi-agency assessment of the developing situation; (ii) information sharing; and (iii) co-ordination and agreement of response / recovery actions.
Scope the current provision of registers for vulnerable people and identify options for production of a single critical care list for NI.
Identify how telephony/ website resource across the public service organisations could be better aligned and co-ordinated to facilitate mutual aid for communications.
Identify a mechanism to facilitate the production of a common information picture for use during an incident to inform the provision of accurate, timely and consistent information to the public / media.
To review the position with Ministers in respect of policy proposals to establish additional Local Resilience Forums in NI.
To review the position with Ministers in respect of policy proposals to place Mandatory Civil Contingencies duties on District Councils to co-ordinate multi-agency preparedness at local level.

Action Plan

Summary of Recommendations

Investment in Flooding Counter Measures

Para 58 It is recommended that Rivers Agency, Roads Service and NI Water work with their parent departments to review current flood defence expenditure priorities and report to the Executive on their adequacy to meet the potential threats over the next 10 years.

By who Rivers Agency, Roads Service, NI Water and parent departments.

By when December 2012

Developing a NI Flood Alert System

Para 65: A good deal of information on drainage patterns and flood hot spots is already available within the flood response agencies. It is recommended that this resource is investigated to see how it could be used with Met Office forecasts to identify local threats. Even if the previous offering was not suitable, looking again at the “virtual” partnering with the Met Office in line with the SEPA model would be a useful start.

By who Rivers Agency

By when March 2013

Para 66: It is recommended that when considering the options for building a local flood alert and forecasting service, consideration should also be given to how flood alerts can be best communicated to responding organisations and the public.

By who Rivers Agency

By when March 2013

Improving Operational Flood Response

Para 72: A key structural reason behind the question of who should be LGD arises because Rivers Agency is in DARD while the Roads Service and NI Water are within DRD. In this context it is recommended that consideration is given to the consolidation all of the flood response organisations under one departmental ambit – i.e by the transfer of Rivers Agency from DARD to DRD.

By who OFMDFM/DARD/DRD

By when November 2012

Para 74: It is acknowledged that local government in Northern Ireland is currently under-going a period of substantial reform initiated by the Review of Public Administration. While recognising this context it is recommended that OFMDFM give urgent consideration to proposals for formalising the role of Local Government in Northern Ireland in civil contingency matters. This should include consideration to extending Resilience Fora across the full width of local government.

By who OFMDFM

By when November 2012

Para 79: On 27th June the average call duration to FIL was 4 minutes and 32 seconds. While this does not appear excessive, it is essential that the telephone scripts of FIL are no longer than they need to be, and we note that FIL and the three organisations have been working together with a view to streamlining the process – it is recommended that this process should be accelerated.

By who FIL/Rivers/Roads/NI Water

By when January 2013

Para 80: In the context where District Councils are given a statutory emergency planning and protection role it is recommended that a process is developed whereby calls to FIL for property and personal assistance can be immediately relayed to local councils

By who FIL/OFMDFM

By when March 2013

ANNEX 9

Para 81: While flood notifications received by FIL are immediately passed to other organisational systems, in some cases there is also a need to contact a duty officer by telephone to alert them to the fact that the notices have been sent and need attention. While NI Water officials have some limited access to mobile communications that allow them to access FIL notices immediately, this is not the case in the Roads Service and Rivers Agency. It is recommended that the three flood response agencies and FIL explore options for improved electronic communications.

By who FIL and three flood response agencies.

By when December 2012

Para 87: It is recommended that Rivers Agency complete its work on *Individual Property Flood Protection Using Resistance and Resilience Measures* urgently and incorporate it into a comprehensive strategy, for consideration by the Executive. This work should specifically include the promotion of self-help initiatives, and consideration of a scheme to help householders flood proof their property.

By who Rivers Agency

By when March 2013

Para 89: *Exercise Eluvies* was scheduled for a re-run in 2014. Given the experience of June 2012 it is recommended that consideration is given to running the next exercise sooner, and that tests and exercises should be held more frequently until evidence of improved responses in real situations is evident

By who Rivers Agency /OFMDFM

By when December 2012

Para 92: To make use of the momentum given to this issue by the recent floods, it is recommended that the relevant lead departments come together to produce a consolidated action plan for all of the reports' recommendations (see annexes 6-8) for implementing the improved flood defence framework. This work should also embrace the recommendations of this report.

By who Rivers (lead role)

By when November 2012

ANNEX 9

Para 93. It is also recommended that PEDU should review the consolidated action plan and report on its implementation to the Executive in March 2013.

By who PEDU

By when March 2013

Bibliography

Review of the Operational Performance of the Rivers Agency (October Flooding Events) (2011)

Surface Water Flood Management Roles and Responsibilities Report (December 2011)

The Guide to Emergency Planning in Northern Ireland

Northern Ireland Central Crisis Management Arrangements Protocol

Protocol for Multi-Agency Co-Ordination of Local Level Response and recovery

Protocol for Escalation of Multi-Agency Response

Protocol for the Collaborative Communications Process

Cross Agency Flooding Information Pack

Project Eluvies – Post Exercise Report (Feb 2012)

BCC Report – Update on Belfast Flooding Emergency (Aug 2012)

Northern Ireland Infrastructure 2010 (Institution of Civil Engineers)

Report of the Flooding Taskforce on Fermanagh Flooding of November 2009

NI Direct Lagan Flooding Incident Line – CSR Information Pack