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NORTH WEST FLOODING REVIEW

**Report on Flooding in the North West -
22nd and 23rd August 2017**

Department for Infrastructure (DfI)
The Executive Office (TEO)
Derry City and Strabane District Council (DCSDC)

MARCH 2018

ACKNOWLEDGEMENTS

The Review Group is grateful to the individuals and organisations who gave freely of their time and experience to detail to us the impact the flooding on 22nd and 23rd August 2017 had on them as homeowners, businesses, members of interest groups or elected members. The input provided was both thoughtful and insightful, and without this information and open reflection this Review would not have been possible.

In addition, the expertise of the many organisations who responded to this flooding emergency has been invaluable in reinforcing the existing good practice already adopted and identifying improvements that could be made. This will help ensure that responding organisations and communities are even more prepared in the event of flooding in the future.

Finally, the professional and unbiased approach of ¹Arup, who independently facilitated this Review, is to be commended. They ensured an open and honest dialogue between all participants, inputted impartially to this Review Report and provided a wider flood risk management and UK context to many of the discussions held as part of the Review process.

¹Refer to Glossary at Annex 7 for additional detail

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1. EXECUTIVE SUMMARY

The North West Flooding of 22nd and 23rd August 2017

- 1.1 During the evening of the 22nd and morning of the 23rd August 2017, the North West experienced, in a number of locations, what for many were unprecedented levels of rainfall. The result was that the area was subject to widespread flooding, leading to significant disruption to life at both an individual and community level.

The Flooding Review

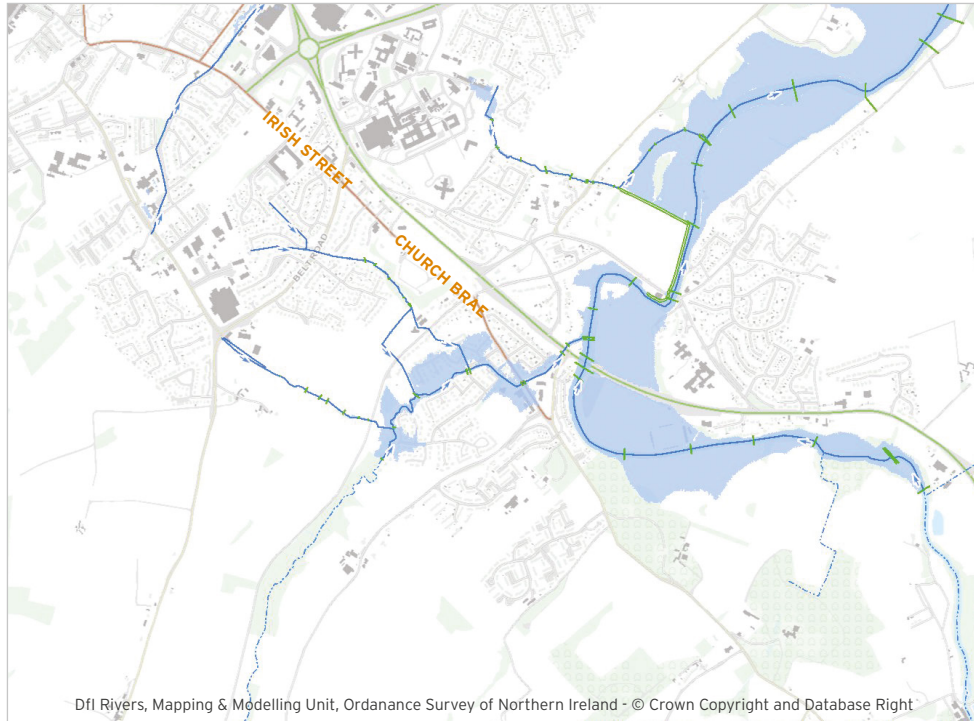
- 1.2 The impact of this flooding was such that, in accordance with Emergency Planning protocols developed by the inter-departmental ² Civil Contingencies Group (Northern Ireland) (CCG(NI)), a Review was required to identify lessons learned and consider measures to potentially mitigate the impact of any future flooding.
- 1.3 This Review was led jointly by the Department for Infrastructure (DfI), The Executive Office (TEO) and Derry City and Strabane District Council (DCSDC) to examine the ³ local tactical response and regional strategic response to the flooding. The Review was independently facilitated by Arup, to ensure that the Report reflects a fair representation of the evidence gathered and that the recommendations identified are appropriate.
- 1.4 This Review gathered evidence from emergency responders, the voluntary sector, government organisations, special interest groups and elected members. A number of sessions were held in the Foyle Arena, so that the Review organisations and independent facilitator could hear at first-hand about the impacts of the flooding, the positive aspects of the multi-agency response to this emergency and areas that need to be addressed to further enhance emergency response and flood risk management arrangements in the future.

Key Findings

- 1.5 The flooding was as a direct result of very heavy and persistent rainfall in the North West on 22nd and 23rd August 2017. 60-70mm of rain, equivalent to 63% of the average August rainfall, fell in the space of 8-9 hours causing many watercourses to rise, in some areas, to unprecedented levels in a very short period of time.

^{2,3} Refer to Glossary at Annex 7

- 1.6 This caused flooding to approximately 400 homes, numerous businesses and impacted significant areas of agricultural land.
- 1.7 There was also significant damage to infrastructure with 210 roads either closed or impacted and 89 bridges requiring remedial action as a result of the flooding. Flood defences also suffered widespread impacts with a total of 2900m damaged in numerous locations across the North West.
- 1.8 This was the most intense event for the Flooding Incident Line (FIL), in terms of the volume of calls received and incident length, since the June 2012 flooding in Belfast. 1178 calls were made to FIL on 22nd August, with 859 calls answered and 319 abandoned. 380 calls were made to FIL on 23rd August with 340 answered and 40 abandoned.
- 1.9 Contributing to the volume of calls received, the time taken to answer calls and the number of abandoned calls was the fact that 'non flood reporting' calls were received. These fell into 3 main categories - calls requesting an update on response, calls from citizens not flooded but worried because of past experience, and those requesting information about the availability of sandbags.
- 1.10 A number of contributors to the Review acknowledged that the combined multi-agency response to this emergency was timely and effective.
- 1.11 As independent facilitators, Arup noted that overall the Review was positive in how the responding organisations co-ordinated their activities in a collaborative and supportive way. Arup based this view on the questionnaire responses, the feedback given at the multi-agency de-brief on 27th November 2017, and the workshops with the elected members and the special interest groups on 12th December 2017.
- 1.12 On a practical level, the swift establishment by DCSDC, in conjunction with the relevant community groups, of the incident / assistance centres was essential in supporting the response and providing assistance to those most in need of help.
- 1.13 In general terms the areas affected by the flooding correlated with predicted flood inundation areas as outlined in the DfI Flood Hazard and Risk Maps that have been developed as a result of the implementation of the EU Floods Directive. The maps overleaf show examples of this:

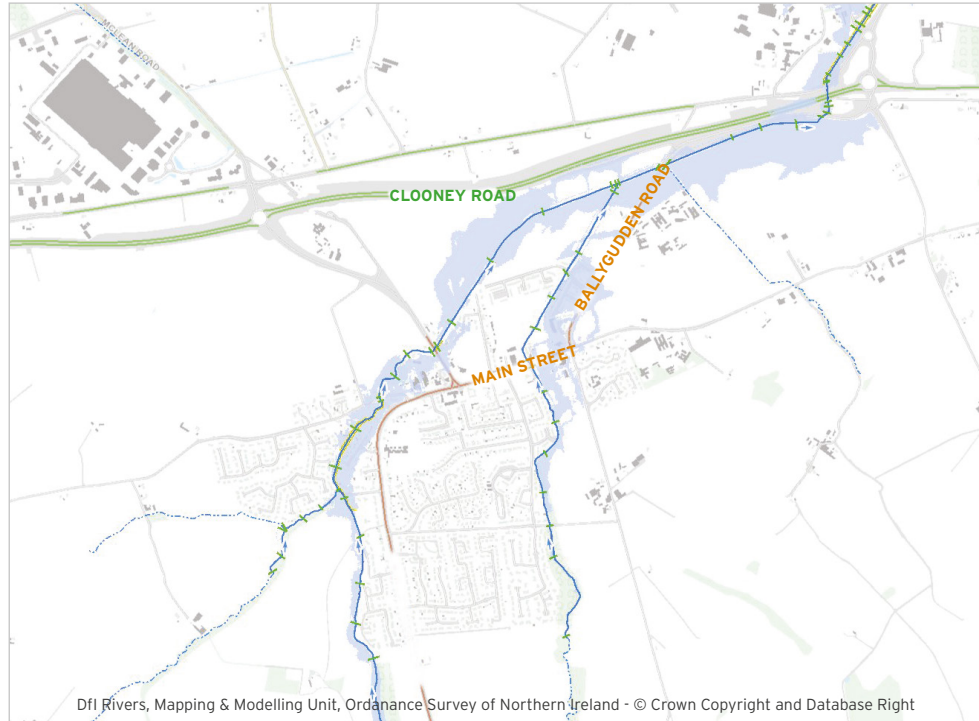


Predicted ⁴ 1 in 200 year river flooding extent on Faughan and Burnigibbagh at Drumahoe



⁵ Heat Map showing the general location and intensity of properties affected by the 22nd and 23rd August 2017 flood event

^{4,5} Refer to Glossary at Annex 7



Predicted ⁶ 1 in 1000 Fluvial Extent on Muff and Castle Rivers at Eglinton



⁷ Heat Map based on domestic properties at Eglinton flooded during the 22nd and 23rd August 2017 flood event

^{6,7} Refer to Glossary at Annex 7

- 1.14 The severe flooding had a profound, and in many cases lasting, impact on the lives of local people, businesses and agricultural land in the areas affected.
- 1.15 It was noted that good progress has been made in repairing public infrastructure promptly after the emergency. Following the event DfI quickly identified £8.7m to progress essential infrastructure repair work and this was helpful in minimising any delay in taking priority emergency repair work forward. The final cost of repairs to infrastructure is estimated to exceed £12m.
- 1.16 It was accepted that the risks and impacts associated with flooding cannot be eliminated but may be reduced. This has, and will continue to, prompt organisations involved in managing flood risk to adopt a range of approaches to reduce the impacts of flooding where possible.
- 1.17 The need for the provision of viable Flood Alleviation Schemes was reinforced.
- 1.18 The importance of protecting robust planning policies that take appropriate consideration of flood risk was highlighted.
- 1.19 The need to develop approaches that further augment the capacity or effectiveness of the FIL was identified, and the provision of a system to allow the online reporting and mapping of flood calls for emergency co-ordination was considered essential going forward.
- 1.20 The environmental impacts of widespread and significant flooding were highlighted and awareness of this issue was raised.
- 1.21 A number of improvements were suggested as part of this Review to further improve emergency response, effectiveness and resilience to flooding in the future.

Review Recommendations

1.22 The main areas of focus for the recommendations are as follows:

1. Online Mapping Systems
2. Flooding Incident Line
3. Community Resilience
4. Rainfall Measurement
5. Weather Forecasting Awareness
6. Farm Support
7. Emergency Exercise Register
8. Emergency Planning Exercise
9. Emotional Support and Wellbeing
10. Roles and Responsibilities
11. Development and Flood Risk
12. Community Volunteer Support
13. Information Sharing
14. Financial Assistance to Local Councils

1.23 The recommendations and the organisations within whose remit they fall are detailed in **Annex 8**, with linkage to the theme of the report they came from clearly identified.

1.24 Further details on timings and governance arrangements for the delivery of the recommendations are detailed in **Chapter 7**.

Way Forward

1.25 The Review Report is available at - <https://www.infrastructure-ni.gov.uk/publications/review-north-west-flooding-august-2017>. There will also be an opportunity for the public to engage with representatives of the key responding agencies at a Public Information and Engagement Event on 29th March 2018.

1.26 Periodic updates on the progress implementing the recommendations will be shared with elected members and senior departmental officials as necessary.

2. BACKGROUND

2.1 **Why the flooding occurred**

The flooding in the North West of 22nd and 23rd August 2017 has been described as some of the worst flooding to affect the North West in almost 30 years. Approximately 60-70mm of rain, equivalent to 63% of the average August rainfall, fell in this area in the space of 8-9 hours causing many watercourses to rise to unprecedented levels in a very short period of time. Watercourses like the Faughan, the Muff and the Burndennett exceeded their previous highest level recorded by a considerable margin, with flows in the Faughan 25% greater than previous highs recorded in 1987.

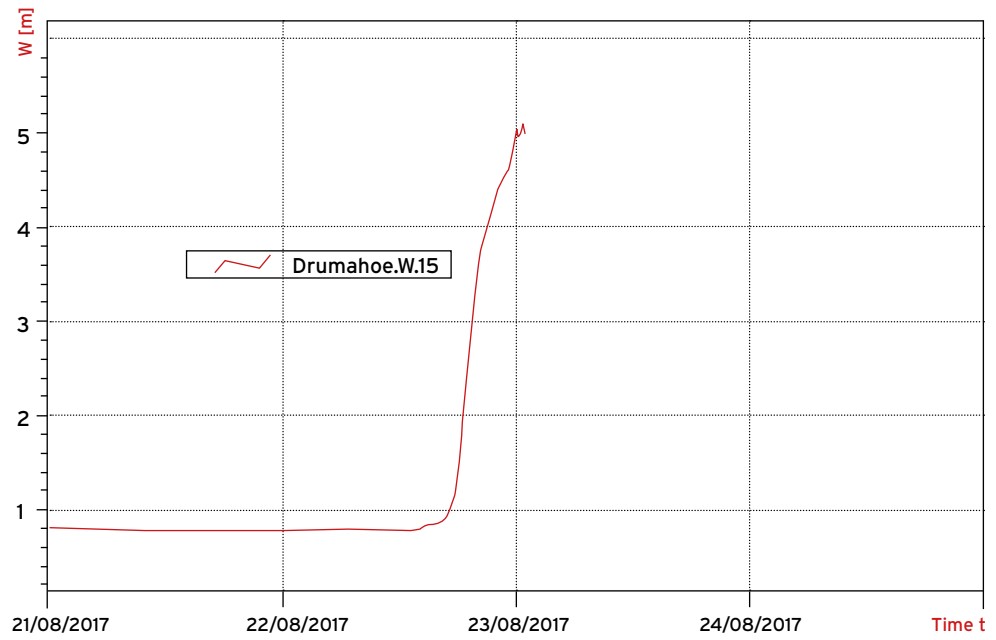
The 1987 floods which previously affected the West, had long been regarded as the flood event against which others were measured. The flooding that occurred on 22nd and 23rd August exceeded these levels, and not by a small amount as is often the case when a record flood level is exceeded. This clearly shows the scale of this flood event in relative terms and explains why widespread impacts rapidly occurred.

The hydrographs below show the rate of rise in water levels for these watercourses over a very short period of time. Some watercourses exceeded their ⁸ 1 in 100 flood level. This is a significant level that is used in the management of flooding to inform the design height of flood defences or define areas of land that are unlikely to be suitable for development.

River Faughan

The River Faughan water level station recorded a total rise in water level of approximately 4.3m over a period of 7.5 hours. The total height of the peak of the flood was recorded at over 5.1m. This was approximately 800mm higher than the previous highest peak of around 4.3m in October 1987. The return period for this watercourse for the event has been estimated to be in the order of ⁹1 in 280 years. It should however be noted that these figures are based on the last recorded water level before the station was washed away by flood waters in the early hours of the 23rd August. The final peak flow height is unknown but based on observations after the event is estimated to be over 5.4m.

^{8,9} Refer to Glossary at Annex 7



Kisters AG

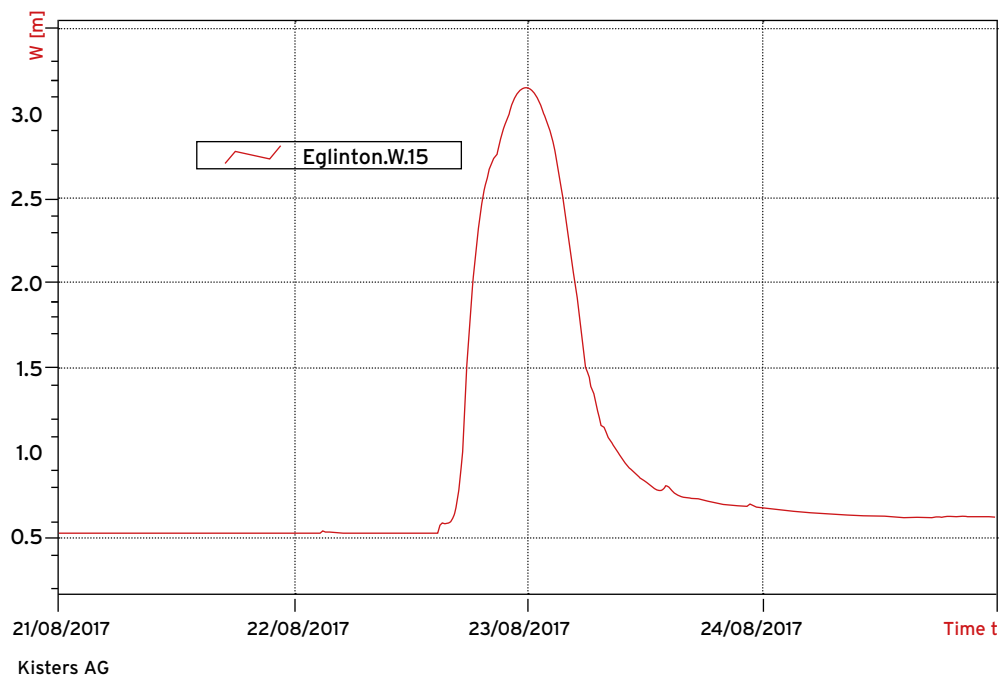
Hydrograph for Drumahoe station on the River Faughan 22nd and 23rd August 2017



Drumahoe gauging station on River Faughan washed away by flood waters.

Muff River

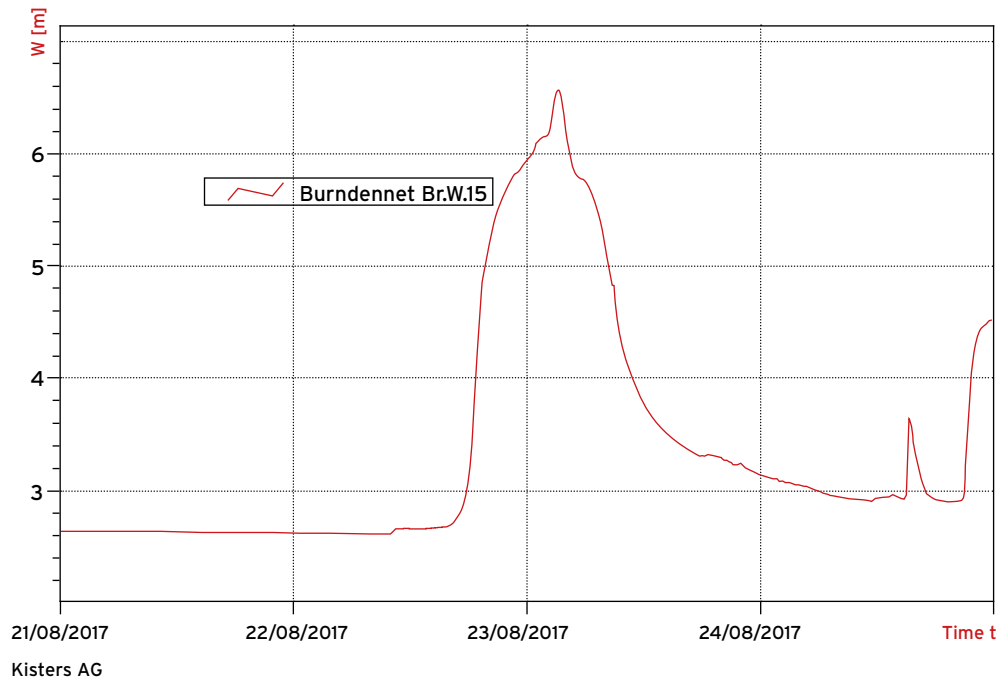
The Muff River water level station recorded a total rise in water level of around 2.6m over a period of 9.5 hours. The total height of the peak of the flood was recorded at over 3.1m which was approximately 450mm higher than the highest previous peak of approximately 2.7m recorded in December 2011.



Hydrograph for Eglinton station on the Muff River on 22nd and 23rd August 2017

Burdennett River

The Burdennett River water level station recorded a total rise in water level of over 3.8m over a period of about 12 hours. The total height of the peak of the flood was recorded at approximately 6.5m which was 450mm higher than the highest previous peak of around 6m recorded in October 1987. The return period for this watercourse for the event has been estimated to be in the order of ¹⁰ 1 in 300 years.



Hydrograph for Burdennett station on the Burdennett River on 22nd and 23rd August 2017.

¹⁰ Refer to Glossary at Annex 7 for additional detail

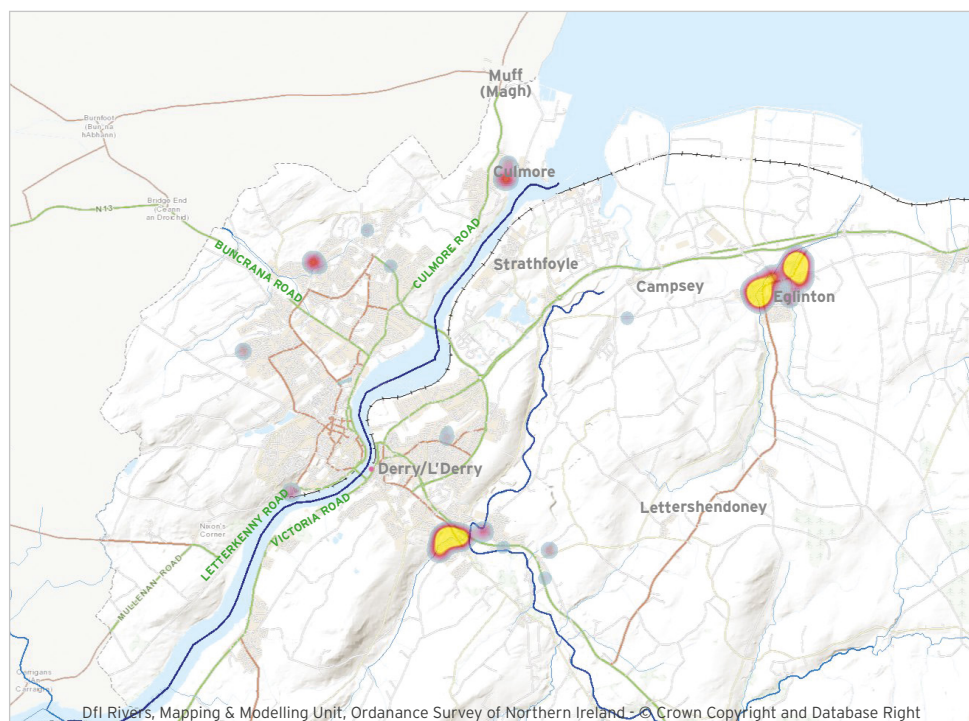
2.2 Impacts of the flooding

Many that contributed to this Review noted crucially that no human lives were lost during this flooding event, despite the very significant flows in watercourses which overflowed to roads and property and damaged the infrastructure network.

However the impacts of this flooding on property and livelihoods were severe:

- approximately 400 homes were flooded in a number of areas including Drumahoe and Eglinton;
- flood waters rose to depths of 1.3m in some properties in Ivy Mead, Drumahoe and 600mm in Dunverne Gardens, Eglinton. There were also reports of water rising to over 2m in properties in other parts of Drumahoe.

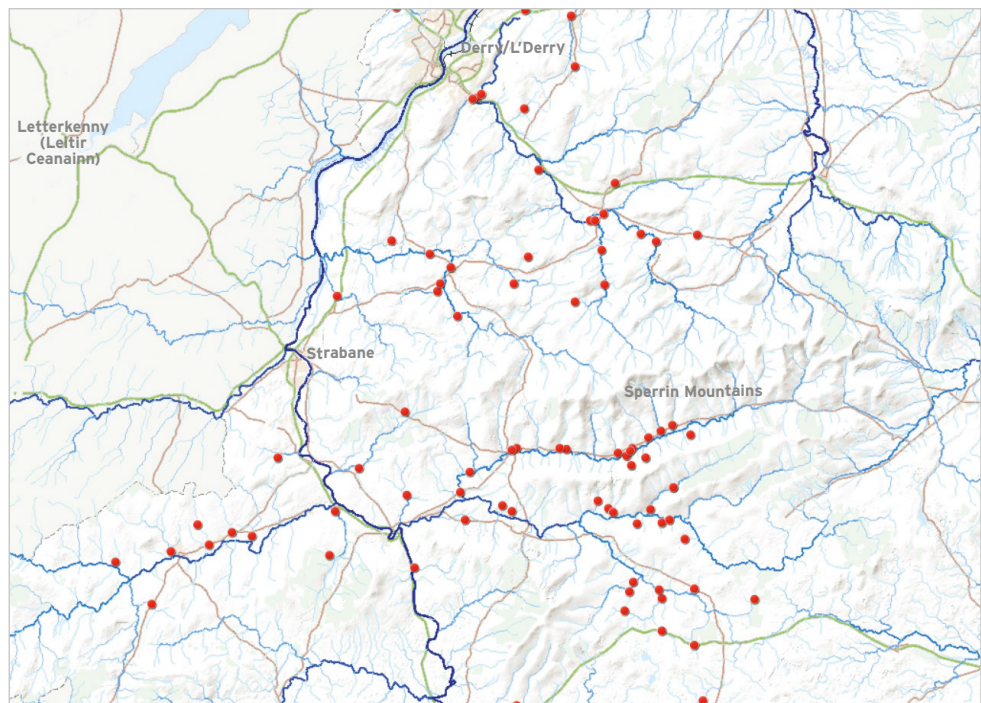
The North West region ¹¹ Heat Map below shows the general location and intensity of properties affected by the flooding.



¹¹ Refer to Glossary at Annex 7

In terms of damage to the transport and watercourse networks:

- 60 roads were cut off due to flooding, with a further 150 impacted;
- 5 bridges were washed away with a total of 89 requiring some remedial action;
- 2900m of flood defences were damaged with further widespread damage to watercourses across the affected area.



Spatial distribution of bridges requiring remedial action



Camlaugh Rd, Carrickmore



Drumahoe Rd at Three Mile House



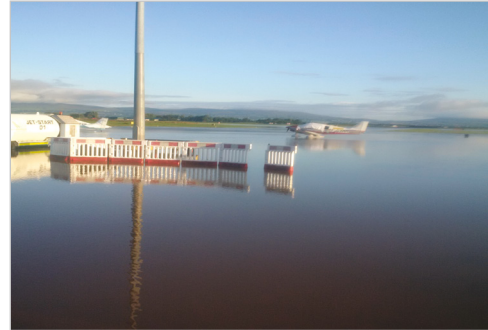
Ballynameen Bridge, Claudy



Glenrandal Bridge, Claudy



Damage to Glenelly Valley



City of Derry Airport



A5 at Burndennett

Impacts to agricultural land were also very significant due to large amounts of debris being washed onto the land. 220 farm businesses were impacted and fences were washed away in many locations. Livestock was also lost with reports of over 300 sheep and a significant number of cattle drowned.

These impacts were particularly severe in the Glenelly Valley, where a very significant series of landslides occurred as a result of the heavy rainfall and many of the fields affected remain covered in a thick layer of debris. The landslides, which engineering geology experts have advised were a ¹² 1 in 3000 year event, occurred when heavy rain made the peat on the side of the glen unstable. Water built up in a non-porous mineral layer under the peat and the pressure then caused the supersaturated peat to slide off it and down the mountain into the valley.

Significant impacts to critical infrastructure also occurred, with the A5 remaining closed for 3 days and the City of Derry airport experiencing flooding which resulted in its closure for nearly 2 days.

¹² Refer to Glossary at Annex 7

2.3 Response and the need for Review

DfI is the ¹³ Lead Government Department (LGD) for the co-ordination of the emergency response to flooding and this involves working with multi-agency partners to, amongst other activities, prepare for flooding emergencies, co-ordinate communications and provide expertise to inform the multi-agency response.

Well established multi-agency procedures to respond to flooding and facilitate effective escalation as necessary have been further refined since 2014. Emergency planning exercises and clarification of LGD responsibilities, on a routine basis, are vital to ensure appropriate preparation is in place for a timely and effective response to be activated when necessary.

This detailed preparation was put into practice to good effect on 22nd and 23rd August as the impact of the flooding required both local tactical and regional strategic multi-agency co-ordination. As the scale of the emergency escalated prompt co-ordination occurred as many response organisations were already in a state of readiness given the severe weather warning for rainfall that had issued earlier in the day. Co-ordination activities centred around providing assistance to those affected by flooding, facilitating emergency shelter arrangements, dealing with transport and safety issues, establishing recovery processes promptly and ensuring effective public communications.

In light of the complexity of the response and the scale of the impacts caused by this emergency it was necessary to conduct a Review in accordance with accepted emergency response protocols.

The methodology for conducting this Review is detailed in **Chapter 3**.

¹³ Refer to Glossary at Annex 7

3. METHODOLOGY

- 3.1 The CCG(NI) protocol regarding the co-ordination of the emergency response to flooding indicates that a Review is necessary for any flooding event that requires tactical multi-agency co-ordination at either a local or regional level. In addition to this, if an event escalates to a regionally strategic level, a Review into the response at that level is also required.
- 3.2 The co-ordination of the local response tactically was undertaken by local government and, as the impacts associated with the flooding on 22nd and 23rd August escalated, strategic co-ordination was provided by TEO through CCG(NI). Throughout this emergency the LGD was DfI.
- 3.3 In order to ensure a co-ordinated Review at both the tactical and strategic levels, it was considered appropriate by DfI, TEO and DCSDC to carry out a comprehensive joint Review. Working together on the Review would help identify key considerations and develop recommendations that would integrate well with, and aim to satisfy the needs of, those affected, other response organisations and interest groups.
- 3.4 At the outset, organisations and government departments leading this Review considered that, whilst not an absolute requirement, it would be beneficial for the process to be independently facilitated. As a result Arup was appointed in October 2017 to provide independent facilitation and scrutiny.
- 3.5 The Terms of Reference for the Review are included at **Annex 1**.
- 3.6 The Review comprises two distinct elements. The first of these took the form of a multi-agency debrief involving all organisations that responded to the emergency, and was led jointly by DfI, TEO and DCSDC. This debrief was held on the 27th November 2017 in the Foyle Arena and followed a well-established process that allows response organisations including government departments to identify what went well, what aspects were challenging and suggest potential improvements that could be made when dealing with emergencies in the future.
- 3.7 The details of this stage of the Review are included in **Chapter 4** of this report.

- 3.8 It was also considered necessary by those leading this Review to share the emerging themes from the multi-agency debrief with elected members and special interest groups from the areas affected.
- 3.9 This approach was driven largely by the clear need to engage directly with those affected by the flooding, to share with them first-hand the emerging findings from the debrief and to hear about the impacts the flooding had at both individual and community levels.
- 3.10 The second, wider element of the Review was taken forward by DfI and DCSDC, and took the form of structured engagement sessions with elected members and with locally based special interest groups. Two engagement sessions were arranged for the 12th December 2017 in the Foyle Arena, and an exchange of information and views took place that have helped to more fully develop the overall Review into the response and recovery phases associated with this flooding emergency.
- 3.11 Details of those who attended the two engagement sessions are included in **Annexes 5 and 6** and a summary of the feedback received at the events is included in **Chapter 5**.
- 3.12 Both these elements of the Review were independently facilitated by Arup.
- 3.13 The Review Panel at the engagement sessions also received information in relation to the causes of the flooding. There was clearly a keen interest from both elected members and special interest groups in maintenance issues associated with drainage and flood defence infrastructure and the provision of flood alleviation schemes.
- 3.14 The scope of this Review is not to consider operational maintenance issues or identify flood alleviation schemes. However, this is a key focus for DfI and a log of operational queries captured as part of these two engagement sessions is being actioned. Work is well underway in taking forward feasibility studies to identify viable flood alleviation schemes in the worst affected urban areas.
- 3.15 The subsequent analysis of the evidence collated as part of the multi-agency debrief and the two engagement sessions led to the identification of a range of issues and the emergence of a number of key themes. These themes, which fall into five main categories, were analysed in detail by the relevant government departments and agencies, to identify what went well and to ensure this is

maintained when responding to future emergencies, and to develop recommendations to address the key challenges faced. This process and the development of the subsequent recommendations contained in this Review were independently verified by Arup.

3.16

The final stage in the Review process was the production of this Review Report and its associated recommendations, as detailed at **Annex 8**.

4. MULTI-AGENCY DEBRIEF

Introduction

- 4.1 A full multi-agency response at both local tactical and regional strategic levels was required to deal with the scale of the problems encountered when responding to the flooding that occurred on the 22nd and 23rd August 2017. Key priorities centred around responding to flooding incidents, search and rescue, clean up and recovery, provision of humanitarian aid, dealing with animal welfare issues and support for the rural community in affected areas.
- 4.2 The purpose of this report is to set out the key findings identified by responding organisations in terms of the:
- learning points from the response to, and recovery from, the flooding; and
 - suggested improvements to further enhance the emergency response and recovery for future emergencies.
- 4.3 Independent facilitators Arup noted that whilst the overall feedback from the Review was positive, given the desire to learn, there is inevitably more narrative and description on recommendations for improvement and betterment in the balance of this report.

Debrief

- 4.4 Once the emergency was over a Flooding Review Group (FRG) comprising members from DfI, TEO, DCSDC and Local Government Civil Contingencies (LGCC) was established. In line with good practice, the FRG arranged a multi-agency debrief on 27th November 2017 involving the key organisations that dealt with the response to, and recovery from, the flooding. A list of those who attended is at **Annex 2**.
- 4.5 Ahead of the debrief a questionnaire (copy attached at **Annex 3**) was sent out to each organisation involved in the multi-agency response requesting them to identify aspects which presented the most difficulty and those which had worked well during the emergency. Based on this learning the organisations were asked to identify potential improvements which could enhance the response to future emergencies. Attendees at the debrief were asked to provide further details about the issues they had identified.

4.6 The questionnaire responses were analysed and broken down into key themes which had emerged. Suggested improvements to address the issues were also logged (summary attached at **Annex 4**). The key themes were:

- Information & Communications
- Roles & Responsibilities
- Co-ordination
- Procedures / Logistics
- Resources

4.7 The questionnaire responses detailed a number of additional suggested improvements / recommendations which, whilst they are important, can be resolved at a local level by individual organisations as part of their normal business activities, and as such need not become specific recommendations of this report.

What Went Well, Difficulties and Suggested Improvements

Information and Communications

What Went Well

- 4.8 DfI, Enterprise Shared Services (ESS), and DCSDC concluded that both internal and external communications were effective and, together with many other organisations present, acknowledged the willingness of multi-agency staff to do what was necessary to assist during the event and the follow up period.
- 4.9 During the emergency response to this event multi-agency partners worked closely to ensure messages to the media and public were consistent and timely, thus avoiding confusion and promoting a clear sense of a joined-up government response.
- 4.10 Key responding organisations made themselves available early on in dealing with this emergency to engage with the local elected members in briefing sessions. This helped provide reassurance in terms of what had been done, what would be done to address the impacts of this flooding and provided a useful platform for elected members not only to raise issues but also convey information back to the local communities on the overall emergency response actions.
- 4.11 The Department of Agriculture, Environment and Rural Affairs (DAERA), Northern Ireland Water (NIW), and DfI were of the view that engagement with community and stakeholder organisations was collaborative and effective. This engagement included a number of information clinics that provided information and advice. The debrief also heard how a number of community resilience groups, established with the support of a number of government and voluntary sector organisations in recent years, had been active during the emergency and had protected their own properties from flooding.

Difficulties

- 4.12 The debrief session heard from 9 organisations, including DfI, Police Service of Northern Ireland (PSNI), the Met Office and the Education Authority (EA) that it was difficult to have clarity on the scale of the unfolding emergency. Predicting areas that would be disproportionately affected and gathering statistics and data was also difficult. Agencies were of the opinion that a common visual representation of impacts of the event may have improved decision making, particularly in terms of response and escalation.

- 4.13 DfI and ESS reported difficulties with the operation of FIL and its ability to deal with the volume of calls. Public confusion about the role of FIL was also noted, for example whether it was for flood reporting only or if it also provided information on the availability of sandbags to those not yet experiencing flooding but who were nevertheless anxious that their property could flood. Some calls to FIL were also noted as requests from the public to provide updates on the operational response to previously logged calls.
- 4.14 DAERA highlighted little uptake from farmers for their animal carcass disposal scheme, which enhanced communication could have improved.
- 4.15 Weather Warning - the Northern Ireland Fire and Rescue Service (NIFRS) noted that the yellow weather warning did not indicate the scale of the event and therefore the response was more reactive as resources were not deployed in advance, impacting response times due to difficulty in accessing incidents. However, the debrief acknowledged that given the inherent difficulty in accurately forecasting the exact location and scale of thundery convective rainfall, pre-deployment to any particular area may not have been possible.

Suggested Improvements by Participants

- 4.16 The following improvements were suggested:
- Multi-agency communication, information flow and notifications could be further enhanced by developing an online visual mapping platform which is reliable, accurate and timely. This mapping platform would provide a clearer picture of the scale and location of the developing emergency. This would assist decisions in relation to multi-agency co-ordination, escalation and deployment of resources. Such a platform could also assist in the preparation of plans and reacting to developing impacts of flooding like road closures etc. It may also be useful in identifying landowners to allow an improved focus for the retrieval of animal carcasses if necessary. This mapping solution should not only be created for emergency use, but be an application used daily by DfI and council officials to ensure user familiarity.
 - ESS and DfI should review their procedures with a view to improving the efficiency of FIL. Clarity on the role of FIL needs to be provided and the process on the deployment of sandbags needs to be agreed with multi-agency partners and communicated to FIL to ensure a consistent message

from Government. nirect should also be further used to disseminate messages to the public in relation to flooding events.

- Strengthen community resilience by establishing further community groups in areas of known flood risk and building capacity in existing groups.
- Strengthen multi-agency communications by further enhancing meeting notification and teleconference arrangements.
- Consider increasing the coverage of the rain gauges network to help improve rainfall monitoring and flood risk assessment.
- Ongoing education of multi-agency responders, the public and those at risk of flash flooding to be considered in relation to the limitations of heavy convective rainfall forecasting.
- Multi-agency understanding in relation to when and where sandbags should be deployed both in the lead up to a potential emergency and during the response phase needs to be agreed. Lines to take that can be used in media briefings and shared with FIL staff need to be developed.

Roles and Responsibilities

What Went Well

- 4.17 Overall there was very positive feedback about the speed and nature of the multi-agency response and recovery during this significant flooding event. It was widely acknowledged that multi-agency actions had contributed significantly to the protection of human life and property. It was noted that despite the severe impacts to property and infrastructure no fatalities or serious injuries had occurred.

Difficulties

- 4.18 DfI and DAERA reported that the timing and lack of understanding around combined government responses / responsibilities in the response phase led to criticism from rural communities. Issues on watercourse maintenance responsibilities, potential environmental impacts resulting from farmers undertaking clean-up operations, and the limitations of government in terms of removal of flood debris outside of designated watercourses, needed to be explained and understood earlier.

Suggested Improvements by Participants

4.19 The following improvement was suggested:

- The support mechanism for rural communities that was created in response to this event by organising 'clinics' to clarify individual departmental roles and developing approaches to help the agricultural community recovery, needs to start sooner and align closely with response and urban recovery timings.

Co-ordination

What Went Well

4.20 It was widely acknowledged that escalation arrangements in terms of establishing local tactical coordination and ultimately regional strategic coordination through CCG(NI), was effective and timely given the very limited time thunderstorms typically allow for such arrangements to be established.

Difficulties

4.21 A number of organisations reported difficulties with the facilitation and resourcing of multi-agency co-ordination activities, particularly in the restricted timescale of this event. They also acknowledged that this is not uncommon and is likely to be an ongoing issue when establishing multi-agency co-ordination to an emergency that has occurred as a result of sudden heavy thundery downpours.

4.22 Five organisations advised that they were not included in initial multi-agency conference calls and there was some difficulty making contact with all of the relevant agencies.

4.23 NIFRS noted that the presence of a multi-agency co-ordination centre from an early stage of the response phase could have improved information sharing and situational awareness regarding event impacts and risk to life.

Suggested Improvements by Participants

- 4.24 The following improvements were suggested:
- Establish a multi-agency exercise programme aligned to risk assessment. To facilitate this TEO will collate an exercise register for NI which could be used to inform stakeholders on the prioritisation of exercise needs.
 - Whilst multi-agency Emergency Preparedness Groups (EPGs) have helped to clarify the roles and responsibilities of organisations, a large scale tactical and strategic exercise should be scheduled to test some of the other recommendations of this Review.

Procedures / Logistics

What Went Well

- 4.25 Over 10 organisations present at the debrief expressed the view that emergency planning procedures proved effective overall in the preparation for, escalation, and interagency co-ordination of the response. The value of the CCG(NI) protocols, which provide guidance for co-ordination and escalation, was acknowledged. These have been developed building on experiences from previous emergencies and the incorporation of their principles into organisations' Emergency Plans was evident.
- 4.26 The PSNI and Red Cross were of the view that drop-in rest centres were set up quickly and provided safe, dry locations for many people who were unable to travel to their homes.

Difficulties

- 4.27 DAERA reported difficulties accessing, retrieving and disposing of fallen stock.
- 4.28 NIW, PSNI and NIFRS experienced delays accessing certain areas as some key routes were impassable due to floodwater. This hindered their response times.
- 4.29 Northern Ireland Electricity (NIE) noted delays with the reporting of electricity outages which led to reconnection delays as meters close to flood water had to be inspected.
- 4.30 Land and Property Services (LPS) experienced delays in capturing aerial photographs directly after the event due to prevailing weather conditions.

Suggested Improvements by Participants

- 4.31 The following improvement was suggested:
- The development of an online mapping system, noted earlier under Information and Communications, would help address some of the difficulties noted in this category.

Resources

What Went Well

- 4.32 The Review participants felt that the NIFRS floodwater rescue capability was both professional and effective in dealing with a number of serious incidents as a result of this flooding.

Difficulties

- 4.33 In relation to the management of flooding impacts on assets and infrastructure - NIW encountered challenges managing repairs promptly due to operational and support staff shortages, particularly specialist contractors. Translink, in their questionnaire response, reported delays in restoring services due to impacts on bridges and the park and ride facility at Drumahoe.
- 4.34 DCSDC noted difficulty with multi-agency staff and counselling support staff being available to attend incident centres over a protracted period of time. The need for longer term emotional support and counselling for those affected was also raised by DCSDC and Red Cross.
- 4.35 NIHE experienced difficulties sourcing suitable temporary and permanent accommodation and furnishings for householders at short notice.
- 4.36 Issues were raised in relation to businesses being unable to claim for hardship payments similar to those provided to homeowners.
- 4.37 There was a need identified to provide clarity and streamline the processes for councils to recoup funds expended as a result of an emergency.

Suggested Improvements by Participants

4.38 The following improvements were suggested:

- Identify and implement ways to improve immediate and longer term emotional, mental health and wellbeing support for those affected in any future emergency in both the urban and rural communities.
- The issue of sourcing alternative accommodation for residents who are long term displaced from their homes was raised, however this is already being addressed through an existing CCG(NI) work stream.

Next Steps

4.39 It has been noted that there were many positive aspects identified under each of the five themes considered in this debrief. These examples of good practice should continue and be further reinforced as appropriate in existing and future emergency response plans.

4.40 The improvements suggested by the participants of this debrief will be taken forward to inform the overall recommendations of this Review. The recommendations and the organisations within whose remit they fall are detailed at **Annex 8**. Governance and monitoring arrangements in relation to addressing the recommendations of this Review are detailed in **Chapter 7**.

5. SUMMARY OF THE SPECIAL INTEREST GROUPS AND ELECTED MEMBERS EVENTS HELD ON 12TH DECEMBER 2017

- 5.1 The Review Group invited elected members and representatives from special interest groups to two separate events held on 12th December 2017 in the Foyle Arena.
- 5.2 At both events the independent facilitator, Arup, introduced the panel and explained that the purpose of the sessions was, as part of the Review into the flooding event of 22nd and 23rd August, to outline the impacts of the flooding on the local and wider community, share some of the emerging themes from the multi-agency debrief and receive input in an open and honest forum as part of the overall Review process.
- 5.3 A presentation was given by DfI and LGCC which summarised the background to, and impact of, the flooding and provided a summary of the emerging findings from the multi-agency debrief held on 27th November 2017.
- 5.4 Arup then facilitated round table discussions with both groups and queries were either addressed by the panel on the day or followed up after the two events. Suggestions for improvements were also noted and these have helped inform the overall recommendations in this Review.
- 5.5 At the outset of both engagement sessions it was noted again that crucially there was no loss of human life. There had however been, and continues to be, significant impacts on the lives of many of those affected by the flooding.
- 5.6 Similar to the multi-agency debrief, the comments and suggestions made as part of this engagement could be broadly identified under the following five themes:
- Information & Communications
 - Roles & Responsibilities
 - Co-ordination
 - Procedures / Logistics
 - Resources

Information And Communications

- 5.7 The general consensus from both engagement sessions was that the overall multi-agency response to this emergency had been effective.
- 5.8 The opportunity to engage directly with the organisations present as part of these engagement sessions was also noted as helpful, albeit some concern was raised about the need to continue to engage with those affected by the flooding.
- 5.9 There were requests for a number of meetings and advice clinics for local residents, business owners and special interest groups to give them the opportunity to talk about their experiences and to seek advice on mitigating future risk. This point was acknowledged and further advice clinics for the rural community will be considered in the spring. In addition to this a public information and engagement event to share the Review recommendations will be held on 29th March 2018.
- 5.10 DfI officials outlined to both groups that a likely recommendation of this Review would be that an online flood reporting tool should be developed which would link with a digital emergency mapping viewer. This would enable emergency responses to be prioritised and ensure that they are as effective as possible.
- 5.11 Some raised a concern that the yellow weather warning, issued prior to the flooding, did not accurately predict the severity of the weather that followed. The unpredictability of this type of weather event, despite advances in Met Office forecasting capabilities, was explained and officials advised that additional rain gauges may be installed in the North West to improve rainfall observation data and the assessment of flood risk.
- 5.12 Similarly, a query was raised as to why hydrology information on the Castle River was not included in the presentation at the beginning of the special interest groups' session. DfI officials advised that at the time of the flooding there was no hydrometric gauging station in this area but that the potential to provide one would be investigated so that water level alerts could be issued in the future to provide information on rising water levels and potentially improve community resilience.
- 5.13 On a more operational theme, the processes associated with the designation of rivers was queried and discussed. DfI officials agreed to meet with the Ulster Farmer's Union (UFU) to clarify the process.

Roles And Responsibilities

- 5.14 There was significant positive feedback about the professionalism and dedication shown during the response to and recovery from this emergency by the large number of agencies involved.
- 5.15 However, a number of attendees raised concerns there was some confusion about the roles and responsibilities of individual agencies and that clarification would be beneficial in any future emergency. It was also highlighted that the invaluable work of community workers needed to be recognised and supported in any future flooding emergencies. The Review Panel agreed that this is an area that could be further developed to form part of the Review recommendations.
- 5.16 Elected members reported that, in some cases, insurance assessors had been slow to attend affected properties. DfI officials confirmed that correspondence would be issued to the Association of British Insurers (ABI) to impress upon them the need for prompt loss evaluation in emergency situations.

Co-Ordination

- 5.17 The elected members and the special interest groups noted that the emergency response to this event appeared to be well co-ordinated and that this seemed to have improved in recent years.
- 5.18 Notwithstanding this, a number of elected members relayed the concern and frustration experienced by some of their constituents regarding the provision and distribution of sandbags to domestic and commercial properties. The Review Panel outlined the considerable efforts that had been made by multi-agency partners to distribute sandbags during the emergency. There had been some difficulties in prioritising where to distribute sandbags, particularly in response to heavy thunderstorms that are difficult to forecast. However, it was agreed that the remote storage of sandbags as part of local community resilience activities would be useful and providing clarity in relation to the use of the Flooding Incident Line when dealing with sandbag requests was essential.
- 5.19 It was noted that NIE had worked efficiently to restore electricity supplies during the recovery phase. Street lighting in the Eglinton area had also been restored quickly by DfI. It was agreed that NIE should be invited to attend emergency centres as part of any multi-agency response in future, given the proactive role they played during this emergency.

- 5.20 One elected member suggested that it may be useful to consider how volunteer support and the distribution of donated goods could be more effectively co-ordinated in a future emergency. This suggestion was well received by the Review Panel and will form a Review recommendation.
- 5.21 A question was raised around the level of cross-border cooperation and communication following this event. LGCC advised that Donegal County Council had also been responding to a significant flooding event on the same dates. It was noted that cross-border liaison is ongoing and recommendations coming from their debriefing process will be considered, to determine if there is any learning that may inform this Review.

Procedures / Logistics

- 5.22 Elected members asked for information on the procedures for checking and clearing road gullies. Officials confirmed that DfI policy is to clean gullies once per year, however with approximately 45,000 in the North West area, it was not possible to check them all ahead of an imminent flooding event. They confirmed that, before the event on the 22nd August, a number of gullies were checked in 'hotspots' where flooding had previously occurred.
- 5.23 Concerns were voiced that invasive species including Japanese Knotweed and Giant Hogweed were washed away by floodwaters which may have created a potential issue in relation to the spread of this vegetation. DfI officials confirmed that a letter would be sent to the Northern Ireland Environment Agency (NIEA) to seek their views on the environmental issues associated with the flooding with a view to clarity being provided on what steps could be taken in the future when managing this aspect of an emergency. Providing this clarity will form part of one of the Review recommendations.
- 5.24 Residents highlighted concerns about health risks associated with flooding from foul sewers and the implications for residents, farmers and livestock. Officials confirmed that these queries would be passed to DAERA and NIW to outline any measures that could be adopted in relation to livestock and the operational clean up in proximity to properties respectively. This issue may, in a similar fashion to the point raised above, form part of one of the Review recommendations in clarifying procedures.
- 5.25 Concerns were also raised by both elected members and special interest groups about future planning applications to build in flood risk areas. DfI officials acknowledged these concerns and pointed

out that planning policies here in relation to flood risk are some of the most robust in the UK. It was pointed out that whilst the issue of planning and flood risk needs to be considered in a realistic and measured way, a precautionary approach should be maintained. DfI officials went on to say that as local planning responsibilities now rest with councils, council officials and elected members all have an important role in understanding and supporting the continued use of strong flood risk policies when compiling the new Local Development Plans. It was agreed by all that this important point should be a recommendation of the Review.

5.26 Elected members reported that Data Protection issues resulted in difficulties triaging and gathering the vital personal details of those attending emergency centres at the time of the event. It was also suggested that welcome packs should be issued to families moving to temporary accommodation. This point was considered by the Review Panel to be important and should inform emergency response and recovery actions in the future.

5.27 Concerns were also raised that mobile homes requested at the time of the emergency took six weeks to deliver.

Resources

5.28 Strong concern was expressed about the emotional impact and trauma for those affected by this flooding event. The response from a number of groups including the Red Cross, Men's Shed, Eglinton Community Group and Drumahoe YMCA was invaluable and appreciated; however, examples were given where mental health issues had been exacerbated by the event and some elderly residents had been reluctant to seek help and advice. The importance of signposting all those affected to the appropriate support services and the provision of face to face advice was acknowledged. The necessity for robust short and long term emotional support for those affected was discussed, and reinforced views already expressed as part of the multi-agency debrief. It was agreed that this issue would form a recommendation to improve the level of support in this area in the future.

5.29 One elected member raised a query around circumstances in which the MoD might be asked to provide additional resources in a local emergency. It was confirmed that this issue could be dealt with, as necessary, by CCG (NI) who maintain links with the MoD via the Northern Ireland Office (NIO).

5.30 Health and safety concerns associated with traffic continuing to use the Drumahoe Bridge and surrounding area were discussed.

Officials advised that the extent of the emergency had stretched resources at the time but that the use of an emergency planning electronic mapping system in the future would help communicate issues like road closures to other responding organisations more efficiently.

- 5.31 Congestion and traffic use on the Cregg Road Claudy Bridge were also discussed. DfI Roads agreed to provide information to elected members on vehicle restrictions on the bridge and Cregg Road.
- 5.32 In addition to the points noted above, the Review Panel captured a number of action points arising from the special interest groups and elected members events. These were issued to, and followed up with, the relevant government departments or agencies in the following days and weeks.

6. CONCLUSION

6.1 It was clear that the extensive flooding that occurred in the North West on the 22nd and 23rd August, and the subsequent recovery that for many is still ongoing, has had a profound impact on the lives of those directly affected.

6.2 As independent facilitators, Arup was positive in terms of how the responding organisations co-ordinated their activities in a collaborative and supportive way. As noted earlier, Arup's view was based on the questionnaire responses, the feedback given at the multi-agency de-brief on 27th November 2017, and the workshops with the elected members and the special interest groups on the 12th December 2017.

6.3 This Review has considered a significant amount of input from responding organisations, government departments, elected representatives, interest groups and individual members of the public directly affected by the flooding. The comments made and views expressed were helpful and constructive in outlining what went well and endorsing that the improvements made in recent years, in relation to the management and emergency response to flooding, should continue.

6.4 However, in parallel with this, improvements have been identified in a number of areas to help improve future resilience to flooding and these have been developed into recommendations. These improvements have been considered under the five themes that have formed the core of this Review.

Information and Communication

6.5 It was acknowledged by the participants of the multi-agency debrief and reinforced by both elected members and special interest groups that effective communications were an essential part of the response to this flooding. Recent developments in DfI in preparing for emergencies and working closely with the communications teams from other responding organisations was put into practice effectively to ensure consistent messaging. There was enhanced use of social media throughout the duration of the flooding and the subsequent recovery. The establishment of the community assistance centres on the morning of the 23rd August provided a focal point for residents of Eglinton and Drumahoe to access services, obtain advice and also ensured a co-ordinated approach for the organisations involved. Engagement

with communities was considered to be very beneficial in areas where community resilience groups had been formed and when 'information clinics' had been established to support the rural community. There was a very clear sense from the majority of Review participants that community resilience activities should be taken forward at areas of known flood risk in the North West.

- 6.6 Throughout the Review process it was also clear that developing capability to report flooding online and for this information to be viewed by responding organisations on an 'online' mapping system would be very beneficial. This system would be very effective in determining quickly the areas worst affected by flooding, inform resource deployment and give increased confidence on when an emergency response should be escalated.

Roles and Responsibilities

- 6.7 It was widely accepted that organisations had a clear understanding of their role and the responsibilities they must discharge in dealing with flooding emergencies. Working together as multi-agency partners ensured the response was more effective and in many cases protected human life and property.

- 6.8 In order to improve in this area it was considered that it would be helpful to share with the public how multi-agency partners come together to manage emergencies and how their individual responsibilities interact to provide an effective overall response. Similarly it was considered important that support to the rural community, in terms of providing guidance to facilitate the recovery from flooding, should be commenced at the earliest opportunity to provide clarity on what action could be taken to repair flood damage.

- 6.9 Providing clarity in relation to the role of FIL in dealing with requests for sandbags, and the roles and responsibilities of the other organisations who respond to flooding, was also a necessary improvement identified.

Co-ordination

- 6.10 In responding to flooding emergencies, particularly those associated with heavy thundery downpours which are difficult to forecast, it is essential that multi-agency co-ordination is activated quickly.
- 6.11 Emergency response exercises in the months leading up to the flooding in the North West tested and refined co-ordination

and escalation arrangements and this proved vital during the emergency.

- 6.12 In addition the efforts and professionalism of the many staff and volunteers who worked together over long periods to assist in so many ways during the emergency response needs to be commended, particularly those to whom the weighty responsibility of co-ordinating and escalating the response fell.
- 6.13 As noted earlier the benefits of emergency planning exercises has again been reinforced by this flooding event and an important next step will be to develop and maintain a multi-agency exercise programme to assist organisations to test key aspects of their emergency arrangements and then work together with other responding organisations to jointly test response plans. This will ensure not only that individual organisations are prepared but also that their interaction with multi-agency partners is maximised.
- 6.14 As the potential to involve others in the response to emergencies, like the one experienced in the North West widens, it will also be necessary to consider how suitable arrangements could be put in place to co-ordinate the activities of community volunteers and enable the distribution of donated humanitarian aid.

Procedures / Logistics

- 6.15 The procedures and protocols for managing emergencies stood up well to the test of this serious flooding emergency. The value of having these procedures embedded in emergency response plans was clear so that a practical understanding of their use was developed.
- 6.16 On a practical level the swift establishment of assistance / incident centres was absolutely essential in supporting the response and providing assistance to those most in need of help.
- 6.17 Notwithstanding this, another area in need of increased focus includes developing procedures to deal with information sharing and signposting arrangements when these centres are established. This would ensure that residents affected by the emergency can avail of all the relevant services as and when they require them. All the relevant agencies, both statutory and voluntary, which can offer support, practical assistance and advice should be represented at these centres.
- 6.18 Throughout the Review, issues were raised in relation to ensuring development does not take place in areas likely to be at risk of

flooding. Historically, regional flood risk planning policies in NI have been very robust when compared to GB and other parts of Europe. The flooding in the North West has clearly reinforced the need for robust planning and flood risk policies to remain as local councils take forward their Local Development Plans.

- 6.19 The environmental damage and pollution implications as a result of a large scale flooding event need to be considered to clarify procedures to help reduce the worst of these impacts.

Resources

- 6.20 The Review heard from a number of participants that investment in flood response equipment and providing systems to monitor and alert organisations to rising water levels in rivers is key for the emergency response to flooding to continue to be effective.
- 6.21 However, resources are not just limited to physical items such as pumps, sandbags and river monitoring equipment which are often associated with a response to flooding, but extends to providing resources for activities like community engagement and supplying information to facilitate effective communication with other responders and the public.
- 6.22 When assessing the feedback and evidence given as part of this process, officials in DfI, LGCC and DCSDC identified that, in addition to the need to provide clarity and streamline the processes for councils to recoup finance expenditure, there was also the need to review the current Scheme for Emergency Financial Assistance. This review should consider costs that may be reimbursed to councils dealing with emergencies, in preparedness, response and recovery.
- 6.23 Finally, and for many crucially, the Review also heard from a wide range of participants about the need to adequately resource the provision of support mechanisms to deal with the immediate and longer term emotional, mental health and wellbeing needs of those affected by flooding in both urban and rural areas. This will be vital to help deal with the initial trauma of future flooding but will also help accelerate the necessary recovery of, not only the property, but the also the lives of those affected by flooding.

7. RECOMMENDATIONS

- 7.1 The improvements identified by participants of the structured debrief together with any suggested improvements made by elected members and special interest groups have been developed into 14 overall recommendations emerging from this Review.
- 7.2 The development of these recommendations will help ensure that the improvements made in responding to flooding emergencies in recent years continues and that areas for further improvement are taken forward with a focused and tangible outcome.
- 7.3 The main areas of focus of the recommendations are as follows:
1. Online Mapping Systems
 2. Flooding Incident Line
 3. Community Resilience
 4. Rainfall Measurement
 5. Weather Forecasting Awareness
 6. Farm Support
 7. Emergency Exercise Register
 8. Emergency Planning Exercise
 9. Emotional Support and Wellbeing
 10. Roles and Responsibilities
 11. Development and Flood Risk
 12. Community Volunteer Support
 13. Information Sharing
 14. Financial Assistance to Local Councils
- 7.4 The recommendations and the organisations within whose remit they fall are detailed in **Annex 8**, with linkage to the theme of the report they came from clearly identified.

- 7.5 The ¹⁴Floods Strategy Steering Group (FSSG) will act as overall co-ordinator for referral of the recommendations from the Review as appropriate to CCG(NI) for consideration / inclusion in the CCG(NI) Resilience Programme; and to ¹⁵Sub-Regional Civil Emergency Preparedness (SCEP) for consideration / inclusion in the SCEP Work Programme and ¹⁶EPG Programmes, as appropriate. CCG(NI) and SCEP will provide the governance function for delivery of the actions included in their respective work programmes.
- 7.6 Exact timescales for the implementation of the Review recommendations will be developed when they are brought forward to FSSG, CCG (NI) or SCEP for inclusion in the work plans of these groups. Recommendations will be addressed as quickly as possible and it is anticipated they all will be complete within two years from the publication of this report. Some will be complete much sooner than this with progress being subject to available resources and competing priorities.
- 7.7 Updates on the progress of the Review recommendations will be developed through FSSG and shared with elected members and senior departmental officials as necessary.

^{14, 15, 16} Refer to Glossary at Annex 7

ANNEX 1

TERMS OF REFERENCE - FACILITATED REVIEW OF THE NORTH WEST FLOODING (AUGUST 2017)

1. Purpose

The purpose of the Review is to capture issues identified during the flooding in the North West of Northern Ireland on 22nd and 23rd August 2017, to inform future collective emergency preparedness.

2. Scope

The Review, comprising of two parts, will:

- incorporate a facilitated debrief of the multi-agency emergency preparedness, response and recovery for a period of one month after the flooding occurred; and
- consult with elected representatives and special interest groups to consider the impacts of the flooding for the local area, population and business.

3. Methodology

Multi-Agency Debrief

Representatives from those organisations involved in responding to the flooding and its impacts will participate in a facilitated debrief which will focus on the multi-agency response and recovery for the time period above. Participants will be asked to consider:

- (a) two aspects of the response/ recovery where difficulties were encountered;
- (b) two aspects of the response/recovery which went well; and
- (c) two action points to further improve the multi-agency preparedness for such emergencies.

In preparation for the debrief, participants will be asked to complete questionnaires and to come prepared to speak to these to the meeting. Copies of the completed questionnaires will also be collated as part of the debrief findings.

The de-brief has also been designed to assist participants understand other aspects of the emergency with which they were unfamiliar, and/or to place their role and experiences in responding into context. The process will focus on key issues that are of high potential impact, rather than minor issues of limited consequence.

Given that the focus of the debrief is to identify and gather information to improve the collective preparedness for future emergencies, there will not be an opportunity to engage in detailed problem solving at this point.

All issues that have the broad support of the participants involved will be listed as findings and will be incorporated into the Debrief Report.

The Debrief Report will be produced by DfI, in conjunction with TEO and local government, to outline lessons learned, recommendations identified and will include actions to address the recommendations against an agreed timeframe.

To facilitate governance for implementation, the resulting actions will be presented to the Civil Contingencies Group (NI) (CCG(NI)) and to the CCG(NI) Sub-Group: Sub-Regional Civil Emergency Preparedness (SCEP) / the Emergency Preparedness Groups (EPGs) for inclusion, as appropriate, in their respective work programmes.

Elected Members and Special Interest Groups

The wider Review will also consider the impact of the flooding for the local area, population and business where elected members and, separately, special interest groups will be invited to make verbal submissions at a date following the debrief.

4. Participants (functional areas) invited to participate in the Facilitated Debrief

Derry City and Strabane District Council - Business and Culture

Derry City and Strabane District Council - Health and Communities

Derry City and Strabane District Council - Environment and Regeneration

Derry City and Strabane District Council - Chief Executive

Regional Officer (Local Government)

Met Office

Department for Infrastructure - Rivers

Department for Infrastructure - Roads

Department for Infrastructure - Core

Northern Ireland Water

Police Service of NI

NI Fire and Rescue Service
NI Ambulance Service
Western Health and Social Care Trust
Education Authority
Red Cross
Loughs Agency
Maritime and Coastguard Agency
BT
NI Electricity
NI Housing Executive
Translink
Northern Ireland Environment Agency
The Executive Office - Civil Contingencies
Department for Communities - Local Government Division
Department of Agriculture, Environment and Rural Affairs - Core
Department of Agriculture, Environment and Rural Affairs -
Veterinary
Department of Education
Department for the Economy
EIS
Department of Finance - Enterprise Shared Services
Department of Finance - Land and Property Services
Department of Health
Department of Justice
The Society of Local Authority Chief Executives (CCG(NI)
Representative)

ANNEX 2

Multi-Agency Debrief Attendees

Name	Agency
John Wylie	Met Office
Eileen Stamp	Met Office
Deidre Mackle	DfI Rivers
Owen McGivern	DfI Rivers
Sean O'Neill	DfI Rivers
Ruth Bond	DfI Rivers
Eoghan Daly	DfI Rivers
Seamus McCann	DfI Rivers
Robert McCartney	DfI Roads
Royston Cousley	NI Water
Grainne McConnell	DfI Core
Bernard McClure	DfI Core
Trevor Steenson	FIL
Joan McCaffrey	Local Government Civil Contingencies
Denise McDonnell	DCSDC
Adele McCourt	DCSDC
Martin Daly	DCSDC
Seamus Donaghy	DCSDC
Ian Hunt	PSNI
Colin Ferguson	PSNI
Jonathan Tate	NIFRS
Norman Henderson	NIEA
Joanne Campbell	WHST
Joanne McKenna	Red Cross
Mary Friel	Red Cross
Eddie Doherty	NIHE

Name	Agency
David Cassells	DAERA Veterinary
Brian Doherty	DAERA
Christine Baker	NIE
Ruari Gribben	DoF LPS
David Orr	EA
Chris McNabb	EIS
Julie Cuming	TEO
Keith Jagelman	TEO
Johny Wright	TEO
Jonathan McKee	DfI Debrief Planning Group
Lynda More	DfI Debrief Planning Group
Ray Hall	WEPG
Lorraine Corrigan	FODC
Christopher Wallace	FODC
Diane Irwin	Mid-Ulster Council
David Wilkes	Arup
Chris Caves	Arup
Rachel Murnaghan	Arup

ANNEX 3

MULTI-AGENCY DEBRIEF OF NORTH WEST FLOODING

Please complete the following questions based on your organisation's response to the North West flooding of 22nd and 23rd August 2017.

1. For my organisation the **two** main things which **presented the most difficulty** during the response/recovery were...

(a)

(b)

2. For my organisation the **two** main things which **went well** during the response/recovery were...

(a)

(b)

3. For my organisation the **two** action points to **further improve multi-agency preparedness for such emergencies** are....

(a)

.....

.....

.....

.....

(b)

.....

.....

.....

.....

Name Organisation

Date

ANNEX 4**Summary of Multi-Agency Questionnaire Responses in Relation to North West Flooding 22-23 August 2017**

	ISSUE / ACTION	RAISED BY	THEME
1	Flooding incident line (FIL) - clarification of role / locating calls / relaying information / resulting negative publicity	DfI / ESS	INFORMATION & COMMUNICATIONS (I&C)
2	Absence of a mapping application to accurately show spatial extent of the event made it difficult to gather impact information due to the timing of the event. Predicting precise areas which would be disproportionately affected and gathering statistics and data was also difficult.	DfI / LPS / MET OFFICE / DAERA / NIFRS	I&C
3	Communication between 1st responders and operational teams	HMC / WHSC / DCSDC / DoH	I&C
4	Teleconference issues - technical issues and difficulty knowing who was attending	TEO / PSNI	I&C
5	Yellow weather warning did not indicate the scale of the event resulting in a reactive rather than proactive response	NIFRS	I&C

MAIN DIFFICULTIES ENCOUNTERED

6	Timing and lack of understanding around combined government responses / responsibilities led to criticisms from rural communities	DfI / DAERA	R&R
7	Facilitation of multi-agency co-ordination	DAERA / LGCC	CO-ORDINATION
8	All agencies were not included in initial multi-agency calls and there was some difficulty making contact with all of the relevant agencies	WHSCT / RED CROSS / DoH / HMC / LGCC	CO-ORDINATION
9	Absence of a multi-agency co-ordination centre	NIFRS	CO-ORDINATION
10	Access to, retrieval of and disposal of fallen stock	DAERA	PROCEDURES / LOGISTICS
11	Access to areas was hindered as some key routes were impassable	NIW / PSNI	PROCEDURES / LOGISTICS
12	NIE reconnection delays	NIE	PROCEDURES / LOGISTICS
13	Delay in capturing aerial photography due to prevailing weather conditions	LPS	PROCEDURES / LOGISTICS
14	Management of impact on assets and infrastructure	NIW / TRANSLINK	RESOURCES (HR)
15	Availability of multi-agency staff attending incident centres	DCSDC	RESOURCES (HR)
16	Immediate and long term support for people affected by flooding	RED CROSS / DCSDC	RESOURCES (HR)

	ISSUE / ACTION	RAISED BY	THEME
17	Delay in deployment of contractors due to impact of budget constraints	Dfi	RESOURCES (FINANCE)
18	Sourcing suitable temporary and permanent accommodation and furnishings for householders	NIHE	RESOURCES (ASSETS)
1	External Comms - consistent messages and regular briefing sessions	Dfi	I&C
2	Information clinics attended by multi-agency staff	DAERA / NIW	I&C
3	Visit by Permanent Secretary	DAERA	I&C
4	Aerial photography captured in the recovery phase is beneficial for the future	LPS	I&C
5	Timely weather forecasts and use of the national severe weather warning (NSWW) service	MET OFFICE	I&C
6	Veterinary service animal health group (VSAHG) response	DAERA	R&R
7	Regional coordination, multi-agency communication / sharing information	Dfi / NIFRS / PSNI / WHSCT / LGCC / DCSDC / NIHE / DoH / LPS / DAERA	CO-ORDINATION

WHAT WENT WELL

8	Engagement with community and stakeholder organisations	DAERA / RED CROSS	CO-ORDINATION
9	Multi-agency emergency planning processes	DfI / NIW / NIE / NIFRS / WHSCT / LPS / DFC	CO-ORDINATION
10	Escalation to CCGNI and timely delivery of strategic support	DfI / LGCC / TEO	CO-ORDINATION
11	Prompt establishment of safe rest centres	PSNI / RED CROSS	CO-ORDINATION
12	Immediate response by agencies	DCSDC / TRANSLINK	RESOURCES (HR)
13	Willingness and flexibility of DfI, multi-agency staff and volunteers	DfI ROADS / HMC / DCSDC / ESS / LPS	RESOURCES (HR)
14	Assistance provided by Irish coastguard helicopter	HMC	RESOURCES (ASSETS)
1	Further enhance multi-agency communication, information flow and notifications by developing an online visual mapping platform	DfI / NIFRS / PSNI / LGCC / DCSDC / DoH / ESS / MET OFFICE / LPS	I&C
2	Provide clarity regarding the role of the flooding incident line	DfI / ESS	I&C / R&R
3	Consider use of NI direct for communication with members of the public	DfI / ESS	I&C

SUGGESTED ACTION POINTS

* DENOTES ACTION AT LOCAL LEVEL - NOT REQUIRED ON FINAL ACTION PLAN

	ISSUE / ACTION	RAISED BY	THEME
4	Establish further groups in problem areas to increase community resilience	Dfl	I&C
5	Establish an administrative documentation role to document events and responses in real time	LPS	I&C
6	Explore technical solutions to strengthen NICCMA communications capability	TEO	I&C
7	Ensure all agencies are registered for both hazard manager and NSW	MET OFFICE	I&C
8	Download Met Office app for instant alerts	MET OFFICE	I&C
9	Clarify multi-agency responsibilities for members of the public on a "without prejudice" basis	NIW	I&C
10	Communicate contact information re: command groups to all agencies	HMC / DAERA	I&C
11	Communicate contact numbers to NIE customers	NIE	I&C
12	DoH need to work with trusts to develop mechanism for providing sitreps to them	DoH	I&C
13	Provide information on roles of responders to local government	RED CROSS	R&R
14	Review emergency plans and business continuity plans as necessary and to clarify roles, responsibilities and hierarchy of command	EA / WHSCT / DCSDC / NIHE / ESS	R&R

* DENOTES ACTION AT LOCAL LEVEL - NOT REQUIRED ON FINAL ACTION PLAN

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15	Establish a multi-agency exercise program aligned to the regional risk assessment and a multi-agency recovery model for Epizootic disease events	NIFRS / RED CROSS / DAERA / DCS-DC	CO-ORDINATION
16	Met office refresher training on hazard manager and NSW systems	MET OFFICE	PROCEDURES / LOGISTICS
17	Review and circulate CCG(NI) guidance	LGCC / TEO	PROCEDURES / LOGISTICS
18	Consider how earlier, more accurate weather warnings could be provided	NIW	PROCEDURES / LOGISTICS
19	Increase roads and bridges maintenance budget	DfI	RESOURCES (FINANCE)
20	Consider use of EA transport and accommodation resources to benefit the community in a future event	EA	RESOURCES (ASSETS)
21	Consider setting up a severe weather focus group	MET OFFICE	RESOURCES (HR)
22	Establish sources of immediate and longer term support and counselling	RED CROSS / DCSDC	RESOURCES (HR)

*** DENOTES ACTION AT LOCAL LEVEL - NOT REQUIRED ON FINAL ACTION PLAN**

ANNEX 5

Elected Members Engagement Session Attendees

PANEL:

David Wilkes - Independent Facilitator - (Arup)
Chris Caves - (Arup)
Deirdre Mackle (DfI Rivers)
Jonathan McKee (Chair) (DfI Rivers)
Eoghan Daly (DfI Rivers)
Jonathan Tate (NIFRS)
Robert McCartney (DfI Roads)
Ruth Bond (DfI Rivers)
George Thompson (DfI Rivers)
Joan McCaffrey (Local Government Civil Contingencies)
Trevor Steenson (Flooding Incident Line)
Denise McDonnell (DCSDC)
Rachel Murnaghan (Arup)
Bernard McClure (DfI)
Lynda More (DfI)
James Graham (DfI)

ATTENDEES:

Councillor Martin Reilly (SDLP)
Councillor Jim McKeever (SDLP)
Alderman Mary Hamilton (UUP)
Alderman Hilary McClintock (DUP)
Councillor Christopher Jackson (SF)
Councillor Graeme Warke (DUP)
Alderman Maurice Devenney (Independent)
Councillor Paul Fleming (SF)
Councillor Tina Gardner (SDLP)

ANNEX 6

Special Interest Groups Engagement Session Attendees

PANEL:

David Wilkes - Independent Facilitator - (Arup)
Chris Caves - (Arup)
Deirdre Mackle (DfI Rivers)
Jonathan McKee (Chair) (DfI Rivers)
Eoghan Daly (DfI Rivers)
Jonathan Tate (NIFRS)
Robert McCartney (DfI Roads)
Ruth Bond (DfI Rivers)
George Thompson (DfI Rivers)
Joan McCaffrey (Local Government Civil Contingencies)
Martin Daly (Emergency Planning Officer Derry & Strabane City Council)
Denise McDonnell (DCSDC)
Elizabeth Campbell (Western Health and Social Care Trust)
Rachel Murnaghan (Arup)
Bernard McClure (DfI)
Mary Toner (DfI)
Lynda More (DfI)
James Graham (DfI)

ATTENDEES:

Catherine Taylor (Men's Shed Volunteers)
Donna Burke (Dove House Community Trust)
James Feeney (Eglinton Community Centre Staff & Volunteers)
Saoirse Fanning (Eglinton Community Centre Staff & Volunteers)
Debbie Caulfield (Eglinton Community Centre Staff & Volunteers)
James McCluggage (Ulster Farmers Union)
Margaret McLaughlin (The Drummond Centre Project, Ltd & Dennett Interchange)
David Holmes (St Canice's Church)
Ernest Moore (St Canice's Church)
Ronnie Lamrock (City of Derry Airport)
William Lamrock (Londonderry YMCA)

ANNEX 7

ACRONYMS AND GLOSSARY

ACRONYMS

BT	British Telecommunications
CCG(NI)	Civil Contingencies Group (Northern Ireland)
DAERA	Department of Agriculture, Environment and Rural Affairs
DCSDC	Derry City and Strabane District Council
DfI	Department for Infrastructure
DoH	Department of Health
EA	Education Authority
EIS	Executive Information Service
EPG	Emergency Preparedness Group
ESS	Enterprise Shared Services
FIL	Flooding Incident Line
FRG	Flooding Review Group
FSSG	Flood Strategy Steering Group
HMC	Her Majesty's Coastguard
LG	Local Government
LGCC	Local Government Civil Contingencies
LGD	Lead Government Department
LPS	Land and Property Services
MOD	Ministry of Defence
NIAS	Northern Ireland Ambulance Service
NIEA	Northern Ireland Environment Agency
NIE	Northern Ireland Electricity
NIFRS	Northern Ireland Fire & Rescue Service
NIHE	Northern Ireland Housing Executive
NIO	Northern Ireland Office

NIW	Northern Ireland Water
PSNI	Police Service of Northern Ireland
PTSD	Post-Traumatic Stress Disorder
RCRG	Regional Community Resilience Group
SCEP	Sub-regional Civil Emergency Preparedness
TEO	The Executive Office
UFU	Ulster Farmers Union
WHST	Western Health and Social Care Trust

GLOSSARY

FOOTNOTE NUMBER(S)	DESCRIPTION
1	<p>Arup Arup is an independent firm of designers, planners, engineers, consultants and technical specialists working across every aspect of today's built environment. They pride themselves on achieving equality and fairness, and have been recognised for this within the profession.</p>
2	<p>Civil Contingencies Group (NI) (CCG(NI)) CCG(NI) is the principal strategic civil contingencies preparedness body for the public sector in NI.</p>
3	<p>Local Tactical Response and Regional Strategic Response</p> <p>Local level emergencies are those where the outcomes are such that the response can be delivered entirely by organisations operating sub-regionally.</p> <p>Strategic level emergencies are those where the extent or severity of the impacts are such that strategic level intervention and co-ordination by government is required.</p> <p>Where strategic level co-ordination by central government has been put in place the co-ordination being delivered at local level will need to continue to ensure all elements of the emergency are managed. At this point the local co-ordination group becomes the tactical co-ordination group and is linked to the strategic co-ordination group.</p>

FOOTNOTE NUMBER(S)	DESCRIPTION
4, 6, 8, 9, 10, 12	<p>1 in 100/200/1000-year flood and floodplain</p> <p>The magnitude of flooding events and the extent of floodplains are often described using terminology like 1 in 100 year / 1 in 200 year / 1 in 1000 year (or any other number of years). This terminology is technically known as the 'return period' of a flooding event.</p> <p>For example, a 1 in 100-year flood (or 100-year flood or 100-year Return Period flood) is a flood event that has a 1% probability of occurring in any given year.</p> <p>There is a common misconception that a 1 in 100-year flood occurs once in 100 years. This is not the case and the actual situation is that a 1 in 100-year flood has a 1% probability of occurring in any year.</p> <p>The volume or magnitude of a 1 in 100-year flood is estimated from river flow data using complex statistical calculations. The volume of a 1 in 100-year flood is unique to each river as the physical characteristics of rivers vary widely.</p> <p>A river flood plain is the area of land that would be inundated in a 1 in 100 year flood. The extent of the flood plain varies as, like the physical characteristics of a river, the shape and form of the land in the vicinity of rivers differs widely.</p> <p>The 1 in 100-year flood and 1 in 100-year flood plain are international standards that are used to identify land at risk of flooding and to inform planning policies to avoid development where there is significant risk of flooding.</p> <p>This 'return period' methodology would also apply to landslides as referenced on page 19.</p>
5, 7, 11	<p>Flooding Heatmap</p> <p>A heat map is a map that shows, based on colour, the density of flooding occurrences on a particular date.</p>

GLOSSARY

13	<p>Lead Government Department (LGD) The LGD is the department with the expert knowledge of the primary cause of the emergency which can apply this knowledge to inform the response.</p>
14	<p>Floods Strategy Steering Group (FSSG) FSSG is a multi-agency group, established in March 2003 in response to the June 2002 flooding which affected mainly the Greater Belfast Area. While flood response remains a key element of the Group's work, its role has evolved in considering wider strategic flooding issues and includes providing oversight of implementation of the Floods Directive.</p>
15	<p>Sub-Regional Civil Emergency Preparedness (SCEP) SCEP provides corporate governance of, and co-ordination across, the EPGs and is the interface between local and strategic levels.</p>
16	<p>Emergency Preparedness Group (EPG) EPGs ensure that there is an appropriate level of preparedness to enable an effective multi-agency response to emergencies which have a significant impact on the local community.</p>

ANNEX 8

RECOMMENDATIONS FROM THE REVIEW OF THE NORTH WEST FLOODING OF 22/23 AUGUST 2017

REC ORIGIN	RECOMMENDATION	THEME	LEAD
MA	1 Online Mapping System: Develop and implement an online visual mapping platform to report and display to response organisations 'real or near real-time' emergency flood calls. This platform must be capable of integrating information from other mapping systems to inform multi-agency emergency co-ordination actions.	INFORMATION AND COMMUNICATION / PROCEDURES AND LOGISTICS	LPS / Dfi
MA	2 Flooding Incident Line: Consider methods to increase efficiency of Flooding Incident Line and improve service delivery.	INFORMATION AND COMMUNICATION	ESS / Dfi
MA	3 Community Resilience: Strengthen community resilience by establishing further community groups in areas of known flood risk and building capacity in existing groups.	INFORMATION AND COMMUNICATION	Dfi
MA	4 Rainfall Measurement: Examine the feasibility of increasing coverage of the rain gauge network to help improve rainfall monitoring and flood risk assessment.	INFORMATION AND COMMUNICATION	Dfi / MET OFFICE
MA	5 Weather Forecasting: Ongoing education of multi-agency responders, the public and those at risk of flash flooding in relation to the limitations of heavy convective rainfall forecasting to be considered.	INFORMATION AND COMMUNICATION	MET OFFICE

REC ORIGIN	RECOMMENDATION	THEME	LEAD
MA	6 Farm Support: Further develop a recovery framework protocol to support farming communities following weather related emergencies.	ROLES AND RESPONSIBILITIES	DAERA
MA	7 Emergency Exercise Register: Develop, maintain and share with civil contingences stakeholders an Exercise Register for Northern Ireland.	CO-ORDINATION	TEO
MA	8 Emergency Planning Exercise: Further enhance effective multi-agency co-ordination through facilitation of a large scale tactical and strategic exercise to test multi-agency roles & responsibilities, including the recovery phase of an emergency.	CO-ORDINATION	DfI / TEO / LOCAL GOVERNMENT
MA/SIG	9 Emotional Support and Wellbeing: Building on action taken as a result of this emergency, identify and implement ways to further improve immediate and longer term psycho-social support for those affected in any future emergency in both the urban and rural communities.	RESOURCES	DoH (SUPPORTED BY RED CROSS)
MA/SIG	10 Roles and Responsibilities: Review nirect content in relation to signposting the public to useful information on severe weather emergencies and reinforce its use as the primary online platform for the public to receive information and updates in relation to an emergency as appropriate.	INFORMATION AND COMMUNICATION	nirect / RCRG

REC ORIGIN	RECOMMENDATION	THEME	LEAD
EM/SIG	11 Development and Flood Risk: Ensure current and future 'development and flood risk' policies are robust and integral elements of new Local Development Plans (LDPs).	PROCEDURES AND LOGISTICS	LOCAL GOVERNMENT / DfI
EM/SIG	12 Community Volunteers: Using best practice, consider ways to co-ordinate the use of community volunteers and identify areas where they will be able to enhance multi-agency response efforts.	ROLES AND RESPONSIBILITIES	DfC (SUPPORTED BY RED CROSS)
EM/SIG	13 Information Sharing: Review the current arrangements for the sharing, between responding organisations, of the personal information of those affected in an emergency.	INFORMATION AND COMMUNICATION	Local Government
RT	14 Financial Assistance to Local Councils: Given the proactive role council fulfilled in this emergency, and the requirement to do so in the future, provide clarity and streamline the processes for councils to recoup finance expended as a result of an emergency and review the Scheme for Emergency Financial Assistance to consider council costs which may be reimbursed.	RESOURCES	DfC/Local Government

MA - Multi-agency Debrief

EM/SIG - Elected Members/Special Interest Groups

RT - Review Team

