

York Flood Inquiry



Foreword

On Boxing Day 2015, the city of York experienced exceptional flooding. Readers of this Report will be familiar with photographs and footage of York showing abandoned properties, marooned cars, residents being rescued from their homes in boats and Chinook helicopters airlifting equipment to repair the Foss Barrier.

The problems did not recede as quickly as the water, many people were unable to return home for months whilst their houses were being repaired and businesses were put out of action for months on end. Even now, York is working to return to normal.

In April 2016, I was appointed by City of York Council (CYC) as Chair of its independent Inquiry into the Boxing Day floods. Technical flooding expertise has been provided by the appointed panel members, Tom Toole and Laurence Waterhouse. Mr. Toole has had an extensive career in the Water Industry and he retired in late 2010 from his role as Associate Director/Commercial Director for the Arup UK Water Business. In the latter years of his career his experience enabled him to act as an Independent Expert Witness on many water related disputes. Mr. Waterhouse is the Technical Director of Flood Risk and Climate Change at Consulting Engineers Pell Frischmann. He is a past Chairman of the National Flood Forum and a Member of the United Nations Expert Panel on Climate Change Adaptation. He has over 40 years' experience as a chartered surveyor specialising in flood protection.

Over the last seven months the Inquiry Panel has held public meetings, considered over 50 written submissions and sent out a questionnaire to flood affected residents and businesses. The Panel has spoken with councillors and officers from the (CYC) and consulted widely with the Environment Agency (EA) and other Risk Management Agencies (RMAs). Throughout, we have referred to the terms of reference that the (CYC) provided and have given priority to the interests of those affected by the floods.

The Inquiry Panel has heard evidence from those that were directly affected by the flooding and from people who play a strategic role in shaping flood management. We heard a wide range of different views and ideas including some contradictory thoughts. We have done our best in the report to reflect the differing opinions.

During the emergency, York residents relayed examples of the emergency services and other organisations working together, saving lives and protecting property. I hope that we have been able

to capture how the Boxing Day flood impacted on the people and businesses of York as well as to highlight some of the issues that arise from flooding and how they impact on York in particular.

The fortitude of the people of York in the face of the adversity presented by the Boxing Day 2015 floods cannot be overstated.

Flood risk management is a very complex issue and **the causes of flooding are multiple and varied**. For example, the Government Agencies alone have [982 publications](#)¹ on the topic of flooding and flood risk management. Responsibility for flood management and the emergency response are split between local and national bodies which creates further complexity and means that good working relationships across these organisations are essential.

We recognise the inevitability that York will flood again and any solutions need to be forward looking. They cannot simply address the current problems. The organisations we consulted were focussed on working together to make improvements to the planning and protection measures for York. There is an openness about future flood risk and this should be encouraged so that everybody can understand the risks and work collectively to increase the resilience of residents and businesses so they are better prepared to recover more quickly from flooding. York is benefiting from **a £17 million upgrading of the Foss Barrier with a further £45 million of Government funding** to be invested in other schemes to reduce the impact of flooding. On 17 November 2016 the EA produced a publication called [“How we’re reducing the risk of flooding for York”](#)⁴ which sets out the proposals. The proposals remain open for consultation and now is the time that we, as a community can shape the flood protection future of York.

The Inquiry has made a number of recommendations; we understand that not everybody will agree with them. Some of the recommendations are not straightforward but the Panel hope these proposals are fulfilled. Only then can we work towards our shared aim of ensuring York emerges better prepared and more resilient to cope with the increasing challenges that climate change, with the likelihood of more frequent and intense periods of heavy rainfall, will bring to the city.

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https://www.gov.uk/government/publications?keywords=flood&publication_filter_option=all&topics%5B%5D=all&departments%5B%5D=all&official_document_status=all&world_locations%5B%5D=all&from_date=&to_date=

⁴ <https://www.gov.uk/government/news/five-year-plan-to-reduce-flood-risk-in-york>

I would like to thank everyone who has helped us with the Inquiry and given their time so generously. This includes the expert panel members who have worked hard providing much needed technical support and ideas having focused throughout on the best interests of the community.

Although we reached agreement on all matters the ultimate responsibility for the contents of this Report lies with me.

Angharad Davies

Chair of the York Independent Flood Inquiry

Glossary

ABI	Association of British Insurers
AOD	Above Ordnance Datum the internationally recognised standard value for sea level set at zero
BIBA	British Insurance Brokers' Association
CYC	City of York Council
DEFRA	Department of Environment, Fisheries and Rural Affairs
EA	The Environment Agency
EFRA	The Environment, Food and Rural Affairs Committee
FOI	Freedom of Information Request
FFC	Flood Forecasting Centre
FSB	Federation of Small Businesses
HART	Humanitarian Aid Relief Trust
ICT	Information and Communications Technology
IDBs	Internal Drainage Boards. Statutory bodies created to manage land drainage in areas of special drainage need
LLFA	Lead Local Flood Authority
LTA	Long Term Average
MIRT	Major Incident Response Team
MIY	Make it York
NFRR	National Flood Resilience Review
NCIC	National Climate Information Centre
NPPF	National Planning Policy Framework
NRA	National Risk Assessment - document produced every two years by the Government assess the risks of civil emergencies facing people in the UK
NYLRF	North Yorkshire Local Resilience Forum
RMA	Risk Management Authority
SMEs	Small and Medium Sized Enterprises
SMRT	Scarborough and Ryedale Mountain Rescue Team
SUDS	Sustainable Drainage Systems

TRCF	Two Ridings Community Foundation
YAS	Yorkshire Ambulance Service
YWS	Yorkshire Water Services

Table of Contents

Foreword.....	3
Glossary.....	6
Executive Summary.....	10
Terms of Reference	20
S 19 Flood Investigation Requirement.....	21
Public Response.....	22
York’s Flood History.....	24
Installation of Flood Defences	24
Properties at Risk.....	25
Rainfall and Catchment Conditions	26
How the Boxing Day floods unfolded	29
Emergency Planning and Emergency Response.....	31
Civil Contingencies Act 2004.....	31
Local Emergency Planning.....	32
Emergency Response.....	34
The Environment Agency (EA)	35
The Foss Barrier.....	36
Barrier Operation	38
Boxing Day flood.....	38
Was the decision to open the barrier the correct decision?.....	40
Flood Warnings	43
CYC’s Response Overview	47
Customer Services.....	50
Demountable Defences and Sandbags.....	53
Communications.....	54
Councillors.....	56
James Street.....	58
North Yorkshire Police (NYP)	60
North Yorkshire Fire and Rescue (NYFR).....	64
Scarborough and Ryedale Mountain Rescue Team (SRMRT).....	67
Yorkshire Ambulance Service (YAS).....	70
Military Response.....	72
Utilities.....	74
BT and the Stonebow Exchange	74
Yorkshire Water Services (YWS).....	76
Northern Powergrid.....	77
Voluntary Response.....	79

Major Incident Response Team (MIRT).....	81
York CVS	82
Recovery.....	86
Grants/Exemptions.....	89
Key Facts:.....	89
Property Level Resilience Grants.....	89
Business Grants.....	93
Insurance	95
Home Insurance	95
Business Insurance	96
Two Ridings Community Foundation (TRCF)	98
Community Ideas.....	102
Flood Wardens.....	102
Community Plans.....	102
The Future	103
Better Understanding of Risk.....	103
Catchment Management	104
York’s Plan	108
What Improvements Are Being Made to the Foss Barrier?	108
What Improvements Are Being Made to York’s Flood Defences?.....	109
Inquiry Recommendations	112
Acknowledgements	120

Executive Summary

This Report has been prepared by the York Inquiry Panel. The Inquiry was requested to be both thorough and independent. The original call for evidence and public meetings generated a wealth of material. This was supplemented by discussions with residents, key organisations and a questionnaire. This Report sets out our findings, conclusions and recommendations.

Flooding in York

York has known devastating flooding with records going back to 1263 AD. More recently, there were serious floods in 2007 and 2012. The city is defended by a series of coordinated flood defences. However, not all areas of the city are protected by permanent defences. The city also relies on monitoring rising river levels to allow the public to be warned and temporary works to be put in place. The EA estimate that there are approximately 7,200 York properties at risk of flooding in extreme storms. These properties are a mixture of residential and business properties. There are 3,680 properties at risk of flooding from the Ouse and 3,517 at risk from the Foss and other tributaries.

December 2015 was the wettest calendar month for the UK since records began in 1910. This meant that the Ouse and Foss catchment areas had become saturated as a result of the rainfall. **The flooding in December 2015 was the worst since 1982 in terms of impact on the city and resulted in the internal flooding of 627 properties (453 residential and 174 commercial).** The properties affected were primarily those normally protected by the Foss Barrier although there were many properties in unprotected areas which were subject to flooding from the Ouse. The river levels were only 200mm below the top of the Ouse defences for the second time in four years.

The main impact of the December 2015 flooding was in the YO1 (city centre), YO31 (Huntington South, Layerthorpe, The Groves) and YO10 (Fishergate, Fulford, Heslington, Osbaldwick and Tang Hall) areas. These accounted for 85-90% of the properties affected by the flooding. The BT exchange building at the Stonebow in York was flooded on 27 December 2015 and resulted in the loss of telephone services to approximately 50,000 customers in the city.

The Foss Barrier

The Foss Barrier is the strategic flood defence designed to protect properties behind the Barrier along the River Foss i.e. in the Foss catchment area.

The core principle of the Barrier is to protect the Foss from rising river levels on the Ouse and to stop the Ouse from backing up the Foss. This is achieved by closing the Foss Barrier to prevent the water

from the Ouse entering the Foss. The pumping capacity is switched on to take water out of the Foss at a controlled rate and pump it into the Ouse, beyond the Barrier. The Barrier uses up to eight pumps to draw the water through the intake. Following the December 2015 floods there has been much speculation as to the cause of the flooding along the Foss this system has been blamed on the 'failure' of the Foss Barrier. The Inquiry Panel hopes that this Report clarifies the circumstances of the flooding and the operation of the Barrier.

The Flood

At 18:35 on Boxing Day the EA made a decision to open the Foss Barrier when the water levels in the Foss could not be managed. The EA were also concerned about water ingress into the pumping station which threatened the electrics. This decision has been the subject of much scrutiny. The Inquiry have considered all the evidence presented to us and our conclusions can be found under the heading "Was the decision to lift the Barrier correct?" in the Report.

On Boxing Day 2015, the EA was dealing with a dynamic and unprecedented situation on the Foss. The exceptional flow of water on the Foss was more than the design capacity of the Foss Barrier Pumping Station which was 30 cubic metres per second.

Although a difficult decision and taken under intense pressure, the subsequent hydrological surveys and analysis have shown that the decision to open the Foss Barrier was the best option available. The decision to open the Barrier on 26 December 2015 prevented rapid, deeper and more extensive flooding in the Foss Catchment area. Due to the amount of water flowing down the Foss, flooding to properties normally protected by the Barrier was inevitable.

From the evidence the Inquiry has heard, after the Foss Barrier was opened the agencies involved in the emergency effort were frustrated at having to respond reactively to the unfolding situation. **The decision to open the Barrier was made by the EA alone without consultation with other stakeholders.** North Yorkshire Police (NYP) and CYC believe that it would have been better practice for the EA to have shared its situational awareness earlier so that a joint decision could have been undertaken. **However, this was an unprecedented set of circumstances and a decision had to be taken very quickly. There was no time to consult. In future whenever possible, the EA should discuss decisions such as opening the Foss Barrier with their multi-agency partners.**

It is clear that the Foss does not have the same level of monitoring as the Ouse, perhaps if the Foss were better monitored this outcome could have been anticipated sooner which would have allowed more time for the emergency responders to react. Therefore, the Inquiry recommend that the EA should further develop its tools and techniques for predicting and modelling river flooding particularly on the Foss.

Warnings

One of the key complaints from residents is that they were not given sufficient warning of the impending water inundation to their properties. The Inquiry have considered the steps taken by agencies to alert residents. The following warnings were put out on Boxing Day 2015 by the EA as part of their flood risk management obligations:

- 1) 07:07 hrs - a Flood Alert (meaning flooding is possible, be prepared) for the River Foss was issued;
- 2) 10:41 hrs - a Flood Warning (meaning flooding is expected, take immediate action) was issued for Huntington Road and Foss Islands;
- 3) 16:51 hrs - 5 further Flood Warnings were issued to cover the whole of the area impacted by the River Foss. These informed that the pumps on the River Foss were struggling to cope with the volume of water;
- 4) 18:45 hrs - the decision was made to issue 6 Severe Flood Warnings (meaning severe flooding and danger to life);
- 5) 19:05 hrs - the 6 Severe Flood Warnings for the area impacted by the River Foss were issued and included text emphasising that the Barrier had been lifted and no longer provided protection to properties and there was a potential risk to life.

Boxing Day 2015 was the first time a Severe Flood Warning had been issued to the Foss catchment area since the Foss Barrier was installed.

What is clear from the evidence is that not all residents at risk were signed up to the Flood Warning system or clearly understood what the warnings meant. Having spoken with several residents, the expectations of what warnings would be received were markedly different from the level of warning that was built into the emergency plans. **Many residents expected a personal visit from an agency to notify them of the impending flood and the need to evacuate.** Some residents had seen and spoken to emergency responders in their area and yet still no direct warning was given. This difference in expectations is something that needs to be addressed.

Residents have suggested improvements to the current flood warning system which include the use of a siren or a loud hailer along the urban part of the Foss and Ouse catchment to warn those at risk. The EA should consider as part of their ongoing review of flood warning measures, the use of loud hailers and/or the installations of sirens in York, supported by a plan for education, annual testing and maintenance.

The EA should also consider the feasibility of an opt-out telephone flood warning scheme to all homes and businesses at risk of flooding, including those with ex-directory numbers. Collectively the RMAs should develop plans for door-knocking, coordinated by CYC, to both enhance flood warnings before flooding and to provide information and assess welfare needs once flooding has receded.

The positive news since Boxing Day 2015 is that the EA have enhanced the current warning system and will further review it in 2017.

RMAs should review and enhance their Emergency Plan so that it contains clear roles and responsibilities for warning, informing and a clear evacuation plan. An emergency plan needs sufficient information about how to identify vulnerable residents so that efforts can be coordinated effectively. Part of this is a resource issue and the Inquiry believe that CYC should review the internal resources required to deliver their role as Lead Local Flood Authority (LLFA) and to fulfil their emergency planning and flood risk management obligations.

Emergency Response

Residents praised the emergency responders for their dedication and commitment during the flood rescue and evacuation effort. However, there were some residents who felt unsupported. These residents felt that there was a lack of co-ordination between rescue agencies; a lack of information about what was going on; and there was an inadequate plan in the event of problems with the Foss Barrier.

The flood in York required a sustained emergency response over several days from agencies that were already stretched dealing with regional flooding. There is no doubt that the timing of the flood, a weekend Bank Holiday in the middle of the Christmas period only served to escalate the challenges faced by all agencies in resourcing their response.

The many organisations involved have been open with the Inquiry about where their response could be improved and have shared areas of learning and good practice that can be captured for future emergency planning. Whilst York coped with the flood event, the Inquiry was concerned that the scale of this incident placed a significant strain on resources and it is unclear to the Inquiry whether some organisations had any spare capacity to cope should the flooding have escalated.

The Tactical and Coordinating Group (TCG or Silver Command) met at Fulford Road Police Station. All agencies involved acknowledged there were limitations in the use of Fulford Road. The agencies were working in cramped conditions with no access to printers. It should be noted that the evidence heard by the Inquiry does not suggest that the facilities available resulted in any impairment in the response. However, it did mean that when faced with a challenging situation the Silver Command members and those briefing them also had to contend with the limitations in space and IT facilities available. The Inquiry think that it is vital that those people who are working long hours in stressful circumstances should have facilities which enhance rather than impede their efforts.

Throughout the event the emergency services carried out a wide range of operations during a logistically challenging time ensuring there was no loss of life. The evacuation effort was assisted by a number of voluntary organisations who worked co-operatively and effectively together. The evacuation effort would have been assisted further by having a clear command structure between these volunteer organisations. As a result, the emergency responders should consider a review of the coordination of a multi-agency flood rescue to establish command protocols which incorporate the volunteer services.

Once the extent of the emergency was known military assistance was requested. This was active in York within 11 hours of the request being made. The military assisted with warning, informing, evacuation and flood protection tasks until 31 December 2015.

During the flood a rest centre was set up at Arch Bishop Holgate School to accommodate evacuated residents. The Inquiry considered that overall the rest centre arrangements provided by the Major Incident Response Team (MIRT) worked well. The assistance provided included shelter, warmth, food, emotional support and referrals to more specialised support if required. However, the Inquiry recommends reviewing rest centre provision to consider their ability to set up different rest centres across the city to provide flexibility in any future emergency.

Communication

During an emergency, multi-agency communication is coordinated by Silver Command. However, the presence of new, faster methods of communication and citizen journalists need to be factored in to any emergency communication strategy. These can create a challenge during a dynamic emergency compared with traditional media.

We heard that social media was an incredibly helpful source of information and filled a gap when there was no official message. However, sometimes this meant misinformation could take hold because official information was not being provided quickly enough. In an emergency, there needs to be a coordinated communications and media response so that residents can be better informed about what is happening. Emergency responders should review their communication strategy to make sure there are effective protocols in place to engage with social media.

Residents felt that there was no back up strategy after the telephone lines went down and people lost access to the internet. Radio York remained broadcasting updated information about the flood throughout. The flooding of the Stonebow exchange on 27 December 2015 resulted in the loss of land line services to approximately 50,000 customers in the city with an impact on mobile phone lines, the internet and electronic points of sale. It seems that BT had not sufficiently considered the flood risk to the Stonebow Exchange despite this risk being identified in the Multi Agency Emergency Plan. This created additional challenges to the communication effort. The loss of the BT system emphasises the need for utility companies to continue to work with the emergency planners to share information and coordinate their actions. This will allow for a clear understanding as to which pieces of critical infrastructure are at risk and whose role it is to protect the assets. Risk Management Authorities should make sure that they have a backup strategy, allowing them to cope in the event of the failure of critical communications infrastructure.

Recovery

Recovery is a critical period. People who were affected have to deal with disruption to their home life, being evacuated with little warning, problems with their insurance claims and living in a home in a state of disrepair. Existing health conditions can be exacerbated by the impact of a flood or recovery. This places a strain on family relationships and people can feel frustrated and depressed. The Inquiry heard that some older and more vulnerable people without extended support found it difficult to cope with the upheaval of being evacuated or living in temporary accommodation.

Two Ridings Community Foundation launched the York Disaster Appeal on behalf of the York Disaster Fund on 28 December 2015 which provided much needed funds for those residents affected by the flood.

CYC also provided the Inquiry with information about the steps they undertook during the recovery phase they confirmed:

- 453 residential properties flooded.;
- CYC paid out £197,500 in flood recovery grants to 395 affected properties;
- council tax exemptions were issued amounting to £372,534.43;

- 174 businesses flooded;
- 115 business recovery grants were paid out totalling £221,674.07;
- business rate exemptions were issued amounting to £1,408,475.35;
- to date, £353,455.75 has been paid out in flood resilience grants.

There are a number of exemptions and grants made available for those affected by the floods. However, despite the availability of flood resilience grants there are still numerous obstacles preventing widespread uptake, including residents finding the process complex and frustrating. Flooded businesses often remained closed for many months, some went out of business, those that did not had to adopt creative measures to re-establish themselves after the flood. Currently no grant money is made available for business marketing.

Residential and business properties would benefit from being made more flood resilient. Therefore CYC and Make it York (MIY) should explore ways to support and encourage that process. Flood Re, which has been set up to assist residential properties at risk of flooding to obtain insurance, should consider requiring insurers to incorporate flood resilience measures into any reinstatement works after a property has been flooded. The Government should consider providing funds to local authorities to assist with the administration of the Property Level Resilience Grants.

Community

It will not be possible to protect York from all flooding, therefore York as a community would benefit from becoming more resilient and better prepared for an emergency situation. The efforts of the people of York to restore the city to normal after the Boxing Day floods were remarkable. Spontaneous volunteers and donations made their way to York as soon as news of the flood spread. However, there was no formal role played by many local charities. There is an important role to be played by the voluntary sector during both the emergency and recovery period. One of the challenges to the voluntary sector is to provide a coordinated response. **York CVS organised an event called “Ready for Anything – Developing the Role for the Voluntary Sector in the Emergency Response” which was held in April 2016.** The purpose of the event was to bring together the voluntary and community sectors to learn from the Boxing Day floods and to generate ideas as to how the sector could respond better in future emergencies.

This event was supported by CYC, North Yorkshire Resilience Forum and the Emergency Planning College. This type of collaboration is immensely valuable. The role of the voluntary sector is already mentioned in the multi-agency Emergency Flood Plan but the Inquiry feel that this needs to be updated in light of the work that has been done by the Third Sector Organisations.

There are other ways that the community can become more involved in protecting the city. There has been a system of flood wardens in York supported and trained by CYC and the EA, however participation has dwindled.

The great benefit of flood wardens is that they have local knowledge of their community and can provide vital information and co-ordination in times of emergency. Many communities across York have made or are in the process of making community emergency plans which incorporate a flood plan and may include flood wardens. It is vital to harness the community spirit and knowledge gained after Boxing Day 2015 so that this information can be retained and shared to make communities across York more resilient. To capture the current enthusiasm for flood wardens, the Inquiry would recommend training for any new volunteers.

Flooding will recur in the city of York and residents' "flood awareness" currently varies more than it should. Therefore, York CVS and the Third Sector should consider how they can encourage and promote community groups that have formed in response to the floods to share information about flood risk and protection.

North Yorkshire Local Resilience Forum (NYLRF) and CYC should continue to provide training including simulations of emergency situations to include emergency responders and the voluntary sector. For this training to be effective residents need to participate in such events to learn how to most effectively prepare for future emergencies.

Insurance

The support property owners received from insurance companies was variable. Many reported a helpful response, especially in the overall drying out and repair stage. However, many also struggled in obtaining pay outs when dealing with loss adjustors and in securing affordable insurance premiums. Flood RE was introduced in April 2016 and has been designed to offer reasonably priced insurance to those who live in flood zones irrespective of their flooding history.

It is unclear whether the implementation of Flood Re has delivered the impact that was hoped for. Some residents still reported difficulties with reinsurance after April 2016. It would be beneficial if those companies that offer Flood RE ensure that their sales staff are fully aware of the criteria for acceptance to Flood Re and promote its use.

Flood Re has gaps. It only applies to residential properties built before 2009 and the residents of the James Street Travellers' Site which was badly affected, are unable to secure insurance at all. Businesses are not covered by Flood RE. Insurance for businesses at risk of flooding is unaffordable for many small and medium sized enterprises (SMEs). This means that there are businesses in York, some

of whom flooded for the first time in 2015, who now find themselves unable to re-insure. This risks their economic viability and the Government should consider an extension of Flood Re for businesses.

The Future

It is evident that the public interest is best served by closer cooperation between flood risk management agencies, the emergency services and the public. Organisations must be open, honest and direct about risk. We must move from a culture of 'need to know' to one of 'need to share'.

RMA's need to share ideas to coordinate their efforts so that solutions can be reached that consider the whole catchment area. This includes considering new areas or methods for water attenuation and storage. This will require more modelling and monitoring of the waterways and catchment areas of York to better understand them.

To facilitate this, CYC should continue its commitment to co-ordination with neighbouring local authorities so that catchment-wide solutions can be developed. Within York, consideration should be given to developing the most effective ways of ensuring that building development does not result in increased flood risk. This will involve a consideration of all types of inland flooding, from rivers, groundwater and surface water. It will also look at the likely impacts of climate change, along with the effects of how we use and manage the land. This should inform the way York develops in the future.

The Inquiry welcomes the EA and CYC's proposed programme of works to improve flood protection in York that will be implemented over the next five years. However, the EA have stated that the Government's allocated £45million funding "*...is very unlikely to deliver all of their desired improvements*". Additional funding and the appropriate resources for the EA and CYC should be confirmed at the earliest opportunity to enable all the necessary works to be undertaken, including the uplands water catchment management proposals.

The EA should consider early implementation, subject to Government funding rules, of their plans to protect the currently unprotected parts of York and the Inquiry would encourage consideration of demountable defences where feasible in these areas, including Clementhorpe.

The plans for the proposed flood defence upgrades are currently open for public consultation we would encourage residents to express their views to the EA.

At a national level, there have been several reports published this year that consider improvements in flood risk management. In particular, the Inquiry supports the recommendations of the Bonfield and EFRA (Environment, Food and Rural Affairs Committee) Reports and would encourage the Government to adopt them. It is inevitable that flooding will occur in the future, especially in view of

climate change predictions. Therefore risk management agencies and the EA need to take a collaborative approach to reducing flood risks and look for a sustainable and holistic approach to flood risk management.

The purpose of this Report has been to shine a light on what caused and contributed to the Boxing Day 2015 flood in York and how the city responded to it. The shared aim of everybody who contributed to this Report is to make York more resilient to flooding in the future. We hope that the final Report make some sensible suggestions to achieve this and is positive where it can be, but demanding where change is needed.

Terms of Reference

When the Inquiry Panel was appointed, the following Terms of Reference had been designated and provided the focus for the Inquiry.

The Inquiry was required:

1. to understand the reasons for the extent of the flooding;
2. to review the emergency response including specifically;
 - i) the warning of householders and businesses of the likelihood of their premises being flooded;
 - ii) arrangements for supporting vulnerable residents;
 - iii) the effectiveness of existing plans;
 - iv) the effectiveness of mutual aid arrangements;
 - v) any other issues which the inquiry team considers should be brought to the attention of responders and the public;
3. to consider the effectiveness of the response during the transitional and recovery phases;
4. to identify future improvements to the arrangements for responding to an emergency including its aftermath and to identify the lessons which can be learned and shared from positive aspects of the response;
5. to consider the resilience of infrastructure in the city to withstand flooding. This consideration should include the actual or potential impact on the emergency response arising from the loss of infrastructure and identify improvements which may be made;
6. to consider the resilience of key public services to the impact of flooding and to make such recommendations as may be required;
7. to make recommendations as to the most effective further measures which may be taken to protect residents and business against future flooding events and to consider the possible impacts of changing weather patterns to the adequacy of York's existing flood defences and plans.

The Inquiry has kept in mind these terms of reference when consulting with the different organisations and individuals and when drafting this Report.

In addition to the terms of reference, CYC has an obligation to investigate a flooding event as one of its statutory duties (often referred to as a section 19 (s19) report). This Report is also intended to fulfil that obligation and therefore, to provide some clarity. We have briefly set out what is expected from CYC in terms of a flood investigation.

S 19 Flood Investigation Requirement

A s19 report is a statutory requirement. As the Local Lead Flood Authority (LLFA), CYC has a responsibility to record and investigate flooding incidents in accordance with Section 19 of the Flood and Water Management Act 2010.

Section 19 of the Flood and Water Management Act 2010 states that when the LLFA becomes aware of a flood in its area, it must to the extent it considers appropriate, investigate:

- (a) which risk management authorities have relevant flood risk management functions;
- (b) whether each of those risk management authorities has exercised, or is proposing to exercise, those functions in response to the flood.

CYC's own "*Local Flood Risk Management Strategy*" sets out the criteria with which to decide whether a flood event is considered significant and therefore merits a formal investigation. The Local Flood Risk Management Strategy states that a formal investigation will be initiated when the following two criteria are met:

- the incident resulted in internal flooding of the habitable area of a property or of a business premises; and,
- there is ambiguity surrounding the source or responsibility of the flood.

The Local Flood Risk Management Strategy also requires the investigation to bring all relevant information together to identify those authorities with relevant flood risk management functions and what actions they have taken and propose to take. The Local Flood Risk Management Strategy requires

the report to provide the details of the conditions leading to the flooding, the impacts of the flooding, and the roles and responsibilities of all operating authorities in the area.

The relevant RMAs as defined by section 6 (13) are (as relevant to York):

- (a) the Environment Agency (EA);
- (b) the lead local flood authority (City of York Council/CYC);
- (c) the internal drainage board (Foss (2008) IDB);
- (d) the water company (Yorkshire Water);
- (e) the highway authority (City of York Council/CYC).

In broad terms the RMAs have the following responsibilities:

- CYC – surface runoff, ordinary watercourses, groundwater and highway drainage ;
- the EA – main rivers and the sea;
- IDB – drainage and flooding of ordinary watercourses within their defined low lying areas ;
- Yorkshire Water – flooding from the public sewer network.

As part of the Inquiry it has been important to provide a context for the Boxing Day 2015 events as well as looking at the weather situation; the weather forecasting; flood defences; the flooding; the emergency response; the effects of the floods on people and businesses and the future.

Public Response

To understand the concerns of residents and businesses the Inquiry held a number of public meetings where we met and discussed the impact of the floods with residents and business owners. We also received written submissions expressing concerns from residents covering a wide range of issues from the emergency response to the mechanics of applying for the resilience grant. The panel would like to thank all residents and business owners who gave their time to provide such thoughtful and well considered contributions to the Inquiry. Many of the people who took the time to speak to us were still contending with the impact of the flooding.

Following the public meetings, the Inquiry decided that it would gain a broader understanding of the impacts of the flood by consulting more residents by means of a questionnaire. Therefore, the Inquiry drafted a questionnaire which was sent out to residents of flooded areas:

- a total of 212 questionnaires were returned from residential addresses;
- 200 reported flooding of their property and/or outside areas;
- 38% of the responses reported that they had to be evacuated from their property;
- 46% reported that they had contact with CYC;
- 61% of those who contacted CYC reported that the response from CYC had been helpful;
- 68% of responses reported that they had to have repairs to their properties.

The Inquiry has taken these views into account throughout the Report. We have given an overview of the evidence and the results of the questionnaire to understand how York was affected (**Appendix 1-3**).

York's Flood History

The city of York sits astride the confluence of the River Ouse and the River Foss. The upstream rivers of Swale, Ure and Nidd which originate in the Yorkshire Dales combine to form the River Ouse which flows through York and continues to the Humber and the North Sea. The River Foss is a tributary of the River Ouse and originates in the Howardian Hills approximately 20 miles North of York.

The interaction of these rivers and the significant amount of rainfall the catchment attracts along with snowmelt in winter makes the city particularly susceptible to flooding. Until the construction of the Naburn Weir in 1757 the River Ouse was a tidal river. The construction of the Weir and lock at Naburn enabled boats to reach York at all states of tide.

York has known devastating flooding many times before with records of flooding going back to 1263 AD. Since the Second World War there were notable floods in 1947, 1978, 1982 and 2000. More recently, there were serious floods in 2007 and 2012. **The events leading up to and after Christmas 2015 resulted in the worst flooding seen in York for a generation.**

The flood level recorded in York on **28 December 2015** was 10.20m AOD⁷ at North Street and is **the second highest level ever recorded**. The highest level ever recorded was 10.40m AOD on the Ouse in November 2000 when the flood peaked at just 50mm below the crest of York's flood defences.

Installation of Flood Defences

Following the flood of 1978, a series of flood defence improvements were initiated and since 1979, work on defending York from the destructive force of flooding has continued. A number of separate, yet coordinated schemes in the city have now been implemented at a cost of around £10 million. The flood defences for York include a number of local flood barriers to help prevent direct flooding from the Ouse and Foss. These are combined with arrangements to pump internal flows from sewage systems and internal watercourses to prevent pollution.

York's flood defences are mainly constructed alongside vulnerable sections of the River Ouse between Rawcliffe, Ings and Rowntree Park to protect properties in areas where major flooding has occurred

⁷ Above Ordnance Datum as measured at the Viking Recorder. There are two sets of measurements for the river levels in this Report. Metres are self-explanatory. The "AOD" measures effectively adds 5m to the normal river level measurements to reflect the height above sea level.

in the past. These existing defences built since 1979, are a mixture of earth embankments, brick or stone clad concrete walls and floodgates. Most of the defences have flood-pump stations to deal with sewerage and watercourse flows. **The defences constructed since 1979 to protect the city from flooding performed successfully during the significant flooding events of 2000, 2007 and 2012.**

Currently the city's flood defences include:

- the Foss Barrier: built in 1986/7. A gate which when lowered in place, cuts the Foss off from the Ouse stopping water from passing back upstream;
- North Street: a series of flood gates and walls installed in 1992/3;
- Lower Ebor Street: concrete flood walls with valves to isolate sewage;
- Holgate Beck: upstream tributaries of the beck were diverted to empty directly into the Ouse, and a pumping station was installed to pump flows into the Ouse;
- Lower Bootham: a 650m earth flood bank and 280m concrete flood wall;
- Acomb Landing: a reinforced retaining wall was added to existing embankments after the 1982 floods to protect York's drinking water abstraction at this point;
- Clifton Ings: a modified natural flood-plain which can hold 2.3 million cubic metres of water - impounding within raised flood banks can lower the peak flood level in the city by almost six inches;
- Leeman Road: a flood bank was built in 1980, following the 1978 floods, and raised in 1982, following further floods. The defences have now been upgraded again in a £4 million project that has included raising the banks further and adding a flood wall at Water End.

Properties at Risk

The EA estimate that there are approximately 7200 residential and business properties at risk of flooding in York in "extreme storm events"⁸. Of these, 3680 properties are at risk of flooding from the River Ouse and 3517 are at risk from the River Foss and other tributaries.

It is significant that the defences protecting properties from the Ouse were not breached during the Boxing Day event.

⁸ Less than 1% probability, or 1 in 100 year, events

Rainfall and Catchment Conditions

December 2015 was not only the wettest December on record, but also the wettest calendar month overall since records began in 1910. Across the UK more than 17,000 properties were flooded or affected, including over 4000 businesses⁹. This gives some context for the scale of the impact that flooding had throughout the country.

From November 2015 to New Year 2016, Yorkshire saw a sustained period of exceptionally wet weather. November and December saw a sequence of weather systems across the country bringing a lot of rainfall including Storm Desmond (5-6 December 2015) and Storm Eva (22-24 December 2015).

The Boxing Day flood event was the result of a weather front following immediately behind Storm Eva which travelled north easterly over West Yorkshire before heading through North Yorkshire.¹⁰

Most catchments received greater than average rainfall in November and were already saturated before the rainfall of Christmas Day and Boxing Day. This meant that the ground had no further capacity to store water which increased the run off into the rivers. The most significant rainfall occurred during a 24 - 36 hour period between 25 and 26 December 2015. During this time, 50-75% of the average monthly rainfall for December fell over through Yorkshire¹¹. The rainfall in the Foss catchment was also exceptional, as demonstrated by the radar picture (shown below) which highlights an intense cell of rainfall at the top of the catchment.¹²

The National Climate Information Centre (NCIC) December 2015 ("Current Month") rainfall maps shown below¹³ illustrate that the northern and western catchment had above average rainfall for the entire previous 12 months.

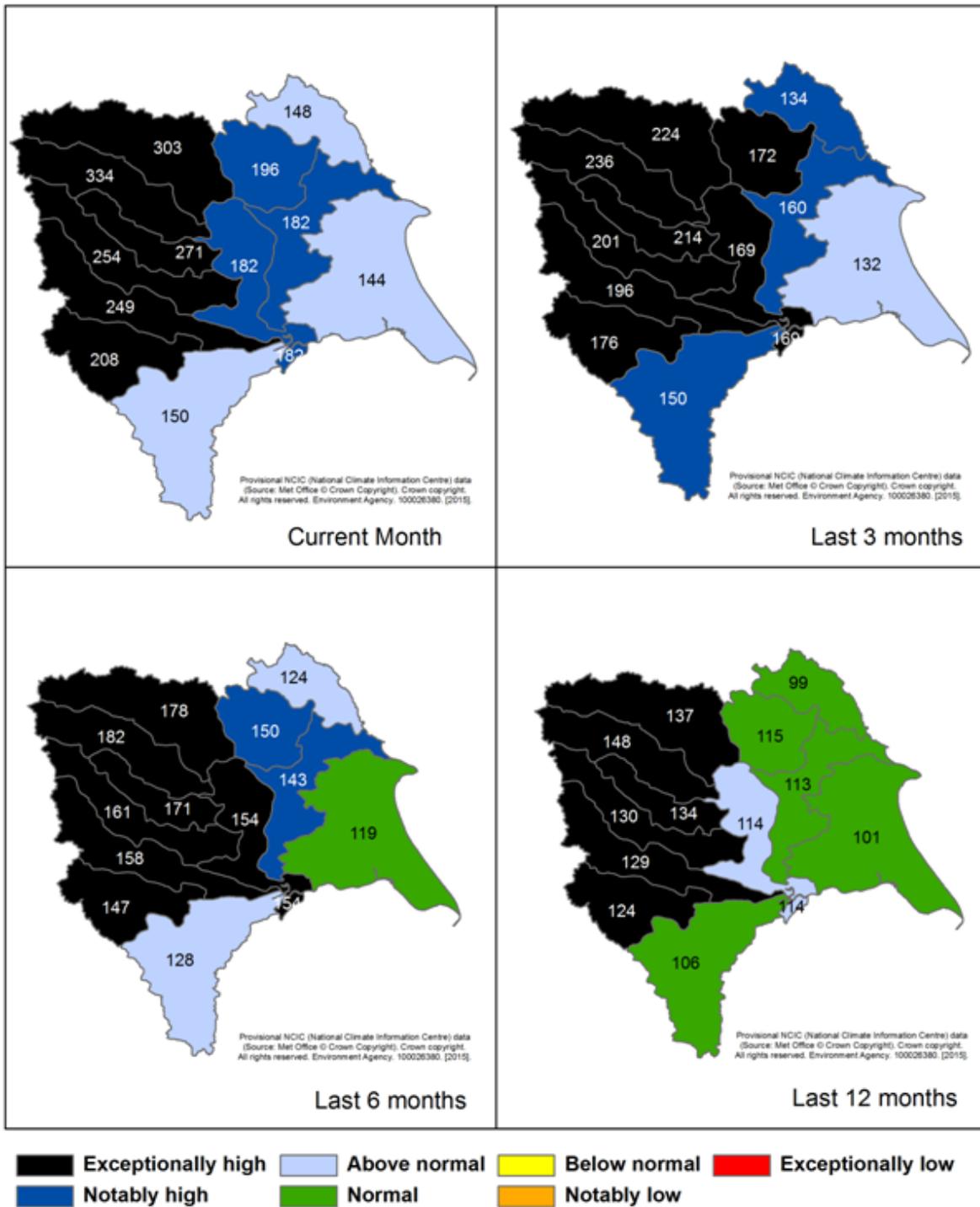
⁹ Statistics taken from DEFRA "*The Property Flood Resilience Action Plan*" By Peter Bonfield September 2016

¹⁰ EA, "Hydrology of the December 2015 Flood in Yorkshire" published April 2016

¹¹ EA, Response to the Flood Inquiry

¹² Radar showing the rainfall in the Foss Catchment, reproduced with the permission of the EA

¹³ EA, "Hydrology of the December 2015 Flood in Yorkshire" published April 2016

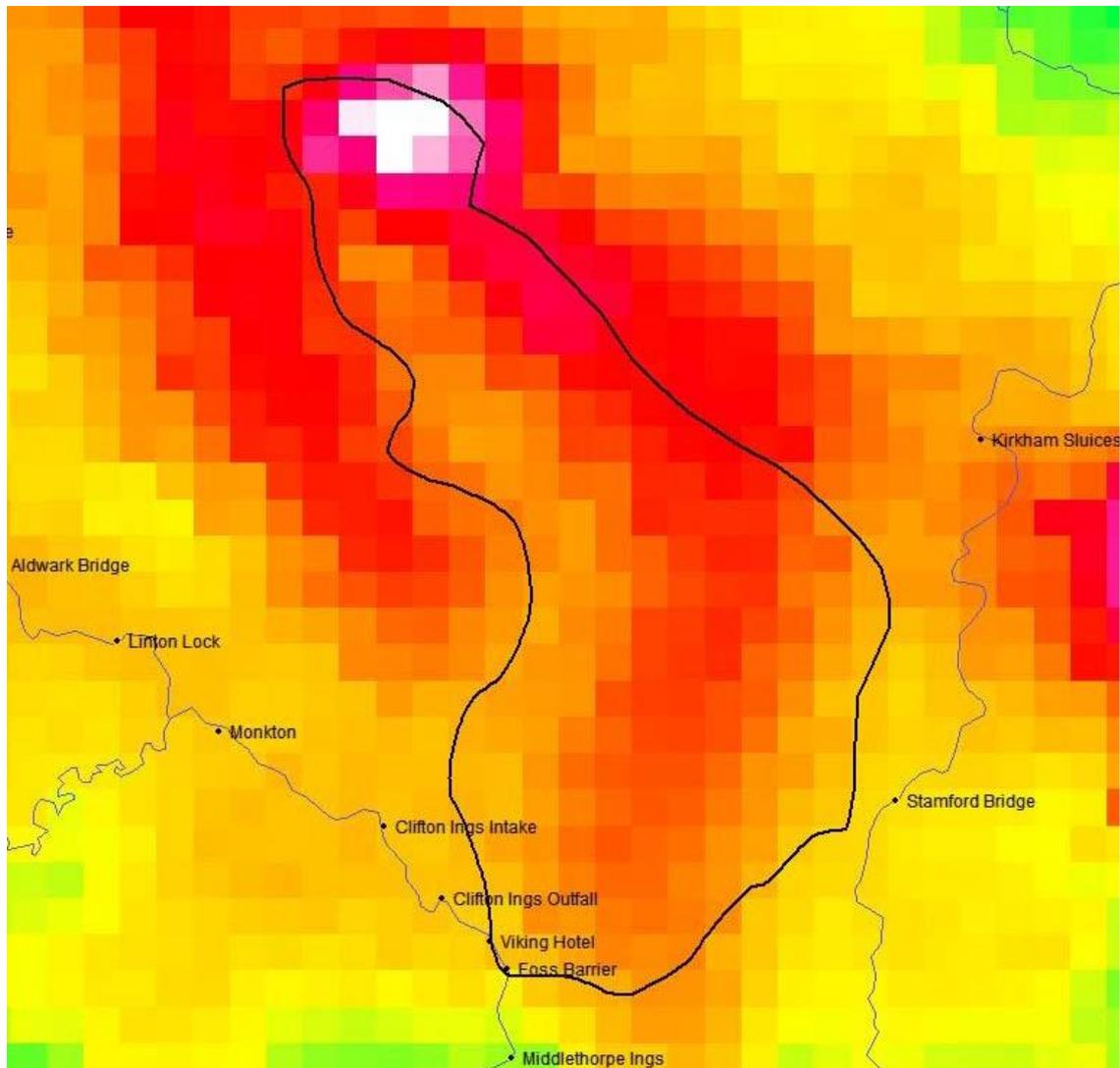


NCIC Current Month Rainfall Maps.¹⁴

More specifically in relation to the river levels on the Ouse and the Foss, the Ouse reached its second highest peak on record at Skelton. Through the centre of York, the level at the Viking Recorder (the river level gauge) on the Ouse also rose to a peak level of 5.19m metres.

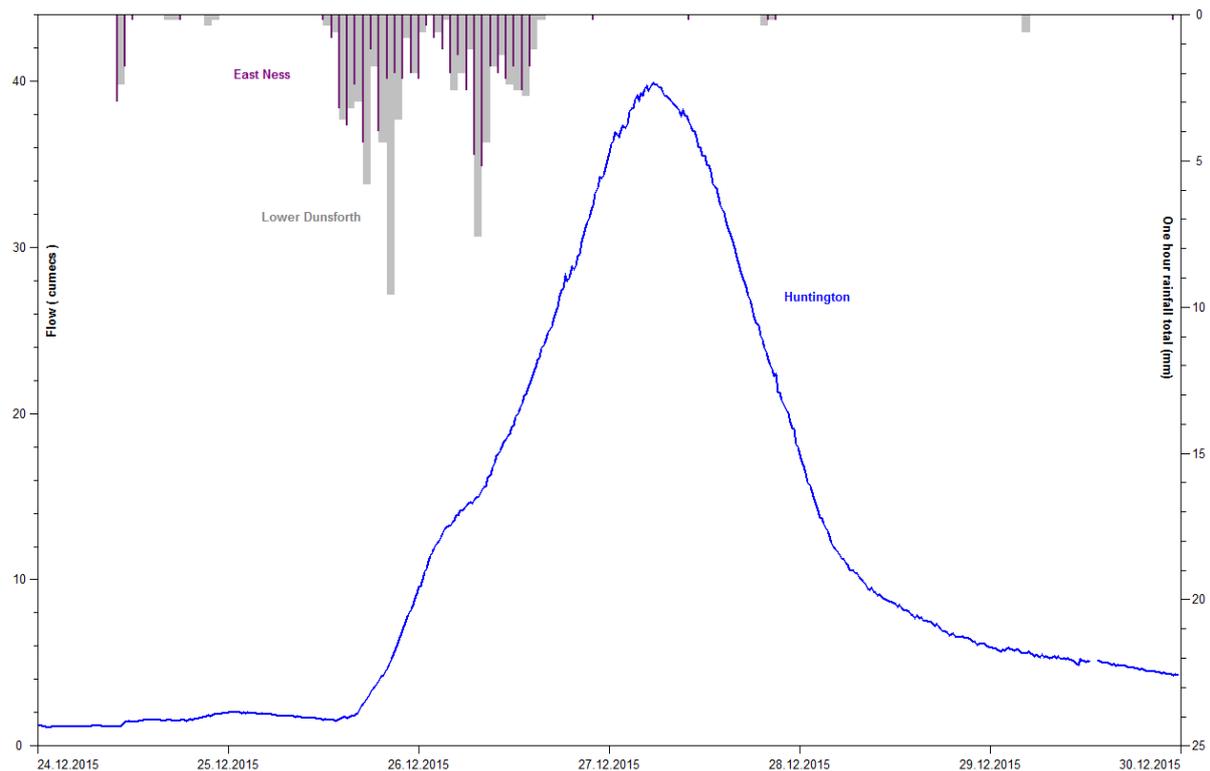
¹⁴ EA, "Hydrology of the December 2015 Flood in Yorkshire" published April 2016

The rainfall on the Foss Catchment was exceptional as shown by the radar picture below. This highlights an intense cell of rainfall at the top of the catchment and shows 36 hours of accumulated rainfall totals to 27 December 2015 over the Foss Catchment.



During this event the water flow coming down the Foss, as measured at Huntington, was far greater than had been recorded in its 30-year history. The gauge at Huntington on the Foss is 2km upstream of the Barrier. The readings therefore are not affected by the Barrier and show what is happening to the river level as a consequence of the exceptional rainfall.

In order to estimate the flow along the Foss the EA carried out a hydrological assessment after the event which has been included below and shows that **the flow on the Foss was almost double that seen during the flood in autumn 2000.**



Huntington river level and rainfall December 2015.¹⁵

How the Boxing Day floods unfolded

The exceptional rainfall throughout 2015 was compounded by the fact that over the last 30 years there has been building development in the catchment area which means that land now drains faster into the Foss. The flow coming down the River Foss on 26 December 2015 was far greater than anything recorded.

The flooding on the Foss was an extreme event, equating to a 0.5% probability or a 1 in 200 year probability. The flooding in December 2015 was the worst since 1982 in terms of impact on the city and resulted in the internal flooding of 627 properties (453 residential and 174 commercial). The properties affected were primarily those normally protected by the Foss Barrier although there were a number of properties in unprotected areas which were subject to flooding from the Ouse.

The river levels were only 200mm below the top of the Ouse defences for the second time in four years. The main impact of the December 2015 flooding was in the YO1 (city centre), YO31 (Huntington

¹⁵ Reproduced with the kind permission of the EA.

South, Layerthorpe, The Groves) and YO10 (Fishergate, Fulford, Heslington, Osbaldwick and Tang Hall) areas and these areas accounted for 85-90% of the properties affected by the flooding.

The extreme flows on the River Foss on 26 December caused the severe flooding of properties on Huntington Road. Huntington Road was already flooding during the afternoon of 26 December 2015. There were unconfirmed reports of properties being flooded at 16:30, two hours before the decision was taken to raise the Barrier.

The emergency services coordinated an evacuation effort which commenced on the evening of Boxing Day and worked through the night and into the following day.

During the flooding numerous roads across the city were impassable and this impacted on the ability of medical staff and patients travelling to and from York Hospital.

The BT exchange building at the Stonebow in York was flooded on 27 December 2015 and resulted in the loss of telephone services to approximately 50,000 customers in the city. BT engineers worked around the clock and most services were restored by 21:00 on 28 December 2015. Most of the 50,000 customers affected were back in service within 36 hours.

At 15:00 on 27 December 2015, Northern Power Grid identified flooding at the Melrosegate substation with the potential for power loss to 50,000 homes. Troops who had been moved to the city on the morning of 27 December 2015 were deployed to assist and flooding of the substation was averted.

CYC have produced a timeline of the flood event (See Appendix 4).

Emergency Planning and Emergency Response

With respect to the emergency response, the Inquiry reviewed:

1. any warnings given to householders and businesses of the likelihood of their premises being flooded;
2. any arrangements for supporting vulnerable residents;
3. the effectiveness of existing plans;
4. the effectiveness of mutual aid arrangements.

In order to be able to evaluate that emergency response the Inquiry considered the emergency arrangements that were in place for York.

Underpinning all local authority emergency planning is the Civil Contingencies Act 2004 which is the main piece of legislation governing emergency planning, including flooding. It formalises the duties of local authorities, the emergency services and other organisations. To be able to evaluate the emergency response, the Inquiry has considered the obligations that the Civil Contingencies Act places on those organisations that took part in response to the Boxing Day Floods.

Civil Contingencies Act 2004

The definition of an emergency in the Act focuses on the consequences of emergencies. It defines an emergency as:

- an event or situation which threatens serious damage to human welfare;
- an event or situation which threatens serious damage to the environment; or
- war, or terrorism, which threatens serious damage to security.

Part 1 of the Civil Contingencies Act has established a framework for civil protection at local level which outlines a clear set of roles and responsibilities for local responders. This is the primary focus of the Act. The Civil Contingencies Act divides local responders into two categories, Category 1 and Category 2 responders.

Category 1 responders are those organisations which are central to the emergency response .

Category 1 responders are required to:

- assess the risk of emergencies occurring and use this to inform contingency planning;
- put in place emergency plans;
- put in place Business Continuity Management arrangements;
- put in place arrangements to make information available to the public about civil protection matters and maintain arrangements to warn, inform and advise the public in the event of an emergency;
- share information with other local responders to enhance co-ordination;
- co-operate with other local responders to enhance co-ordination and efficiency;
- provide advice and assistance to businesses and voluntary organisations about business continuity management.

Category 2 responders such as utility companies are "co-operating bodies" who will be heavily involved in incidents that affect their sector and consequently have a lesser set of duties (see Appendix 5 for a full list of Responders).

Local Emergency Planning

Given the emphasis placed on Local Emergency Planning by Parliament, it is important for the Inquiry to set out York's Local Emergency Planning arrangements.

At a local level, the emergency planning is the responsibility of CYC. This is assisted by the North Yorkshire Local Resilience Forum (NYLRF). The NYLRF is a partnership of local agencies working together to prepare for, respond to and recover from potential major incidents and emergencies via the duties stated in the Civil Contingencies Act 2004. NYLRF has provided overarching guidance called "*Response to Major and Critical Incidents*", which is updated and provided to all the agencies within the partnership and is aimed at ensuring a consistent approach to any emergency that might occur across York and North Yorkshire.

CYC, as the LLFA, has its own emergency planning unit. CYC hold 2 flood plans, the first is the River Flood Emergency Plan which is CYC's plan of action in response to rising river levels. This is often referred to as the Internal Plan. The second document is the Flood Defence Emergency Response Plan or the multi-agency Plan. Each of these plans is reviewed by CYC every year and after each significant flood.

The multi-agency Flood Defence Emergency Response Plan that was provided to the Inquiry had been updated in October 2015 i.e. it was the plan that was current at the time of the Boxing Day floods. The purpose of the plan is to provide a coordinated response to flooding events and to minimise the effects on the public and key infrastructure.

There are two trigger levels for implementing the two stage multi agency response which are based on the EA's flood warnings and predicted level of flooding. In York, the water depths that are used refer to the water level as recorded by the EA at the Viking Recorder. The Viking Recorder gauge is sited on the opposite bank from the Guildhall and was named after the Viking Hotel (now the Park Inn). **The normal summer level for the River Ouse is 5m AOD.** Alerts occur above this level as follows:

- 9.2 metres (AOD), York Flood Control Group is convened.
The York Flood Group is chaired by CYC and is comprised of representatives from CYC, the Emergency Services, EA and Yorkshire Water;

- 9.6 metres (AOD), Multi Agency Silver Command is convened.
Silver Command is the multi-agency forum, usually chaired by North Yorkshire Police which coordinates the response of all the agencies involved in a flooding event. Silver Command operates on a 24/7 basis and is based at Fulford Road Police Station for the duration of the emergency. As part of the Emergency Plan, CYC have maps showing the flood risk areas and defences in place to protect properties and infrastructure.

The Foss Barrier is identified in the Plan as a strategic asset and four specific risks are identified:

1. electrical/mechanical failure of the pumps;
2. inability to lower the Barrier;
3. Barrier overtopping;
4. flooding of the control building.

The impact of a failure can result in flooding to the Foss catchment area starting with Huntington Road and Foss Islands road areas. The counter measures listed are varied but include; trying to rectify the problem at the Barrier itself, sandbagging, evacuation and issuing a Severe Flood Warning. Despite it forming part of the plan the Inquiry has been told that sandbagging is unlikely to be effective. The Emergency Plan also identifies the critical assets protected by the Barrier. Both the Stonebow

Exchange at Garden Place and the Melrosegate Exchange had been identified as assets that could be at risk of flooding.

Emergency Response

The Inquiry have received written submissions and have consulted with RMAs, emergency responders and organisations that provided front line assistance during the flood.

The flooding in York was only part of a wide-scale series of flood events across the region, such as the Tadcaster Bridge collapse, to which agencies were responding. Organisations were having to work within a very challenging set of circumstances.

The flood in York required a sustained emergency response for several days which placed a considerable strain on resources. Some organisations found the available personnel depleted because the flood occurred on a Bank Holiday over the Christmas period. Furthermore, the organisations had to contend with the breakdown of their communications caused by the failure of critical infrastructure at the Stonebow Exchange. **There was widespread agreement amongst the organisation that the arrangements had, overall worked well.**

What emerges from the submissions we have received is that **York received an unwavering response from responders who worked long hours to provide critical help and assistance to affected people and property. Without reservation, the emergency responders were praised for their dedication and contribution to the flood effort.**

The many organisations involved have been very frank and shared with the Inquiry the areas of learning and good practice that can be captured for future emergency responses and planning. There seemed a willingness to ensure that lessons are learned and that these are embedded into plans for any future emergency response.

Whilst York coped with the flood event, the Inquiry was concerned that the scale of this incident placed a strain on resources and it is unclear whether some organisations had any spare capacity should there have been an escalation of the flooding.

Conclusions:

- *all RMAs and Emergency Responders had emergency plans in place which worked well overall;*
- *agencies are committed to learn from the Boxing Day flood. A multi-agency debrief and CYC's debriefs have both identified a number of improvements to the emergency response which are being implemented.*

Recommendation:

- **RMAs and Emergency Responders should review their emergency and business continuity plans to incorporate the lessons learnt during the Boxing Day flood. This will increase resilience and ensure that they are robust enough to cope with a sustained period of emergency.**

The Inquiry has considered the individual responses from the different risk management authorities and emergency responders. It has been necessary to provide some responses of the different agencies to assess how they worked.

The Environment Agency (EA)

The Inquiry consulted extensively with the EA. The EA is responsible for a strategic overview of all sources of flooding and has a general supervisory duty for flood risk management. The EA is also responsible for working in partnership with the Met Office to run the Flood Forecasting Centre (FFC) which provides warnings of flooding which may affect England and Wales. The EA provides a 24/7 365 day a year Category 1 Responder service during a major incident.

The Inquiry has heard a number of concerns about the EA's actions on Boxing Day and immediately thereafter. Residents in the Foss catchment area expressed frustration that their properties flooded and felt unprepared for this.¹⁶ The central issues raised with the Inquiry were whether:

- the decision to lift the Barrier was correct and if there was an alternative course of action;
- more time could have been provided before the Barrier was lifted;
- the decision to lift the Barrier was what caused the flooding;
- there was sufficient consultation with other agencies before the decision to was taken to lift the Barrier;
- the pumps failed;
- a lack of maintenance contributed to the Barrier "failing";
- sufficient warnings were provided;
- the warnings could be understood.

Given this very significant weight of public concern regarding the performance and operation of the Foss Barrier, the Inquiry considered both in detail.

¹⁶Huntington Road has always been identified by the EA as being in Flood Zone 2/3 with the benefit of protection from the Foss Barrier.

As part of the Inquiry process the panel have visited the Foss Barrier to:

- understand how it operated;
- understand what the root cause of the problems were on Boxing Day;
- assess whether the decision to raise it was the appropriate course of action;
- see and understand the upgrades that are taking place at the Barrier.

The Foss Barrier

The core principle of the Barrier is to protect the Foss from rising river levels on the Ouse and to stop the Ouse from backing up the Foss. This is achieved by closing the Foss Barrier to prevent the water from the Ouse backing up the Foss. The pump is switched on with the capacity to take water out of the Foss and pump it into the Ouse, beyond the Barrier. The Barrier can control the rate of flow by adjusting the number of pumps in use (there are 8 at full capacity). This keeps water levels in the Foss manageable and ensures that the river stays within its banks.

Since construction in 1987, the Foss Barrier has protected the city areas along the Foss many times including the severe floods of 2000, 2007 and 2012. The flood protection of York along the Foss is dependent on the operation of the Foss Barrier. In November 2000, when York was threatened with flooding, the pumps on the Foss Barrier had failed to operate for 3-4 hours due to a power failure and as a result the water levels in the River Foss increased rapidly. Flooding in the River Foss catchment was only narrowly avoided.

The Foss Barrier pumps were refurbished following the 2000 flood to improve reliability. A significant amount of work has also been undertaken since 2000 to improve the resilience of the power supply and the facility.

The Foss Barrier facility includes a service tunnel which is designed to carry cables, drainage pipes and other services from within the building to the Barrier structure and to the drainage chambers on the outside of the building. There is a small recess in the floor of the service tunnel to capture any leakage and carry it to the drainage system.

The building, the discharge culvert and the Barrier structure are all supported by piles. The service tunnel between the building and the Barrier is founded on made ground and has therefore always

been susceptible to differential settlement. In the autumn 2000 floods there was leakage identified entering the service tunnel due to the differential settlement which had caused damage to the construction joints in the service tunnel and allowed water to enter the tunnel via these joints. The leakage was managed with small temporary pumps and the joints were resealed after the 2000 floods.

Repairs to the construction joints were also undertaken following the flooding events in 2007 and 2012. **Two investigations were undertaken in 2011 and 2013 and the findings of these investigations were incorporated into the EA Project Appraisal Report of September 2015, i.e. in the autumn before the 2015 Boxing Day flood.** This report included works to deal with settlement and leakage issues and they were planned to be undertaken during 2016.

On occasions, the rate of leakage into the service tunnel has exceeded the capacity of the site drainage pumping station and would rise and enter the building at ground floor level through access openings in the floor. In these circumstances, the EA worked around this by drawing this water level down by pumping the excess water from the external chamber. This practice necessitates the removal of a sealed cover and lowering a submersible pump into the interceptor chamber. **This process had worked successfully on all previous occasions.**

The building housing the electrical controls at the Foss Barrier is below the maximum flood level and was therefore designed to be watertight. This design and construction for the electrical controls was not the preferred option for the original scheme but local objections at the time resulted in the lower building height being the only acceptable option. **The Foss Barrier has always been a more critical and complex structure than York's other flood defences. The asset inspections, maintenance and renewal works undertaken by the EA over the years have ensured that the asset has been effective and provided protection to the Foss catchment since 1987.**

Issues were raised with the Inquiry about the adequacy of the maintenance of the Foss Barrier as shown by the EA's maintenance records for the mechanical and electrical equipment for the period 2013 -2015. These records indicated that reliability figures were below the EA's target of 95%. However, the Inquiry understand that the reliability figures are only an indication of the potential difficulty in obtaining spare/replacement parts due to the age of the equipment and are not a measure of the performance of the equipment. Prior to the lifting of the Barrier there was no failing of any electrical or mechanical parts, the pumping station was overwhelmed by sheer volume of water.

Barrier Operation

The Barrier itself is a turnover lift **gate weighing 16.5 tonnes**. It is held horizontally above the river when not in use. This allows boats and barges to pass underneath and enables regular and efficient maintenance.

When the River Ouse is forecast to reach 7.4 metres (AOD), the duty officer for the barrier is alerted. **As soon as the River Ouse reaches 7.8 metres AOD, the barrier is lowered.** The EA run the pumps for a few minutes to clear any rubbish and silt from the riverbed so that the barrier is a watertight fit. The electrically driven barrier is then lowered, which takes about four minutes.

Once the barrier is in place, the flow from the River Foss is transferred around the Barrier and into the Ouse by up to eight pumps. **These pumps are capable of pumping 30 tonnes of water per second (i.e. 30 cubic metres of water per second)** and automatically maintain the water level of the Foss at around 6.5 metres AOD.

When the flood subsides and the level of the Ouse drops to 6.5 metres AOD, the levels on either side are equalised.

Boxing Day flood

The exceptional weather conditions and rainfall in the Foss catchment overnight into Boxing Day 2015 meant that the water flow coming down the River Foss was greater than anything previously recorded. **A hydrological survey carried out after the flood event showed a flow of 40 cubic metres per second which was almost double that seen during the Autumn 2000 floods. The flow of 40 cubic metres per second is more than the design capacity of the Foss Barrier pumping station which is 30 cubic metres per second.**

On the morning of Boxing Day 2015, the Foss Barrier was in the lowered (closed) position and all pumps at the Barrier were operating to pump water from the River Foss into the River Ouse.

At 07:45 on Boxing Day morning, the flow in the River Foss increased and although all eight of the pumps were operating, the water level in the River Foss started to rise.

By noon, the River Foss had reached the same level as the open external access cover from which water was being pumped using the mobile pump. The level of the River Foss continued to rise which increased the flow of the water into the open access chamber thereby increasing the flow into the drainage system.

As a result, the build-up of water in the service tunnel combined with the water flowing through the drainage system filled the service tunnel until it emerged from the floor access points inside the “watertight” pumping station building. Water then started to rise at a faster rate and then entered the electrical control rooms, situated on the ground floor, where the control panels for both the pumps and the Barrier are housed.

At 18:30, the decision was made to raise the barrier. The Inquiry have seen the EA’s control log which shows that at 13:00 the drainage system was beginning to let water in at the barrier and that the temporary pumps were struggling with the inflow.

At 16:51, 5 Flood Warnings were issued for the Foss Basin. At the same time as these warnings were issued, the EA’s website was updated to show that the pumps at the Foss Barrier were struggling to cope with the volume of water.

At 18:00 it was noted that the Foss levels had risen quickly and the pumps were not managing the water levels.

Between 18:00 and 18:15, the EA received reports from the Foss Barrier staff to say that water was entering the Barrier rapidly and was placing the electricity supply at risk. The EA were concerned that if the barrier had been left in the down position and the rising water had cut off the power, there would have been no way of raising the barrier quickly. As soon as the barrier was lifted the electrical supply to the site was isolated and the site made safe.

Raising the barrier gate slowed the rate at which the River Foss rose and provided more time for the multi-agency team to put an evacuation plan in place. Opening the barrier meant that the water levels in the Foss and the Ouse equalised and continued to rise until, in the late evening of 27 December 2015, the levels peaked at 10.2m AOD on the Ouse. Then levels on the Foss and the Ouse fell slowly during 28 December 2015. The barrier was then closed and water levels in the Foss were drained quickly by the pumps and normal water levels in the Foss were achieved at about midday on 29 December 2015. Following the opening of the barrier and the electrical supply to the site being isolated, the EA operational staff and their contractors worked around the clock to get the Foss Barrier working again. A Chinook helicopter was used to lift equipment onto the roof of the pump house

building on 28 December 2015. This equipment enabled the EA to lower the barrier and to restart four of the pumps in the early hours of 29 December 2015. The army also assisted with the installation of a temporary bridge to route electrical cabling across the river on the morning of 30 December. This enabled the EA to restart the remaining four pumps and the Barrier was again fully operational.

The Barrier was out of operation for a period of 58 hours between 26 December and 29 December 2015.

Was the decision to open the barrier the correct decision?

At 40 cubic metres per second, the extreme flows seen on the River Foss on 26 December 2015 were far in excess of the design capacity of the pumps at the Foss Barrier. Reports from the Parish Council representatives at Strensall confirm that the flows in the Foss at Strensall were higher than had ever been seen and some properties flooded for the first time ever.

Since the flood event in December 2015 the computer models¹⁷ (see Appendix 6) for the Ouse and the Foss have been updated using recent recorded data and 5 flooding scenarios have been modelled:

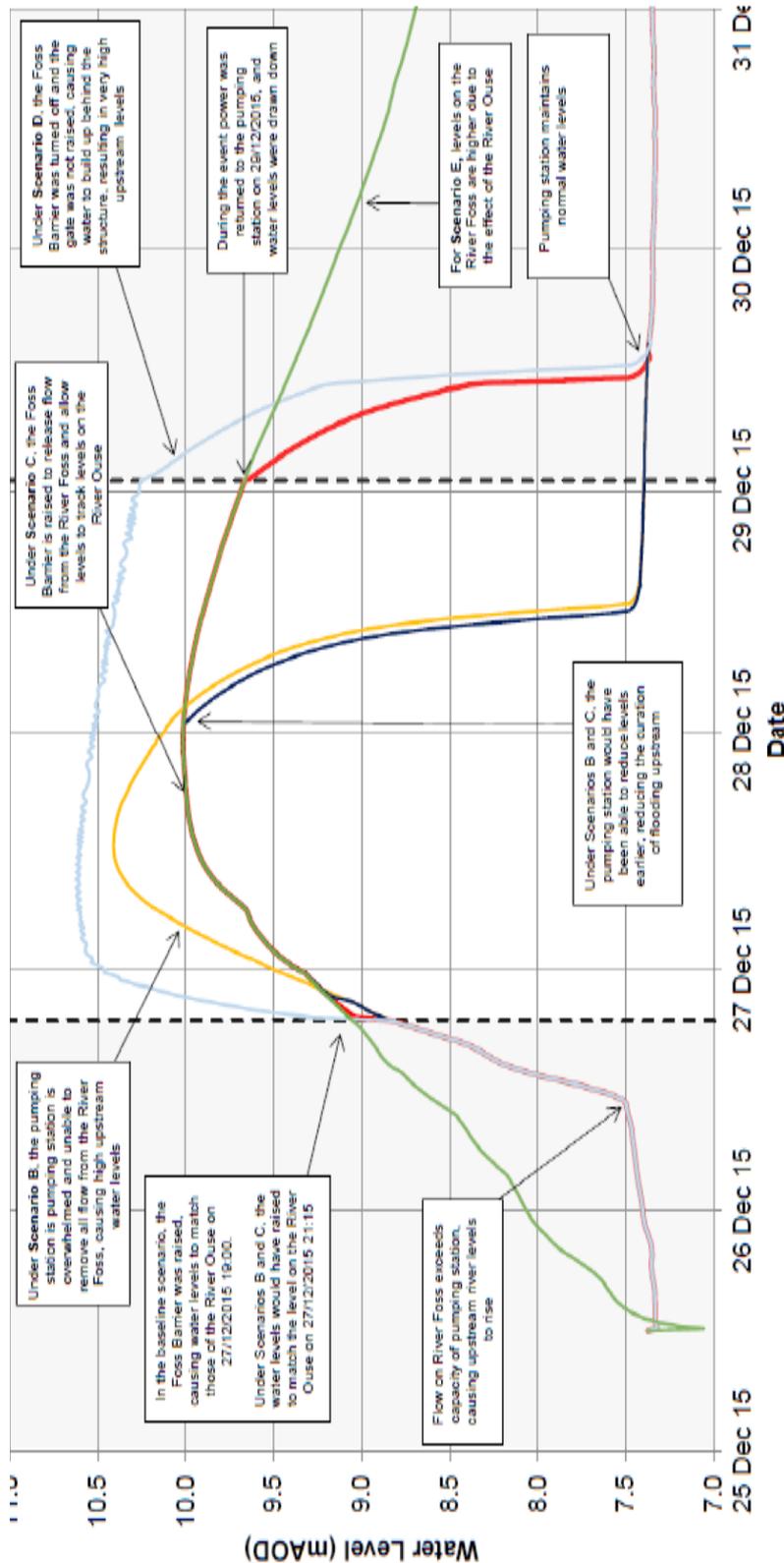
- Scenario A – as it happened i.e. pumps turned off, gate opened and power disconnected;
- Scenario B – power remains on, pumps keep running and the Barrier remained closed;
- Scenario C – power remains on, pumps keep running and the Barrier opened for a shorter period;
- Scenario D – power lost, no pumping and Barrier left closed;
- Scenario E - no Barrier at all (assumes the Barrier and pumping station were never built).

The different outcomes of the modelled scenarios are shown in the table and diagram below¹⁸:

Scenario	Average Duration (hrs)	Total number of flooded properties	Change in Flooded Properties
A	58	692	-
B	47	843	+151
C	49	692	0
D	65	885	+193
E	61	692	0

¹⁷ EA “The Foss Barrier Scenario Modelling” October 2016

¹⁸ The figure for actual properties flooded is different than that provided by CYC which suggest 627.



- - - Period within which Barrier Raised
- Scenario B: Power maintained - Barrier raised
- Scenario C: Power maintained - Barrier closed
- Scenario D: Power disconnected and Barrier left closed
- Scenario E: No Barrier at all
- Scenario A: Modelled Baseline
- Scenario C: Power maintained - Barrier opened
- Scenario E: No Barrier at all

This modelling has shown that if the Barrier had been left closed with power supply lost and no pumping, the flooding would have been deeper by about 600mm. It would have risen to the higher level much faster and the duration of the flood event would have been longer than what occurred.

The higher water levels predicted behind the closed barrier would have resulted in a greater number of properties being flooded. The scenarios show that the peak on the Foss, had the Barrier been closed, would have occurred at about midnight on 26 December 2015 almost 24 hours before the peak level was reached during the actual flood.

Much faster and deeper flooding could have had a catastrophic impact on the city. Based on the information that the EA staff had available to them on 26 December 2015, **the decision to open the Foss Barrier was the correct decision**, albeit a difficult one to make at the time. The EA accepts that the decision to open the Foss Barrier was not taken in conjunction with their multiagency partners. The EA agrees that it is preferable to make these decisions collectively at Silver Command but in this case the time pressure meant that this was not possible.

The Foss does not have the same level of monitoring as the Ouse. Perhaps if the Foss were better monitored and understood the peak flows could have been predicted and this outcome could have been anticipated earlier in the day which would have allowed the emergency plans to be put in operation sooner.

The scenario modelling undertaken also showed that if the Barrier operated as normal i.e. the Barrier closed and all eight of the pumps worked correctly then the level of the Foss would have reached higher levels more quickly with the effect that more properties would have flooded.

Conclusions:

- *on Boxing Day, the EA was dealing with a dynamic situation within the Foss catchment area;*
- *the flooding in the Foss catchment area in December 2015 was caused by the highest flows ever recorded in the River Foss;*
- *these high flows of 40 cubic metres per second were in excess of the capacity of the Foss Barrier pumps rated at 30 cubic metres per second;*
- *severe flooding in the Foss catchment area would have occurred even if the Foss Barrier had been fully operational;*
- *the decision by the EA to open the Barrier on 26 December 2015 prevented more rapid, deeper and more extensive flooding in the Foss Catchment area.*

- *the action taken by the EA in opening the Barrier prevented more properties from flooding than would have occurred had the Barrier remained closed (and potentially saved lives);*
- *with an installed pumping capacity of 30 cubic metres per second and an actual flow rate of 40 cubic metres per second, flooding of the properties normally protected by the barrier was inevitable;*
- *the decision to open the Foss Barrier was the correct decision.*

Recommendations:

- **the EA should further develop its tools and techniques for predicting and modelling river flooding, particularly on the Foss, taking in to account extreme and multiple events.**
- **where possible, the EA should endeavour to discuss decisions such as opening the Foss Barrier, with their multi-agency partners;**
- **the EA should work with its partners to progressively develop and bring into use flood visualisation and mapping tools that are designed to meet the needs of flood-risk managers and emergency responders;**
- **the EA should continue to work with the utility companies (i.e. Category 2 Responders) to improve their understanding of risk and their capacity to make more resilient assets.**

Flood Warnings

Flood warnings were a central theme of the discussions with residents and business owners. The Inquiry heard very mixed responses about the warnings that were received, or lack of them, at the time of the Boxing Day flood. **Some people who were flooded told us that they simply got no warning of what was about to happen.**

The EA operates a flood warning system which has service standards that aim to issue warnings more than two hours ahead of potential river flooding in England – it delivers them to the public through its Floodline Warnings Direct system by a number of different media, in a range of languages. Warnings are also issued to the emergency responder community and to the broadcast media.

For each type of flood warning (Flood Alert, Flood Warning, Severe Flood Warning), the EA has a predetermined activation threshold, based for example on rainfall levels over a catchment area.

On Boxing Day 2015, the following warnings were sent out by the EA:

- 1) 07:07 hrs - a Flood Alert (meaning flooding is possible, be prepared) for the River Foss was issued;
- 2) 10:41 hrs - a Flood Warning (meaning flooding is expected, take immediate action) was issued for Huntington Road and Foss Islands;
- 3) 16:51 hrs - 5 further Flood Warnings were issued to cover the whole of the area impacted by the River Foss. These informed that the pumps on the River Foss were struggling to cope with the volume of water;
- 4) 18:45 hrs - the decision was made to issue 6 Severe Flood Warnings (meaning severe flooding and danger to life);
- 5) 19:05 hrs - the 6 Severe Flood Warnings for the area impacted by the River Foss were issued and included text emphasising that the Barrier had been lifted and no longer provided protection to properties and there was a potential risk to life.

The EA told the Inquiry that **on Boxing Day 2015, 2,058 public and business customers located in the affected Flood Warning and Alert areas were signed up to receive Flood Alerts and 1,785 were signed up to receive Flood Warnings (messages are sent in various formats e.g. phone, text, email).** Warnings were also sent to professional partners and customers located outside of flood warning areas who had signed up to receive messages about a particular location, such as their workplace or their child's school.

In the days immediately following the flood there was an increase in the number of people signed up for the warnings. The current figures show that 3,064 people are signed up for Flood Alerts and 2,552 for Flood Warnings, as against the 7,200 properties estimated to be at risk from flooding in an extreme storm event. **Given the number of people that are potentially at risk of a flood it would not be feasible for any emergency flood plan to incorporate door to door calls as the standard method of warning those people at risk. That is why the EA warning system is so critical.**

BBC Radio York was also present in the Silver Command room throughout the event and broadcast warnings and information regarding evacuation at frequent intervals.

What is clear from the figures that we received from the EA and from the questionnaire responses is that not all residents at risk were signed up to the Flood Warning system nor did all those signed up for the warnings understand what they meant.

One anomaly of the current warning system is that when a Severe Warning is downgraded, the system sends out another Flood Warning. Therefore, it can appear to those receiving the warning that the situation is worsening not improving. CYC have told us that this caused some concern on Huntington Road in the days after the peak of the flooding.

It is clear from conversations with residents that the public's expectations of what warnings would be received were markedly different from the level of warning that was built into the emergency plans. Many residents expected a personal visit from either CYC or another agency to notify them of the need to evacuate. The Inquiry can understand this expectation, especially in properties that lie within the Foss catchment as this was the first time they had received a Severe Flood Warning since the Foss Barrier had been installed. However, given the number of properties potentially at risk on 25 December 2015, it was not possible for any organisation to visit every individual property at risk to warn them of the potential flood. However, the Inquiry still thinks that steps should be taken to warn residents, including, visiting properties at risk, to supplement the EA's warning system.

Previous experience appears in some cases, to have created a false sense of security about the severity of the situation.

The Inquiry has heard about different methods of flood warnings used in other areas of the UK and abroad. Quick reacting catchments, such as Calderdale in West Yorkshire, have used sirens to warn the public. It would seem appropriate to consider the use of a sirens or a loud hailer along the urban part of the Foss and Ouse catchment to warn those at risk. There are obviously education and management issues surrounding their use but they potentially offer a method by which large numbers of residents can quickly be alerted to potential danger.

The Inquiry has heard many suggestions for changes to the flood warning system. Residents suggested using a traffic light system. The EA used this method in the mid-1990's to raise public awareness of flooding. However, it was not effective as people would not act until the red warning was issued even though they could be at risk with an amber warning. This was replaced by the system that is now in use.

The EA told the Inquiry that they introduced a new warning dissemination tool for winter 2016. The new tool is intended to improve the speed of issuing warnings and give greater capacity to adopt

future enhancements. For example, providing multi-media dissemination and on-line registration for warnings.

The actual warnings will not be changed as the current system has been developed using market research and evidence from the experience of the public and the EA's partner organisations. The EA can make local adjustments to the warning service and following December 2015, they have implemented some boundary changes to flood warning areas to more accurately represent the local fluvial flood risk.

The EA have used the data obtained during the Boxing Day flood in York to recalibrate their Ouse and Foss models and will conduct a review of the alert and warning system in 2017 using data obtained from the recalibrated Foss and Ouse modelling.

The Inquiry agree that a balance has to be struck with warnings and alerts so that residents have enough time to react to a risk whilst a "boy who cried wolf" situation is avoided and warnings are not perceived to be overused.

Conclusions:

- *Boxing Day 2015 was the first time a Severe Flood Warning had been issued to the Foss catchment area since the Foss Barrier was installed;*
- *on Boxing Day 2015 not all residents who were at risk of flooding in York had signed up to the EA's Targeted Flood Alert or Flood Warning system nor was the system clearly understood by everyone;*
- *the EA have used other Flood Warning systems in the past, the current system has been developed following market research and feedback, the EA have enhanced the current system since Boxing Day and will further review it in 2017.*

Recommendations:

- **EA to consider as part of their ongoing review of Flood Warning measures, loud hailers and/or the installations of sirens along the urban stretch of the Foss catchment, together with a plan for education of the public, annual testing and maintenance;**
- **EA should consider the feasibility of an opt-out telephone flood warning schemes to all homes and businesses liable to flooding, including those with ex-directory numbers;**

- **EA should consider reviewing trigger levels to ensure that the flood warning measures can be issued in a timely manner, to allow residents and businesses the maximum possibility of instigating their own flood resilience measures;**
- **EA to incorporate information about how the Flood Warnings operate in their next educational campaign.**

CYC's Response Overview

CYC has a central role as the Lead Local Flood Authority (LLFA) in delivering local flood risk management in its area and in co-ordinating the activities of the relevant agencies. As well as this general responsibility, the LLFA has specific management functions relating to local flood risk. As well as the emergency planning function that has already been discussed, CYC also played a crucial role in the emergency response as a Category 1 Responder, under the Civil Contingencies Act.

The Inquiry has heard praise for the dedication and commitment of CYC staff during the emergency response. However, we have also heard that some residents felt unsupported; they felt that there was a lack of co-ordination in CYC's response; there was a lack of information about what was going on. Furthermore, some felt that there was an inadequate emergency plan in the event of problems with the Foss Barrier.

There is no doubt that the timing of the flood, a weekend Bank Holiday in the middle of the Christmas holidays, only served to escalate the challenges faced by all agencies in resourcing their response.

CYC were made aware on 24 December that the EA forecasting indicated that the Ouse might rise over the next couple of days to levels of 4.5m to 5m. A decision was taken to step up implement the Internal Flood Plan on Boxing Day morning²⁰. This was done pre-emptively and staff were placed on standby.

On 26 December, the Emergency Planning duty Officer was called at home to inform her of the EA predictions that the Ouse would rise to 4.7m the next day and peak at 5m. From early morning on 26 December CYC continues to progress its flood response, chairing the York Flood Group and Flood Advisory Meetings. CYC also maintained a presence throughout the event at Silver Command.

²⁰ The Flood Plan had been implemented since November and temporary flood defences had been in place throughout December.

The flood saw involvement of staff from virtually every section of the council. As well as the initial emergency response, council staff fulfilled many critical roles to assist people which were not part of the normal day-to-day council business.

In addition to the 12 CYC staff on the Silver Command rota, CYC also contacted every member of the highways team on the night of 26 December. **A 33-strong team of workers** were involved in various activities including filling, distributing and laying sandbags, constructing other defences, pumping floodwater off and closing roads. **3 flood risk engineers worked around the clock** with the assistance of **5 community safety officers**. **68 officers and councillors** were involved in visiting flooded properties in the days immediately following the event.

Council officers were tasked to manage various aspects of the response including:

- providing technical advice and support;
- assisting with the co-ordination of evacuations;
- arranging for the rest centre to be set up;
- donations of equipment and money;
- coordinating offers of accommodation for those displaced;
- assisting vulnerable people access their home care services;
- collating details of volunteers who came to assist.

Council staff also formed 'door-knocking' teams who were sent out to visit affected properties, or those suspected of being affected. The Inquiry was told that properties at risk of flooding were assessed and prioritised. CYC identified the vulnerable households where the occupants might need additional support to evacuate. Adult Services staff worked to cross-reference the properties at risk from flooding with their care records to identify those who were at the greatest risk. Staff from Adult Care were also deployed to the rest centre to support vulnerable residents.

The Inquiry has been told CYC has held various internal debriefs and several issues have been raised by staff. For example staff carrying out new and unfamiliar roles during the incident and having to create procedures on an ad hoc basis.

We were told that the roles staff found themselves doing outside of their day to day work included:

- collating and allocating offers of accommodation from generous members of the public, with all the potential safeguarding issues that it raises;

- managing the coordination of the many and varied donations of clothing, toys, food and cleaning equipment including finding storage locations to identifying and delivering items to those who needed them;
- constant delivery and monitoring of communications to ensure all communities were supported in the aftermath of flooding;
- management and deployment of over 600 volunteers, both groups and individuals from all over the country (once again being mindful of potential safeguarding issues).

The experiences of officers have been captured for inclusion in CYC's Emergency Handbook to provide guidance for the future. The Inquiry would commend this creation of an enhanced guide to work from in future emergencies so that the resourcefulness shown by council officers can be captured and built upon.

In response to a problem with the Foss Barrier, the multi-agency flood plan describes the steps to be taken as "Warn, Inform and Evacuate". Residents in the Foss catchment area that we spoke to were unaware of this plan. **Those present at Silver Command seemed to have a lack, in the initial phase after the Foss Barrier had been lifted, as to what actions had to be taken and who to evacuate first.**

Door-to-door calls were viewed as particularly effective and were welcomed by residents. The Inquiry accepts that no individual organisation would have the resources to implement this but the RMAs together should develop plans for door-knocking, coordinated by CYC, to enhance flood warnings before flooding and to provide information and assess welfare needs once flooding has receded. Furthermore, the multi-agency plan should be enhanced to contain a clear evacuation plan, with where to access sufficient information about vulnerable residents, so that the effort can be coordinated effectively.

After the failure of the BT exchange, with the consequent loss of landline, and internet across the city, there was no electronic communication between Silver Command, Depot Officers and their staff. The Inquiry learned that CYC has discussed the potential for using a radio system in such circumstances and have purchased a number of small radios.

Resourcing is always an issue for any local authority. The Inquiry heard that in 2009, the Emergency Planning Unit at CYC was cut from 3 people to 2 with the removal of an assistant's position. Whilst this role was predominantly administrative, the post holder also gained enough experience and knowledge

to enable them to join the on-call rota. Having only 2 emergency planning officers maintaining a 24/7 duty officer role was onerous on the officers concerned.

The Inquiry is not aware of any plan to reinstate the additional position but the Inquiry have been told of a report which suggests creating a small number of reserve (volunteer) emergency planning officers from other Directorates who, with appropriate training, could supplement the 2 full time officers during an incident. The Inquiry can see how this would be beneficial to strengthen the resilience of the Emergency Planning Department during an emergency and would endorse a trial of this system. This is not the only area in CYC where resources are stretched, the Inquiry is aware that the Flood Risk Manager also has additional Highways responsibilities that take time away from the flood risk role. It is vital that important functions such as flood risk management and emergency planning are provided with the resources they require to fulfil their roles.

Customer Services

CYC has plans in place to cover out of hours customer service provision for all emergencies. At 17:15 on Boxing Day 2015, the Head of Customer and Exchequer Services was made aware of the developing situation and asked to arrange an out of hours service. As it was the holiday period volunteers were requested. Quickly, a 24/7 rota was put together and the out of hours service was operational. At 08:45 on 27 December, calls were being taken on the normal line rather than the out of hours service. There was a very high volume of calls covering the following types of issues:

- requests for sandbags to protect properties at risk of flooding;
- requests for assistance for cars stuck in flood water;
- requests for information about river levels;
- requests for information about the Foss Barrier;
- calls from residents who were on holiday to find out whether their property had been flooded;
- calls from potential visitors to the city to see whether they should travel;
- offers of assistance.

A number of residents complained to us that they had been unable to speak to anybody on CYC's customer service line. This seems to be part of a wider criticism that **residents felt that there was a lack of information coming from CYC**. Therefore, the Inquiry have considered the communications issues more generally later in the Report.

The Inquiry was told that **it was not easy for CYC staff to contact Silver Command to get updates as to what was going on.** Therefore, the staff on the customer service lines found it difficult to answer the queries that were coming in. This improved over time but staff were unable to keep ahead of the information being requested by the public. A Flood Information Sheet was developed and updated to ensure efficient handovers between staff.

A flood inbox was set up for emails so that these could supplement the telephone line but on 28 December, the telephone lines went down. This created enormous difficulties for the customer service team, whose very purpose was to answer telephone calls. In response to the lack of BT service, CYC switched to mobile telephones and began to publicise the numbers. It is important from a business continuity perspective that adequate provisions are in place should communications infrastructure fail.

Residents quickly started a Facebook account to share information about the flood. The Inquiry was told that CYC staff initially responded to Facebook via their personal accounts. Thereafter an official CYC response was provided. Facebook is an incredibly valuable and effective resource, failing to instigate a formal response straight away and reliance on personal accounts meant that the official message can be lost.

When the phone lines were restored, staff went back to CYC's main number. The customer service number operated 24/7 until 31 December. The Inquiry was provided with some statistics about the customer service response:

- calls received 1,031;
- calls answered 957;
- response level 93%.

(There is no data available from when the telephone lines were down.)

Some residents told us that even if they did get through to CYC they did not always get the information that they required. **CYC acknowledge that the staff handling the calls were initially not well briefed on the situation and CYC's actions.**

CYC have identified some improvements that are needed and have already begun to instigate changes. One of the issues CYC noted was that over a prolonged event such as December 2015, **more staff need to be involved in the response and therefore CYC needs a greater body to call upon.** If a 24/7 service is required, then CYC would need to supplement their normal customer service staff with

volunteers from other parts of the council. The Inquiry recommends that CYC has a robust plan to ensure that the helpline operates throughout future events and can cope if the incident is prolonged or communications are compromised. This might mean that the CYC should make reciprocal arrangements with another council or outsource the service to a customer care centre to ensure a resilient service.

Conclusions:

- *during the flood CYC deployed 33 members of the highways team, 12 officers on a rota at Silver Command, 3 flood risk engineers and 5 community safety officers;*
- *68 officers and councillors were involved in visiting flooded properties in the days immediately following the event;*
- *there was a lack of clarity at Silver Command, in the initial phase after the Foss Barrier had been lifted, as to what actions needed to be taken and who had to be evacuated first;*
- *CYC customer service team managed a 93% response rate for phone calls;*
- *CYC conducted debriefs after the flood, identified improvements that are needed and have already begun to instigate changes.*

Recommendations:

- **CYC should do their best to ensure that staff on the customer service line are kept up to date with information, including road closures and contact details to hand out during an emergency. A direct link to Silver Command could be considered;**
- **RMA's should consider developing plans for door-knocking, coordinated by CYC, to enhance flood warnings before flooding and to provide information and assess welfare needs once flooding has receded;**
- **CYC should consider making reciprocal arrangements with another council or outsource the service to a customer care centre to ensure a resilient customer service and provide an appropriate backup communications system;**
- **;**
- **CYC should continue to improve the resilience of the customer care department during an emergency which should consider providing maps and locating them in the same place as the communications team.**

- **RMA's should consider the resilience of their communication systems to ensure that they can cope in the event of critical infrastructure failure. This should include an evaluation of the use of RAYNET (the Radio Amateurs' Emergency Network);**
- **EA and CYC to consider sending letters annually to residents in flood risk areas, reminding them of the flood risk and emergency plans, o encourage them to prepare personal emergency plans, to have flood boxes and remove all important possessions to a safe place;**
- **CYC staff to record their good practice during the flood event so that this can be used as a source of guidance for future emergencies;**
- **RMA's to review and enhance their Emergency Plan so that it contains clear roles and responsibilities for warning and informing and a clear evacuation plan. This should include sufficient information to access the details of vulnerable residents so that the effort can be coordinated effectively;**
- **CYC to review the internal resources required to deliver their role as LLFA. This should include considering the provisions to fulfil their flood risk management role . CYC should trial training reserve emergency planning officers which will offer resilience to the current duty rota.**

Demountable Defences and Sandbags

CYC and EA already deploys temporary/demountable flood defences as part of its flood risk response strategy but these are mainly deployed on the River Ouse frontage. Many residents expressed concern that these type of defence mechanisms were not deployed on the Foss. **Although sandbagging does form part of CYC's plan along the Foss, the extreme conditions meant that this would not have been effective during the Boxing Day event.**

The Panel feel that consideration should be given to providing demountable/temporary defences along the affected length of the River Foss and understand that EA and CYC will consider this in the future where there is a slow onset of flooding.

During the emergency, 13,000 sandbags were deployed by CYC. Sandbagging was being coordinated from the depot at James Street. The depot reported that they had an ample supply of empty sandbags and a filled stock of 2,000 at the start of the event. **Builders' merchants had been very helpful and opened their depots on request when further supplies were required.**

The Inquiry has heard several different perspectives about the success of the sandbagging. Residents were concerned about the fairness of the allocation of sandbagging and people who wanted them were not able to obtain them. Volunteers assisting with filling sandbags at the depot felt that there was a lack structure, that it was difficult to work out who was in charge and some health and safety issues may not have been properly addressed.

Balanced against this we heard praise for the depot team who worked tirelessly for long hours during the acute phase of the emergency. CYC have decided to raise the standing stock of sandbags to 5,000 in future which the Inquiry was pleased to hear.

Conclusions:

- *the CYC team based at the James Street depot worked tirelessly, providing sandbags and assistance during the acute phase of the flood;*
- *1,300 sandbags were deployed by CYC during the flood;*
- *CYC are to raise the standing stock of sandbags from 2,000 to 5,000.*

Recommendations:

- **CYC should investigate the use and deployment of both temporary and demountable barriers along the river Foss and Ouse where appropriate;**
- **CYC should conduct a review of how to involve volunteers in filling sandbags. This should be carried out to ensure that a protocol is in place that has considered health and safety issues;**
- **CYC should give some considerations as to whether a more efficient method can be adopted to communicate the addresses of residents requesting sandbags.**

Communications

A predominant theme through the public meetings was that residents felt there was a lack of information available. Residents said that it was unclear where to get help and advice from. Others complained that CYC's website was not kept up to date.

During an emergency, communication is coordinated by NYLRF and Silver Command. Although CYC still issue their own communications messages and update their own website. However, the presence of new, faster methods of communication and citizen journalists need to be considered. These can create a challenge during a dynamic emergency compared with traditional media. We heard that

social media was an incredibly helpful source of information and filled a gap when there was no official message.

Sometimes this meant that misinformation could take hold because official information was not being provided as to on the situation. Residents felt that there was no back up strategy after the telephone lines went down and people lost their access to the internet. The loss of the telephone exchange and the impact that was felt emphasises the need for all agencies to have a robust business continuity strategy to ensure that should there be a strategic communications failure for any reason a reliable alternative is in place.

All members of Silver Command have their own Communications Teams. CYC have their own Communications Team with a 24/7 emergency rota which was implemented between 26 December and 7 January. The CYC Team is an integral part of Silver Command which means they have access to up to the minute information which can then be communicated during media interviews and briefings, on social media, , as updates on the website and in statements and press releases. To give some idea of the enormity of task that was undertaken the Inquiry was told that:

- **1.2million posts were seen on Twitter;**
- **250,000 people read one Facebook post relating to traffic and travel alone;**
- **CYC received a normal month's worth of media queries in one week.**

Between 26 December and 7 January the CYC Communications Team:

- **sent 264 tweets via @CityofYork;**
- **reached 1.5 million people through Twitter;**
- **reached 437,000 through Facebook;**
- **received 1,314 new followers on Twitter.**

CYC's website was not kept up to date with information. In the absence of official information being provided residents had to turn to Facebook and Twitter in order to get updates about the situation. The Inquiry has been told **Twitter reached over 40,000 people.** CYC have discussed training more staff to edit the website so that this can be kept current during an emergency situation. It is important that official information is kept up to date. More staff should be able to access and inform the Twitter account.

Businesses expressed concern that during a broadcast interview message, a councillor said that York was 'closed for business'. York was never closed for business. This had obvious financial repercussions at a time they could be ill afforded. This emphasises the clear need for a consistent media message.

The Inquiry have seen 18 press releases that were issued during December and January and 8 different newsletters which were distributed to affected residents and businesses. This included a specific newsletter for flood affected tenants, Travellers which also outlined the financial support that was available. The work didn't stop in January.

The Inquiry have also seen CYC's action plan for November 2016 to coincide with the EA's own publicity campaign to raise flood awareness and provide information for people who might be anxious about the winter weather conditions.

Conclusions:

- *communication was challenging particularly when the BT exchange went down;*
- *social media was an essential source of information for residents and RMA's were slow to engage officially with social media;*
- *in an emergency, there needs to be a coordinated Silver Command response so that residents can be better informed as to what is going on.*

Recommendations:

- **NYLRF, CYC and EA should consider reviewing their communication strategy to embed further system and protocols to engage with social media;**
- **RMAs should ensure that they have a robust business continuity strategy so that in the event of a strategic communications failure for any reason a reliable alternative is in place;**
- **RMAs should ensure that media briefings are coordinated to avoid conflicting messages.**

Councillors

The Inquiry extended an offer to all councillors to meet with them and discuss the impact of the Flood on their ward and the concerns of their residents. **The majority of councillors in the affected wards took up this offer** and we have heard about the effects of the flood on residents as have been reported to their elected representatives.

One recurrent theme was that formal communication to councillors was minimal and councillors had to find out about the extent of the flooding from different online sources. It appears that there was a good network of communication between councillors and particularly between those in the same ward. Many residents who were afraid that their properties may be at risk of flooding (i.e. the Foss catchment area) contacted their representatives for assistance. Although information was being given to councillors on 27 December 2015, there was no indication as to who they should be offering support to or what kind of support would be of most use.

Some councillors answered the call for volunteers to assist with sandbagging as they were unsure how their efforts could be best used. Councillors were undertaking a variety of roles, including touring their wards, visiting the rest centre, providing refreshments to volunteers and many were responding to residents' enquiries. The Inquiry has been told that some even attended Silver Command. Alongside this, some councillors were using social media to pass on information to inform their wards. Other councillors spoke directly to the media. **There was not always a consistent message from CYC as an entity. Radio York recorded an interview with a councillor saying "York was closed for business".**

Councillors expressed concerns to us that perhaps certain areas had not received the same focus of the effort as other areas for example, Tang Hall, Navigation Road and James Street. After the acute phase of the flood it seems that councillors felt they had more information to assist residents with assistance regarding insurance claims, how to clean their properties and the relevant public meetings. Some wards held specific surgeries to focus on providing assistance for those affected by the flood.

One area of concern was that councillors were willing and able to assist during the Flood but lacked clarity as to how their efforts could have been best employed during the crisis. The Inquiry is not aware of any councillor being given training or guidance as to what to do during an emergency in York. The Inquiry understands that some training has been provided by CYC but the take up was very limited.

The Inquiry is aware that following the flood in 2000, CYC set up a Flood Scrutiny Panel to look at the multiagency response. The Flood Scrutiny Panel in 2004 recommended that Flood Procedure Awareness training be provided for councillors particularly to those in wards that are impacted by flooding.

Councillors have made the following comments to the Inquiry:

- *“No one contacted me or gave me up to date information which is chaotic.”*
- *“I spoke to the people, they were quite elderly and frail I introduced myself and they were happy because they thought I would sort it out for them.”*
- *“I don’t know what the emergency plan is.”*
- *“I am a first-time councillor...there was no induction to the emergency plan.”*

Whilst councillors may not have an official statutory role as part of an emergency response, it is clear that they are looked to for leadership by the community and have a vital role to play in facilitating communication and assistance to their constituents.

Conclusions:

- *councillors are ready, willing and able to assist during emergencies but lack clarity about how they could be best deployed;*
- *residents look to councillors to provide leadership during an emergency.*

Recommendations:

- **flood/Emergency Procedure Awareness training should be considered/repeated for councillors and councillors should commit to attend the training;**
- **a short guidance document should be produced for councillors so that they have reference material to assist with what to do in an emergency;**
- **information should be given or made available for councillors to access during an emergency so that a consistent message can be communicated to residents.**

[James Street](#)

Unfortunately the Inquiry did not hear any evidence from the residents of James Street. However, we did hear from Christine Shepherd of the Travellers Trust. The Inquiry spoke to councillors and CYC’s Flood Risk and Asset Manager about the site.

The Traveller site at James Street is located in Flood Zone 3. The EA estimate that Zone 3 has a 1 in 100 chance (1% chance or less) of flooding each year without considering the presence of any defences.

CYC's Strategic Risk Assessment from March 2013 addresses James Street and is clear that the EA mapping study of 2004 showed that the *"greatest risk of flooding from the River Foss is as a direct result of the capacity of the pumps at the Foss Barrier being exceeded and Tang Hall Beck overflowing at James Street Link Road, adjacent to the Travellers' site."*²¹ The site has been subject to historic flooding from the culvert which runs from the River Foss into Tang Hall Beck and is one of the lower parts of the Foss catchment. The site had been protected by the Foss Barrier and defended by a boundary wall to provide additional protection against heightened water levels in the Foss and its tributaries.

The Inquiry is aware that some families were able to move their caravans from the site but the majority of families were unable to get their caravans off the site. Those caravans that had been moved had no place to park and the residents had to rely on the good will of others to use their facilities. After Boxing Day there was a delay in transporting the caravans that had left James Street to a stable longer term location. Like all those displaced by the flood this caused distress.

On Boxing Day itself, CYC officers visited the site and deployed sandbags but these were insufficient, to protect against the record flows on the Foss. CYC offered temporary alternative accommodation for displaced families but some of these were brick and mortar properties which Travellers did not always regard as suitable.

The Inquiry was told that many volunteers responded to an appeal from the Travellers Trust for help and **by 12:00 hours on the 27 December 2015, the Travellers Trust received so many donated goods that they were unable to accept any more.** Local supermarkets and businesses provided food and cleaning materials and Travellers from around the country volunteered support.

CYC have carried out rectification work at the James Street Travellers site with the amenity blocks having the same, intensive drying treatments as other council properties and refurbishment works were carried out where needed.

Following the flood, a site investigation was carried out which identified that the flooding had damaged the internal surface water pumping system. This has now been replaced.

The residents of James Street struggle to get insurance for their homes. The Inquiry does not know whether this position has been improved by Flood Re. Those caravans and chalets that were not able to get off site (save for one) needed to be replaced. CYC worked with the Travellers Trust to source

²¹ CYC Strategic Flood Risk Assessment March 2013 para 3.9.2

grants to replace flood-damaged essentials and mobile homes. Two Ridings Community Foundation provided the funding for the chalets and caravans to be repaired.

Work to protect the site remains on going and a meeting took place as recently as November 2016 between CYC and the Travellers Trust to consider whether there are further opportunities to increase resilience at the site.

Conclusions:

- *James Street Travellers' Site was badly affected by the flood;*
- *insurance is not available for the site but funding was provided by the Two Ridings Community Foundation for the chalets and caravans to be replaced but the properties are vulnerable should another flood occur;*
- *CYC has completed refurbishment and rectification work at the site.*

Recommendations:

- **CYC and the Travellers' Trust should give consideration as to whether a specific evacuation plan is needed for the site, if so this should be shared with residents;**
- **CYC should consider whether the site could be made more resilient to flooding which includes looking at flood alleviation measures to see if greater protection can be provided;**
- **efforts should be made to see whether insurance can be secured, via Flood Re, by residents of the James Street site.**

North Yorkshire Police (NYP)

NYP provided an open and reflective account of NYP's involvement in the December flood to the Inquiry. We have been impressed with the critical reflection that NYP have already brought to their own analysis of their response. **NYP have identified several areas of learning which they can improve and incorporate into their response to future incidents.**

NYP named their response to the incident 'Operation Tanner', which encompassed the entirety of North Yorkshire and was not limited to the floods in York, there were over 80 incidents of flooding elsewhere in North Yorkshire.

We have been told that as early as 08:00 on 26 December, the police were notified of significant flooding occurring across North Yorkshire which was causing severe disruptions with the closures of 80 or more roads. Flooding continued over the course of the morning and by 11:00, a Flood Advisory Group meeting had been convened.

By 12:00 Silver Command had been called due to the increasing flooding across the county. This included concerns about Tadcaster Bridge and the forecasts for the Ouse. The TCG met at Fulford Road Police Station.

NYP acknowledge the limitations the Police Control Room at Fulford Road had when trying to accommodate the number of people required for a large multi-agency response. This complaint has been echoed by many of the other agencies who were present. It should be noted that **the evidence we have received does not suggest that the facilities available resulted in any impairment in the response.** It did mean that when faced with a challenging situation, the Silver Command members and those briefing them also had to contend with the limitations in space and IT facilities available. It meant that stakeholders were working in cramped conditions with little space to spread out maps or access their own laptop. The Inquiry has heard that NYLRF are attempting to identify a more suitable location. It has also been suggested to us that CYC West Offices be used. The Inquiry think that it is vital that those people who are having to work long hours in stressful circumstances should have facilities which enhance rather than impede their efforts.

At 15:00, Silver Command met and was chaired by the Police Silver Commander. Due to the widespread nature of the issues that were affecting the region, some agencies joined the meeting by teleconference because their presence was required elsewhere. Due to the extreme pressures caused by numerous incidents of flooding across the county, some of the larger agencies (including NYP) have recognised that a number of tactical and strategic officers struggled to meet their own organisational needs as well as attend multiple and frequent Co-ordination Group Meetings. No obvious solution was presented to the Inquiry, other than to recognise that some staff were needed more urgently in places other than Fulford Road and to accommodate this with teleconferencing facilities.

NYP have told us that there was a lack of specifically trained officers available therefore **the administrative support provided to the Gold and Silver Command was initially provided by police officers who had not had undergone special training for these incidents.** This was because the incident occurred on Boxing Day so the organisation had a reduced number of staff at work. **Where**

possible NYP would usually use specifically trained police staff. NYP have indicated that trained staff would better support the documentation preparation, minute taking and action recording. As this was a dynamic situation it meant that by 15:00 Silver Command did not have a formal agenda, minutes or action log so there was no formal review of aims and objectives. Again, this did not have any impact on the service that was provided by the organisations but it did mean that staff were having to react to a fast-moving situation and also had to prepare their own notes and documentation. It would be beneficial if those people making tactical decisions were able to focus entirely on the job.

At 18:35, CYC notified Silver Command that the Foss Barrier needed to be raised before it failed. The estimates at the time were that it could potentially flood 2,500 properties²². When the EA took the decision to raise the barrier, Silver Command had to agree what action was then to be taken. Silver Command were not consulted about the decision to lift the barrier. At 19.00 NYP were directly told by the EA that the barrier was being lifted there and then.

At the time that the Foss Barrier was being lifted, Silver Command did not have maps of the flood zones or clarity as to who might need evacuating. Detailed mapping was provided by the EA later that evening. The reality that Silver Command were faced with was that substantial areas of York were being flooded and residents and businesses required immediate evacuation. The first 24 hours of the rescue effort were particularly challenging because Silver Command did not have a clear idea of the locations that required evacuation and sandbagging whilst trying to coordinate their efforts to save lives and protect property. They would have benefited from more enhanced maps of projected flood inundation than were contained in the Emergency Plan.

In extremely challenging circumstances, the agencies including NYP, military and voluntary groups worked tirelessly to achieve their central aim of saving life and reducing harm to people. From the evidence the Inquiry has heard, there is a strong sense that after the Foss Barrier was raised, the agencies were frustrated at having to respond reactively to the unfolding situation. **The decision to lift the barrier was made by the EA alone without consultation from other stakeholders.** However, the stakeholders also feel that the EA made the best decision they could with the information available to them. The assessment they made did not include any discussion with the multi-agency group which would have allowed them to consider the impact on vulnerable residents, critical infrastructure and facilities that may have been affected by the decision. **NYP and CYC are not alone in thinking that it**

²² The EA told the Inquiry that 2,200 homes were at risk. There was a slight variance in the figures we received from a number of organisations. The initial concerns were a worst-cases scenario and this has been subsequently refined with the modelling.

would have been better practice for the Agencies involved to share their situational awareness. This shared situational awareness could have informed a joint decision.

This was an unprecedented set of circumstances and a decision had to be taken very quickly. At this stage there was no time to consult. But the Inquiry is surprised that at some earlier period the EA did not discuss with Silver Command the possibility of the Foss Barrier being unable to cope and the Barrier having to be raised.

The Inquiry clarified with NYP the reports of looting during the flood. NYP confirmed that there had been 6 burglaries in one night, committed by one person who had been arrested, convicted and sentenced.

Since the flood, training has been carried out with the members of Silver Command to test the response to a flooding event based on fictitious mapping.

Conclusions:

- *Fulford Road Police Station has limitations and is not suitable as a venue for Silver Command;*
- *the EA took the decision to lift the Foss Barrier alone, which was a time-sensitive decision at a stage when there was no time to consult with Silver Command;*
- *best practice is for the Agencies involved to share their situational awareness to inform a joint decision making process when problems arise;*
- *maps taken to Silver Command were insufficient to formulate an evacuation plan.*

Recommendations:

- **the Inquiry agrees with NYP, CYC and NYLRF proposal that a different venue needs identifying for Silver Command to use in any future flood incidents. This should mean that those people working hard to respond to an emergency on our behalf can do so in an environment that facilitates them in carrying out their role;**
- **if a problem arises with an asset, including the Foss Barrier or other flood protection measure, partner agencies should be consulted, where the situation allows, and/or notified, before a decision is taken by the asset owner that would impact on the emergency response;**
- **trigger levels should be reviewed in the multi-agency flood plan to ensure that they allow sufficient time for consultation;**

- maps of York identifying the potential flood zones and predicted inundation, along with information about vulnerable residents should be made available to Silver Command, as soon as it convenes;
- with the flood risk details known, an in-depth Evacuation plan should be developed as part of the multi-agency plan. Flood risk and information about residents should be incorporated;
- agencies should consider as to whether relevant flood visualisation data, held in electronic map format, can be made available online to Gold and Silver Commands;
- NYLRF to continue to provide training including simulations of emergency situations and the Emergency Responders should endeavour to participate in such exercises.

North Yorkshire Fire and Rescue (NYFR)

The Inquiry received a submission from NYFR which covers a geographical area including both the city of York and the County of North Yorkshire. NYFR told the Inquiry that they have gathered a lot of learning and knowledge from the significant number of flooding incidents that occurred across the city and county.

NYFR has 38 fire stations with 46 standard fire engines and 21 specialist response units. All the firefighters in the region have been trained to work safely in or near water. Each standard fire engine is equipped with a built-in pump with a capability of pumping approximately 2,000 litres per minute and a portable pump which can be carried to remote locations with a capability of pumping 1,000 litres per minute. We have been told that these pumps are normally adequate to deal effectively with domestic flooding.

The service also has two High Volume Pumps with a capacity of 7,000 litres per minute which were deployed to York.

NYFR have helpfully put this into context for us: at the time when the Foss Barrier was working, it had the capacity to pump 1,800,000 litres of water per minute (i.e. 30 cubic metres per second).

During Storm Eva, which had a more direct impact on York and North Yorkshire, **between 25 December 2015 and 1 January 2016, NYFR responded to 535 emergency calls.** Of these call outs, **292 were directly related to flooding incidents** predominantly around the York and Selby area. This also included the bridge collapse at Tadcaster. These statistics put into context for the Inquiry the challenges that emergency responders were facing with the rescue effort in York.

NYFR had an exceptionally high level of operational activity so increased numbers of commanders were required to ensure that the integrity of command structure was maintained. NYFR instigated a recall of managers who were off duty.

As well as responding to the flooding event, NYFR also had to ensure it had the capacity to provide its “business as usual” response to the non-flood related emergencies.

NYFR has told the Inquiry that during this time they responded to (amongst other incidents) **23 fires and 8 road traffic collisions**. NYFR also took part in Silver Command meetings. As well as responding to emergency call outs, NYFR assisted with warning, informing and evacuating residents during 26 and 27 December alongside the Mountain Rescue Teams.

During the period 5 specialist water rescue teams were deployed and were working to near full capacity. Due to the high level of assistance required and the news of Storm Frank which was expected later in the week, NYFR requested mutual aid from the Fire and Rescue Service National Co-ordination Centre.

This comprised approximately 130 additional firefighters, 10 water rescue teams, 3 additional High Volume Pumps and a Logistical Support Unit. The Service also set up a Strategic Holding area at Strensall Barracks.

As the impact of Storm Frank was not as severe as initially anticipated, these resources did not need to be fully utilised. However, they provided an additional level of resilience for York which allowed NYFR to use its local resources to attend non-flood related emergencies across the region. Responders could use their local knowledge to navigate a city which still had areas that were cut off.

NYFR were required to carry out many roles during the flood.

These included:

- carrying out welfare checks at individual properties along streets that had been completely flooded;
- evacuating residents who were flooded or stranded by the flood water;
- deploying High Volume Pumps to pump out key infrastructure including the BT site at the Stonebow;

- retrieving cabling from the flooded basement of the Foss Barrier so that the power could be reconnected to the pumps;
- transportation of patients that needed immediate medical care or hospital treatment through flood water;
- assisting with the delivery of medicines to residents whose properties had become landlocked;
- transportation of health workers to deliver essential medical support to residents whose properties had become landlocked.

The events of December 2015 had been one of the largest deployments of water rescue and pumping assets across the UK. It was challenging logistically due to the accommodation and welfare support which was needed for such a large number of personnel at short notice at a busy time of year. **The arrangements put in place by NYFR for this incident have now been identified as good practice and are the basis of a working model for all future deployments of resources across the country.** The Inquiry were impressed with the logistical planning and manner in which NYFR were able to work in such challenging circumstances.

Conclusions:

- *the Boxing Day floods meant that NYFR were working to almost full capacity over the period;*
- *NYFR successfully carried out a wide range of operations during a logistically challenging time;*
- *mutual aid was made available from the National Co-ordination Centre to increase York's resilience.*

Recommendations:

- **NYFR to formalise the arrangements adopted because of the Boxing Day floods as a model for future emergency deployments;**
- **NYFR to consider a review of the coordination of a multi-agency flood rescue to establish a clear command structure and protocol to incorporate the volunteer services.**

Scarborough and Ryedale Mountain Rescue Team (SRMRT)

Many Mountain Rescue teams answered the call to assist with the flooding in York. SRMRT were the host mountain rescue team and took the lead role. At 20:00 on Boxing Day 2015, SRMRT tactical advisors attended Silver Command and at 21:00 the decision was taken to call the team in to undertake evacuations of residential areas of York.

Due to the fact that the weather forecast predicted continuation of flooding in areas such as Cumbria, the Pennines and western parts of the Yorkshire Dales, many Mountain Rescue teams were already in a heightened state of readiness, SRMRT included.

When SRMRT were required, a full team call out was initiated which meant that they were fully committed and as a result, they had no back up officers. SRMRT were based at Bronze Command, established at Archbishop Holgate's School.

As other Mountain Rescue teams arrived in York to offer assistance, the Inquiry were told that they were naturally drawn to the SRMRT control vehicle rather than to the co-ordination points which provided a level of distraction as teams had to be routed to the correct locations. Tasks were undertaken very quickly, but SRMRT have decided that in the future they will prioritise tasks using a traffic light system on a canvas task organiser which appears to be an efficient model.

Many of the properties that needed to be evacuated were along the northern section of Huntington Road. As flooding developed and the city centre roads closed, access to that area became increasingly difficult. The location of Bronze Command, at the rest centre, was not convenient for this activity given the road closures. SRMRT also felt that it would be more appropriate if Bronze Command was located away from the rest centre.

Many Mountain Rescue teams responded from around the country which was very impressive. Even teams who had already been dealing with flooding in their local areas arrived to assist York within hours of the request being sent.

There was the risk that the Ouse may overtop its flood defence which would have exerted extreme pressure on emergency responders. All the Mountain Rescue teams had been deployed for more than 12 hours and there was no spare capacity to deal with any escalation of flooding had the Ouse overtopped.

SRMRT are aware of how fortunate this was and have recommended that in future incidents, the arrival of different Mountain Rescue teams is staggered.

This means that there are fresh personnel who can continue to work whilst earlier arrivals can rest having been deployed for the maximum safe amount of time.

SRMRT also had the same communications difficulties as the other organisations when the landlines and internet went down. The police airwave network and mobile phone network also became overloaded. SRMRT found that the VHF radios that were held by the Mountain Rescue service were unsuitable for winter area operations. They are going to consider what communications back up they can use in the future.

A number of other organisations assisted in the evacuation of residents during the incident. These included St John's Ambulance, Yorkshire 4x4 Response and Watersafe UK Search and Rescue Team. **There was however no clear structure as to who was responsible for the deployment or allocation of volunteer staff.**

The response lacked a cohesive approach. For example, Mountain Rescue were using boats to rescue people from their properties but initially there was no coordinated response to transport residents from where they disembarked to a point of safety. This gap was met by Yorkshire 4x4 who stepped in to provide the missing link in the chain.

Therefore, SRMRT suggest a capability audit is carried out so that everybody is aware of each other's availability and capacity for future emergencies and so that a clear command structure can be agreed.

This was the first time in recent years that SRMRT had been the lead Mountain Rescue team which means that their equipment was extensively deployed and tested. SRMRT have themselves identified a number of requirements for additional equipment. They have also identified that once it is clear that the incident will turn into a multi-day event, a shift pattern needs to be introduced so that there are suitable rest breaks to ensure the welfare of their volunteers. To the Inquiry, this seems to be a vital precaution to ensure the safety of everyone involved.

SRMRT have told the Inquiry that they did not have access to detailed flood zone or flood warning maps. Neither were they signed up for the EA flood warning throughout the entire area, both of which

they think would have been of benefit to them. SRMRT feel they could have benefited from having some input into the emergency planning process.

It would seem vital that SRMRT should have had clear maps identifying the areas that were at risk, whether this is in hard copy format or electronic.

It is perhaps more understandable that SRMRT were not signed up to every flood warning across North Yorkshire but we can appreciate why they would wish to have increased awareness. As the Inquiry have identified, a detailed evacuation plan was missing from the emergency plans that York had in place and it seems critical that the Mountain Rescue service provide their expertise to such a plan.

Conclusions:

- the Mountain Rescue Service were deployed to full capacity and provided a tireless evacuation service for York residents;
- the evacuation effort was assisted by other voluntary organisations which included St John's Ambulance, Yorkshire 4x4 Response and Watersafe UK Search and Rescue Team;
- overall teams from various organisations worked well during the evacuation however this could have been enhanced by better co-ordination;
- the evacuation effort was concluded without loss of life.

Recommendations:

- **NYLRF and Risk Management Agencies should consider whether Bronze Command can be located separately from any Rest Centre that is set up in an accessible location;**
- **SRMRT to review their deployment plans/shift patterns to ensure that there is sufficient resilience for personnel to be deployed for a safe amount of time and so that procedures can be adopted to see if working arrangements can be agreed with other rescue organisations. Any requirements for additional equipment be met;**
- **Silver Command to ensure Mountain Rescue have relevant flood zone/inundation maps to assist with evacuation as soon as possible;**
- **emergency Responders to consider a review of the coordination of a multi-agency flood rescue to establish a clear command structure and protocol to incorporate the volunteer services potentially under the control of the Fire and Rescue Service;**

- **when the multi-agency flood plan is updated, NYLRF to consider input from the Mountain Rescue Service to enhance the emergency planning for evacuation and to consider suitable rest areas so that volunteer organisations can be given food and rest.**

Yorkshire Ambulance Service (YAS)

On 26 December 2015, YAS had been made aware of numerous flooding incidents. They also knew that rain was causing issues around Leeds, Wakefield and York.

YAS were aware of 138 flood warnings being issued in North and West Yorkshire with 42 flood warnings in North Yorkshire alone. YAS had been notified by the EA at approximately 21:30 on 25 December 2015 about the incoming weather front and the potential impact this could have across the region. The decision was taken to put a full command structure in place at 12:50.

After this, a number of incidents were notified to YAS.

These included:

- six main road closures in North Yorkshire;
- two road closures due to bridge weaknesses;
- 42 Flood Warnings;
- major road closures on A66 Scotch Corner, A170 Sutton Bridge, A162 North of Filey;
- Tadcaster being notified as an area of concern as the bridge was starting to crack.

YAS were notified that the Foss Barrier had been raised, putting 2,200 homes at risk. At 21:55 on 26 December 2015 YAS went to Major Incident Stand.

At about this time the York Ambulance Station had to be evacuated. The decision was taken on the morning of 27 December 2015 to move York call handlers to Wakefield. The decision was taken against the backdrop of on-going issues with their radio network and Mobile Data Terminals.

By 21:10 on 27 December, all the calls into the YAS Emergency Operations Centre in York had failed. Therefore, all staff and calls were being handled in Wakefield.

YAS responded by obtaining radio units for their personnel.

At around 16:00 on 28 December 2015 the communications exchange at York was restored. It was not until 31 December 2015 that the emergency response was stood down.

Throughout the time of the incident, YAS worked with other agencies including the Fire & Rescue, Hazardous Area Response Team, Mountain Rescue Team, Police and Army. What is clear is that these agencies worked co-operatively and effectively together.

This incident proved challenging for YAS due to the interruption of services at the communications exchange, which caused disruption to the radio network and adversely impacted the YAS mobile data system.

The length of the disruption meant that the small YAS team were already stretched. Furthermore, the fact that some staff were on annual leave for Christmas meant they had few extra staff to call upon. However, despite this, staff were willing to return early from holidays to assist and the team pulled together, providing effective handovers to manage the ICT issues.

YAS have significant experience of responding to emergencies in adverse weather conditions. **It was clear that YAS had in place robust plans which enabled them to respond to the challenges that were created by the flood.** This was a very challenging incident for YAS to respond to, particularly when it occurred during winter and over the festive period which is known to be an especially busy time of year.

Due to the tireless efforts of staff and responders, YAS ensured their normal service delivery across the region and to respond to all requests. Indeed, **YAS were able to report to the Inquiry that they are unaware of any adverse patient outcomes as a result of the emergency response.**

YAS have been very candid about the challenges they faced during this period and what they have learnt from the emergency.

It seems the biggest challenge was the flooding of the critical communications infrastructure. YAS had thought that the fact they had their Mobile Data Terminals located at two sites, one in York and one in Leeds would provide sufficient resilience. However, on this occasion both were affected and YAS are addressing this. The fact that the Mobile Data Terminals were compromised placed a significant burden on the radio system which struggled. Overall YAS have told the Inquiry that they have made changes to ensure that they have greater resilience should an emergency befall the city again.

Conclusions:

- *YAS has a well-rehearsed major incident plan;*
- *emergency services including the YAS, Fire & Rescue, HART, Mountain Rescue Team, Police and Army worked co-operatively and effectively together;*
- *there were no known adverse patient outcomes.*

Recommendation:

- **YAS to review their business continuity and emergency plans to ensure their resilience in light of what was learnt during the response to the Boxing Day flood.**

Military Response

The Inquiry spoke with Lieutenant Colonel Chris Green, the Joint Regional Liaison Officer (JRLO) for the Headquarters 4th Infantry Brigade Headquarters North East based in Catterick Garrison.

On 26 December 2016, Lt Col Green was requested to dial into the North Yorkshire Tactical Co-ordination Group meeting at 12:00 which was being chaired by NYP. There were 41 Flood Warnings in force for North Yorkshire and the relevant agencies reported that their resources were stretched but coping. Lt Col Green dialled into a second meeting at 16:00. There was no suggestion that a military response would be required although there were concerns around Tadcaster.

The next meeting that Lt Col Green attended was at 19:30, when he was told that the Foss Barrier had been lifted. It was not made clear when it had been raised but he was informed that 2,300²³ homes were imminently at risk of flooding and a Severe Flood Warning had now been issued. Flooding was expected to increase until the Ouse peaked which was predicted to take place on Monday morning.

Military assistance was requested to assist evacuation and flood protection. Lt Col Green made arrangements with the HQ Standing Joint Command which was co-ordinating military deployments and then made his way to join Silver Command at Fulford Road Police Station.

The first military assistance arrived at approximately 05:50 on 27 December 2015 and began to assist with warning, informing, evacuation and flood protection tasks which continued until 31 December 2015.

²³ The EA told the Inquiry that 2,200 homes were at risk; there was a slight variance in the figures we received from a number of organisations.

On 28 December, the military also assisted with moving heavy equipment to the Foss Barrier and a Chinook helicopter assisted on 28 December 2015. The military were requested to build a footbridge at the Foss Barrier which was completed by the Royal Engineers on 30 December 2015.

York was fortunate that on this occasion the military were already on stand-by as a result of weather alerts across the country and were able to deploy at short notice. We have been told that a military response cannot be guaranteed in these situations as operational requirements may prevent them from being available. The Inquiry have heard how useful the military were to the emergency response and have concerns as to how the gap would be filled in the future if no soldiers could be deployed.

Conclusions:

- *military assistance was active in York within 11 hours of the request being made;*
- *military assistance was provided to assist with warning, informing, evacuation and flood protection tasks until 31 December 2015.*

Recommendation:

- **the multi-agency Emergency Plan should be reviewed to ensure that there is sufficient resilience should military assistance be unavailable.**

Utilities

BT and the Stonebow Exchange

BT confirmed that the exchange building on the Stonebow was flooded on 27 December 2015. This was the first time the building has flooded and BT said *“it was not previously thought to be at risk of flood damage”*.

This is at odds with the CYC Flood Defence Emergency Response Plan which identified the Stonebow Exchange as being at risk should the flood level reach 10.6m AOD. BT have provided the context for these divergent views. BT had been shown a copy of the plan in 2014 and had confirmed the location of their assets to CYC. BT considered that the Stonebow Exchange was at the edge of any flood risk area having made their own assessment based on the EA’s online mapping. The evidence the Inquiry received from BT was that they commented to CYC’s emergency planning team that the Stonebow Exchange was close to the edge of the flood area. BT tell us that they did not receive any further feedback upon their comment to state that there was an increased risk to the asset other than it being at the edge of the flood risk area.

BT said that no *“warnings of the threat of flooding were received by BT in advance of the flooding event”*. Had they received a warning BT had a fully trained Emergency Response Team they would have deployed to the area (ERT). The EA have shown the Inquiry a record of warnings being sent to the contact details they had on file. BT have reconfirmed that they did not receive any warning before the flood event. It is not possible for the Inquiry to resolve the cause of this breakdown in communication.

The multi-agency emergency plan identifies that BT would resource the defence of the Stonebow exchange as part of its internal contingency plans. BT first became aware of an issue when alarms in the building alerted them that the flood water had cut off the building’s mains power supply. This impacted the on-site backup generators. Once BT were aware of the situation they did deploy their ERT and asked to join the multi-agency partner response effort and were involved in the gold, silver and bronze level response from 28 December 2015.

When the mains power was lost, the back-up generators and batteries provide electrical support but these ran out of power as engineers tried to gain access to the site and install mobile generators. Access to the Stonebow Exchange was hampered by flood water both in the surrounding streets and the building itself.

Fortunately, the telecommunications equipment itself was not damaged. But access to the generator room was restricted until the mains electrical power supply to the site was isolated by the local Power Company and safe access for the BT ERT had been confirmed by the Fire and Rescue Service. The BT ERT engineers deployed BT temporary flood protection equipment (flood barriers, sand bags, and a high velocity pump) and attempts were made to start the existing generators on site. This was unsuccessful so BT coordinated two mobile generators as part of the site recovery.

BT have estimated that more than 1.8 million litres of flood water was pumped out of the building with the assistance of multi-agency partners. Power was restored to the building the following day (28 December 2015) using mobile generators which were installed at the highest ground possible to avoid any further flooding issues (75 meters from the River Foss). BT say that *“the building did not contain water pumps as it was not understood to be at risk of flooding”*. It was BT’s expectation that they would be notified that the Stonebow Exchange was at immediate risk of flooding by one of the other agencies. There was a mismatch with the expectations of Silver Command who expected BT to have received the EA warning and have their own arrangements in place to notify them of a risk to their asset. This emphasises the importance of being signed up to the EA’s flood warnings and having a full understanding of the risk to assets. It also emphasises the need for collaboration between NYLRF, CYC and utilities companies to have plans in place to deal with emergencies. The Inquiry is pleased to hear that since the floods BT have joined the NYLRF and attend meetings.

Since December 2015 BT has increased its flood defence capability. They have added additional Emergency Response Team (ERT) volunteers, addition higher capacity pumps, extra mobile generators and temporary lighting, BT have committed to continue to review its network and to improve its flood defence capability taking into account the relevant flood guidance.

Stonebow exchange has undergone a programme of works which includes an extensive clean-up operation, structural survey work and hardware replacement. Mains power was restored successfully in early January with both static back-up generators having been repaired and tested, and a risk assessment has been undertaken to understand how best it can be protected in the event of future.

Since the events of December 2015, BT, along with other operators from across the communications sector, has become part of the Electronic Communications Resilience and Response Group (EC-RRG)

to better understand how flooding impacts the sector and what can be learnt from such incidents. At a local level BT now engage with NYLRF and attend meetings with other lifeline services.

Yorkshire Water Services (YWS)

The Boxing Day flood had a major impact on YWS assets. The cost of reinstatement of damaged assets in the region was in excess of £50m.

YWS operate and maintain seven flood defence pumping stations in York, which are put into action when the river Ouse is forecast to reach 3.6m. The purpose of the pump stations is to isolate the sewer network from river inundation during times of flood.

The pumping stations are located at:

- North Street;
- Jubilee Terrace;
- Westminster Road;
- Longfield Terrace;
- Marygate;
- Lower Ebor Street;
- St George's Place.

Prior to Christmas, the YWS team had already met to decide what resources would be required to cover the Christmas period. YWS use the available weather forecasts to predict any problems that may occur over the holiday period.

During Boxing Day, YWS had to respond to a number of floods across the region. They continued to operate all their flood defence pumping stations and joined Silver Command

At about 18:30, YWS were told that the Foss Barrier was being lifted and thereafter provided staff to assist with the evacuation of properties that were at risk. They also checked their own assets including Castle Mills SPS and the York flood defence pumping stations.

On 27 December 2016, YWS were alerted to a problem at Castle Mills SPS by CYC's Flood Risk Manager. YWS attended and discovered the Castle Mills SPS had been flooded by the river Foss. The power to the site had to be cut for safety reasons which meant that it was then out of operation. When the

flood waters began to recede on 29 December 2015, Castle Mills SPS became accessible again. Temporary pumps were installed on 29 December 2015 so that the station was operating again and the normal pumps were restored on 31 December 2015.

Over the next few days, YWS had to provide additional pumping capacity to a number of its assets. It was not until 1 January that the additional pumps could be stood down.

Throughout the region, over 110 YWS waste assets were impacted by the flooding that occurred on Boxing Day. Customer contacts for the week were over 3 times the normal levels and jobs to clear blockages from sewer systems and clean up areas of flooding trebled in the week of the flooding. To date, **approximately £1 million has been spent on the Castle Mills SPS** to return to its full operational capacity. Additional work is planned in early 2017 to increase its resilience.

Residents on Tower Street discussed with the Inquiry the benefit of installing a non-return valve on a YWS on the sewer network at Tower Place to reduce the impact of flooding to properties in the area. **The Inquiry is very pleased that this work had been completed by the time the Report came to be written.**

Northern Powergrid

The Inquiry consulted with Northern Powergrid who are the main electricity distribution network operator for the North East, Yorkshire & Humber and North Lincolnshire.

Northern Powergrid take part in the NYLRF and so do work with the CYC Emergency Planning team and participate in any multi-agency improvements. Northern Powergrid told us that in terms of major substations within York, the two sites within the area of flooding were protected by permanent flood defences.

There were already plans in place to upgrade the defences at both sites. Northern Powergrid intend to carry out some additional works to Foss Islands to complement the 1.2m external flood wall and the existing wall at Melrosegate will be replaced with a 2m high wall around the site. We were told that smaller, local substations provide a challenge to defend and are only as well defended as the properties and street furniture they supply. This emphasises the importance of a collective approach to flood risk management.

Utilities Conclusions:

- *BT had not considered that the Stonebow exchange was at risk of being flooded despite this being identified in the multi-agency Emergency Plan;*
- *the flooding over Boxing Day caused in excess of £50 million of reinstatement works across the region for YWS assets (£1million was spent on Castle Mills alone);*
- *across the region over 110 YWS assets were impacted;*
- *Northern Power assets in York are protected by permanent flood defences and the defences at both sites are to be upgraded.*

Utilities Recommendations:

- **NYLRF, CYC and the utility companies should continue to work together to share data and coordinate their actions so that there is a clear understanding of the parties roles and responsibilities as defined in the multi-agency Emergency Plan;**
- **NYLRF, CYC, EA and the utility companies should continue to work together to improve the understanding of risk and their capacity to make at risk critical assets more resilient;**
- **BT should conduct a review of the resilience of their critical infrastructure to ensure that there is a suitable plan in place to protect the assets in case of future flooding, this may include retaining demountable flood defences;**
- **BT should remain signed up to EA Flood Alerts and Warnings and have a robust system in place to monitor and respond appropriately to them;**
- **BT should review its business continuity to ensure that there are suitable and time critical contingency plans should the Stonebow Exchange be at risk again.**

Voluntary Response

A wide range of voluntary organisations were involved in the response and recovery activities following the floods. The response from volunteers after the Boxing Day floods was overwhelming. The committed contribution of the voluntary sector greatly assisted the response to the flood.

The Inquiry is not able to list individually all the organisations and people who volunteered their time and services but would like to recognise all these contributions whether large or small that were vital to the effectiveness of the overall response and recovery effort. We have heard many different stories about the range of assistance that was provided. The list below outlines some examples of activities the voluntary sector carried out:

- assisting evacuation;
- filling sandbags;
- donating food and supplies;
- providing meals;
- transferring residents in four-wheel drive vehicles;
- staffing rest centres, including providing practical and emotional support;
- recovery support, including providing cleaning materials for home cleaning;
- assisting with the clean-up;
- warehousing and distributing donated goods.

Groups and individuals worked tirelessly to help those people whose properties had been inundated by flood water. The Inquiry has heard that as soon as the news of the flood spread people set off from all parts of the country bringing a range of supplies such as nappies, chocolate, tea, coffee, cleaning products, food as well as offering assistance.

The efforts of the volunteers were very much appreciated by all those we spoke with. York Press, CYC and Benenden launched a flood hero award to recognise some of the volunteers who assisted victims of the flood.

The voluntary sector had a tremendous impact on York after the floods and the support, assistance and donations that were provided were invaluable to the effort to restore York back to normal.

The accounts the Inquiry heard about the generosity and community spirit that was shown by volunteers over the period of the flood were quite amazing. People offered their assistance from both within the community and beyond quickly and unstintingly. Donations came in from local, national and international sources. One of the difficulties, which is never easy to address with donees, is that organisations have found it difficult to say no to goods that were not needed. There was no clear policy as to what should happen to the surplus donations and who should benefit from the generosity. There needs to be some overall co-ordination to assess quickly and deal with the variety of donations that were coming to the city so that they could be allocated quickly to where they were most needed.

Whilst people were being provided with emotional support from organisations including the Major Incident Response Team, Two Ridings and the Citizens Advice Bureau, there was still a gap in the emotional support that was available and that which was needed by those people who had suffered the distress of being flooded.

The message the Inquiry heard from several organisations was that the voluntary sector wants to be more widely utilised. For example, Age UK York have an emergency plan to meet the needs of a disaster situation. Therefore, whilst they contacted the residents already known to them in affected areas they were not called upon widely. There could have been a mechanism to put older people in touch with Age UK which might have filled a gap in support.

Volunteers could be utilised in the long term recovery phase if it is decided that elderly, vulnerable people may benefit from follow up support.

There was also a frustration that, despite unmet needs, it sometimes proved necessary for the voluntary sector to approach the local authority to invite them to utilise their resources. One of the challenges for the future is to find a plan to utilise the skills available through this sector and integrate them within the wider emergency response.

Spontaneous volunteers, whilst incredibly welcome, created challenges for the city. Difficulties included collating the different types of help offered and, importantly, the need to carry out checks before a volunteer could work with vulnerable people.

The Inquiry has considered the role of the voluntary sector which it feels is really to provide support and co-ordination for people wanting to help those in crisis.

Major Incident Response Team (MIRT)

The MIRT is part of the NYLRF. MIRT serves the communities within NYCC and CYC. MIRT has 25 volunteers with a range of skills who are mobilised to provide support following a traumatic event in the region. The volunteers who comprise the MIRT team have a range of different backgrounds such as mental health practitioners, counsellors and Samaritans volunteers. One of the central roles of MIRT during an emergency is to set up and manage rest centres when the community needs evacuating which is what they were called upon for on 26 December 2015.

MIRT's resources were severely tested because of December 2015. MIRT were contacted as early as 09:30 on Boxing Day to assist communities in North Yorkshire who were already being affected by flooding. They were called upon to provide 5 rest centres for people affected by flooding over the region (including Archbishop Holgate's School).

The centre at Archbishop Holgate's School began receiving people at 19:00 on Boxing Day. The centre remained open until 29 December 2015 and at its height was looking after 150 people. The rest centre was visited by the whole spectrum of residents. Some families even brought their pets with them for safety. There was an authorised reception area which meant that residents could be referred to other services for help if needed. The catering manager from Archbishop Holgate's School came in to assist MIRT volunteers to provide food for the residents.

The Inquiry have heard that there was a good community spirit that developed within the rest centre. It provided the safe space required for people who were in immediate need. The rest centre was also well supported by the good will of the volunteers and the community.

MIRT have many links with other agencies and as a result of the flood, have begun to create stronger links with Age UK, York CVS the British Red Cross and the Samaritans to provide a better service in the future.

MIRT held an internal debrief after the December floods which they have shared with us. MIRT identified several areas which they have discussed with the Inquiry that could be improved should there be another emergency where MIRT's services are required:

- registration was time consuming and difficult therefore it was suggested that more volunteers are used to perform the general duties whilst the MIRT volunteers can be utilised to provide specialist support;
- the rest centre was also used by the police for their briefings which caused difficulties as there was limited space and equipment;
- it was not easy to liaise with the medical staff to find someone willing to write an emergency prescription for some of the guests;
- donations were coming into the rest centre and there were insufficient volunteers to sort through the donations. This created more chaos as guests needed to rifle through them all to find what they needed;
- the MIRT staff did not have a laptop which could have been used to update the rest centre with current information;
- this was the only rest centre that was opened in York.

The Inquiry would also commend consideration in the future to zoning rest centres so that they can be set up in areas of the city where they are easily accessible to the residents that need them. The Inquiry heard that plans were being put in place for a hastily arranged back-up rest centre at Energise in Acomb which ultimately was not required. The Inquiry acknowledge that multiple rest centres in York may be beyond the current capacity of MIRT but could perhaps be accommodated if other voluntary sector organisations come together.

York CVS

York CVS is a centre for voluntary services based within York and belongs to a wider national network of independent charities that offer similar services. York CVS offers a range of support to charitable organisations. York CVS describes itself as “*the collective voice of the sector*”.

York CVS have been very open with the Inquiry and acknowledge their lack of involvement during the Boxing Day floods. York CVS has sought to take ownership of what went wrong and how to ensure that York does not find itself in the same position again. There are a number of reasons that explain the lack of involvement. York CVS was not open for business at the time, the then Chief Executive was on holiday and there were difficulties with communication as CYC did not have up to date contact information for key York CVS personnel.

York CVS have been proactive in looking at what they felt they ought to have done during the Boxing Day floods and have tried to identify the role they should have played and could play in any future emergency situation in York.

CVS organised an event called “Ready for Anything – Developing the Role for the Voluntary Sector in the Emergency Response” which was held in April 2016. The purpose of the event was to bring together the voluntary and community sector to learn from the Boxing Day floods and to generate ideas as to how the sector could respond better in future emergencies.

The Inquiry was impressed by the number of different organisations that collaborated in this event. The event was supported by CYC, NYRF and the Emergency Planning College.

Although the volunteers themselves worked hard during the flood, **there was no clear leadership** or single point of contact from either CYC or a voluntary sector organisation that would have enabled volunteers to be efficiently deployed.

Whilst people were being provided with emotional support from organisations including MIRT, Two Ridings and the CAB, there was still a gap in the emotional support that was available and that which was needed by those people who had suffered the distress of being flooded.

The Inquiry has been shown the plan that was created following the “Ready for Anything” event which the voluntary sector organisations are going to put into place in readiness for a future emergency.

It has been suggested that there should be Third Sector representation at Silver Command. The Inquiry can see how good communication with the Third Sector would enable them to mobilise the resources that York is fortunate to have available.

However, the Inquiry are not convinced that a representative at Silver Command would be feasible. Organisations such as Age UK have relevant information about where vulnerable residents are situated which could be incredibly useful during an emergency rescue to supplement the information held by CYC.

The Inquiry would encourage voluntary organisations to have emergency plans. In order to ensure that the plans are robust they should be tested and reviewed on a regular basis.

Since the summer, York CVS and CYC have started a register of individuals and organisations who are willing to help if there is an emergency. **Over three hundred volunteers and organisations have been contacted.** This coordinated effort will identify any skills gaps so that if there are future challenges, York will be well supported.

There is no doubt that the Third Sector could have worked better together but the Inquiry is pleased to hear that the Sector recognises this and are united to try to create stronger partnerships between their organisations so that they can be prepared and ready to escalate their involvement if required.

The goodwill of the spontaneous volunteers needs to be channelled as effectively as possible. Therefore, a system needs to be established for volunteers who turn up able and willing to help but who are not established volunteers and may not DBS checked.

It is inevitable that other emergencies will occur in the future, especially in view of climate change predictions. Therefore, the importance of having more structured arrangements for mutual aid will become increasingly significant. The Inquiry has been told that a Third Sector Emergency Planning Group has been formed and they these strategic ideas are being implemented in conjunction with CYC. The Inquiry is optimistic that the voluntary sector can be expected to deliver a coordinated response, ensuring that identified gaps and needs are met in advance of another major incident. This can only serve to make York more resilient.

Conclusions:

- *the Inquiry considered that overall the rest centre arrangements worked well. The assistance provided included shelter, warmth, food, emotional support and referrals to more specialised attention if required;*
- *York CVS did not play a role during the flood. It is clear from the evidence heard by the Inquiry that there is a role to be played by the voluntary sector by delivering a coordinated response in times of emergency;*
- *It is important that emergency plans are tested to ensure that they are validated; to develop staff competencies and to test well established procedures.*

Recommendations:

- **the role of the voluntary sector is already mentioned in the multi-agency Emergency Flood Plan but the Inquiry feel that this needs to be updated considering the work that has been done by the various Third Sector organisations;**
- **York CVS and CYC/NYLRF should ensure that contact details are updated regularly so that they can be used to mobilise and coordinate the volunteer effort;**
- **York CVS should agree a protocol with the NYLRF/CYC as to how the voluntary sector will be involved in emergency situations;**
- **consideration should be given by York CVS to support an event or emergency drill to ensure that the learning captured by the “Ready for Anything” conferences held this year are not lost;**
- **multi-agencies including CYC should consider whether Third Sector input could be utilised to provide support in identifying and assisting the vulnerable in future emergency situations;**
- **CYC and Multi-agencies should consider how a clear message could be given inviting/tailoring donations to what is required and creating a clear policy to deal with surplus donations;**
- **MIRT should review their plans to incorporate the lessons learnt from December including considering zoning rest centres so that they can be set up in areas of the city where they are easily accessible to the residents that need them.**

Recovery

A recovery group was set up on 29 December to identify the issues that needed to be addressed in order to assist the communities in returning to normal as soon as possible. The recovery effort is still ongoing at the time of this Report.

CYC instigated a Recovery Group Team that met between 30 December 2015 and 18 January 2016 to coordinate the initial recovery phase, although the work of the various groups and agencies continued. Prior to this the Inquiry has been told by residents that CYC officers visited Tang Hall Community centre on 29 December assisting residents with insurance claims and detailing the impact of the flood.

The recovery phase presents challenges because it is not properly accommodated for in the Civil Contingencies Act. Once the emergency is over and the blue light agencies have stood down, organisations need people to return to their normal roles yet there is still much to be done and a great deal of assistance still needed. The Inquiry understands that this presents a resource challenge for organisations but it is vital that adequate resources are applied to the recovery phase.

The recovery phase saw **CYC provide 64 skips to key locations** (50x 8-yard skips & 14 x 35-yard crates). **In the 2 weeks following the floods, the skips had 185 lifts and collected 164 tonnes of waste.** In addition to the above, 16 tonnes of flood-damaged debris were cleared from the James Street Travellers' site and **the Public Realm Team collected 341 tonnes for flood-damaged waste.**

The following key statistics have been provided by CYC:

- 13,000 sandbags deployed to existing strategic flood defences, key utility installations, communication centres, care homes, operational emergency service premises and essential roads;
- 1,000 sandbags were deployed to Cawood to support key flood defences;
- 34 York Streets with flood affected properties;
- 5 villages affected – Acaster Malbis, Naburn, Elvington, Poppleton & Osbaldwick;
- approximately 900 residential homes were visited by staff/volunteers to ascertain if help was needed;
- 262 businesses were visited, 174 were affected;
- over 60 front line staff were on duty delivering the councils response;

- over 260 tweets were given out and 1314 new Twitter followers;
- around 100 media enquiries were responded to;
- rest centre opened which supported over 150 residents;
- 64 skips provided to support the clear up;
- 56 dehumidifiers provided to council homes.

On Monday 28 December, CYC went to the rest centre to specifically assess the needs of the families there. They were able to relocate 20-30 families in an afternoon to either private or properties owned by CYC.

On Tuesday 29 December, a team was put together that had daily meetings about coordinating people to get back into their properties, coordinating repairs and informing residents. Time had to be spent co-ordinating donations and preparing vacant homes to put people in on a temporary basis. This included furnishing the homes. Vulnerable private owners were also given assistance from the council.

The Inquiry has been told that the Buildings Team set up two projects: one team was to look at James Street which was more severely affected than anywhere else and a second team was allocated to deal with the remainder of the flats and houses owned by CYC, predominantly around the Navigation Road area.

These teams were comprised of multi-disciplinary groups including; housing, legal, communications, maintenance and flood experts. They developed a project plan of how they would recover each site. The Inquiry has heard about a range of challenges which were different in each area. For example, all the residents had left James Street and therefore the team could move to remove debris and liaise with the residents via the Travellers' officer. However, in Navigation Road, some people were still living in properties so there was a slower process of assessing the damage and trying to relocate people. Properties had been damaged in different ways and required various levels of drying/repair.

The Inquiry notes that CYC sensibly allocate ground floor properties to people who may have more issues in terms of their mental or physical health. Therefore, unfortunately it tended to be more vulnerable people that were most affected. This is regrettable and there does not seem to be an easy solution to this.

In the second week after the flood, site cabins were put up on Navigation Road so people had a hub to come to. Contractors were on site and surveyors who were on the estate were able to deal with

queries. This also formed a focal point for volunteers. The Inquiry has heard that each property required a full survey.

The biggest issue was the drying process. CYC soon learned that fans and dehumidifiers were not working efficiently enough. Due to the flood damage at Navigation Road and James Street, the properties and pitches were saturated. Therefore, CYC adopted a faster drying process and what would normally take 6 weeks with a dehumidifier could be reduced to one.

The Inquiry has also been told that some of the people whose properties were most affected did not have insurance to cover their possessions. We have heard as part of the consultation process just how distressing this was for people.

By 22 April 2016, many residents were able to return to the properties.

Conclusions:

- *approximately 900 residential properties were visited by staff/volunteers to ascertain if help was needed;*
- *CYC provided 64 skips and collected 164 tonnes of waste;*
- *most CYC tenants were able to return to their properties by 22 April 2016;*
- *some of the people whose properties were most affected did not have insurance to cover their possessions.*

Recommendations:

- **CYC and NYLRF should evaluate and share lessons from the recovery phases to inform their planning for future emergencies;**
- **CYC should consider whether there is any solution to the issue created by the fact that often the most vulnerable tenants were allocated ground-floor flats (the most affected by flooding);**
- **CYC to consider the take-up of property flood resistance and resilience by residents and businesses.**
- **Government to consider whether there could be a mechanism to ensure that adequate resources are available to local authorities to be applied to the recovery phase.**

Grants/Exemptions

Key Facts:

- confirmed number of internal flooded residential properties – 453;
- number of flood recovery grants paid – 395;
- value of flood recovery grants paid out - £197,500;
- council tax exemptions issued following application (to April 2016) - £274,823.70;
- council tax exemptions issued following application (since April 2016) - £97,710.72;
- confirmed number of flooded businesses – 174;
- number of recovery grants paid following application (@£2.5k per business) – 114;
- value of recovery grants paid following application - £221,674.07;
- business rate exemptions issued following application (to April 2016) - £1,353,169.85;
- business rate exemptions issued following application (since April 2016) - £55,305.49;;
- number of flood resilience grants approved following application – 127
- value of flood resilience grants approved following application - £596,130.74;
- value of flood resilience grants paid out following completion of works - £353,455.74.

Property Level Resilience Grants

CYC participated in the DCLG scheme for property level resilience grants. There were two types of grant available. Under the Communities and Business Recovery Scheme, local authorities were given funding to provide £500 for every flooded household. This was intended to help with recovery costs, such as temporary accommodation.

There were also grants available of up to £5,000 to help residents who had been flooded.

These grants would help protect their property to make it better prepared to cope with any future flooding. The grant can be used for either resistance or resilience measures.

Resilience measures need to be put in as the property is being repaired and are aimed at enabling the property to recover faster after a flood.

Resistance measures are less time critical and can be implemented during or after the repairs. They aim to *limit* floodwater entry and the damage caused – *not to prevent* flooding. Both are ways that the costs and disruption following a flood can be reduced.

In response to the questionnaire,

- the most frequently reported “resistance” measures were:
 - air brick covers;
 - flood doors;

- door flood barriers;
- window guards;
- non-return valves.
- The most frequently reported “resilience” measures were:
 - concrete/solid/tiled floors;
 - raised electrics;
 - water resistant render/plaster;
 - sump pumps.

The statistics from the survey must be balanced against the actual figures that have been provided by CYC. It was disappointing that only 28% of those affected by the York flooding who returned questionnaires reported that they had obtained the flood resilience grant.

During the public evidence sessions, there was a very mixed response about the property level resilience grants. Some reported that they had found the process complicated and difficult to understand whilst some found the process fast and expedient.

The following are reported obstacles which hindered people to take up the resilience grant:

- actual repairs to property were judged as being of greater priority than installing resilience measures;
- residents who had made an insurance claim and who already had reparation work underway via their insurers were reluctant to fit resilience measures;
- reluctance from some loss adjustors to consider resilient repairs in preference to their own tried and tested procedure of “like for like repairs”;
- the application process was found to be too complex and time consuming;
- the application process itself changed;
- concerns that in terraced properties resistance measures would only be effective if neighbouring properties co-operated;
- difficulties in sourcing surveyors and builders to quote for the work;
- the perception that having flood resilience or resistance measures fitted will make it obvious that the property floods.

One resident that applied for the resilience grant described the process as “*quite tortuous*”.

He said that either DEFRA or CYC “*is changing the goalposts*”.

The Inquiry has heard from residents that one objection to having flood protection and resilient measures fitted to properties is that it is perceived to attach a stigma to the property if obvious barriers and frames are showing on the property. Fortunately, most modern flood protection measures now look like normal doors, French windows etc., or are hidden such as air vents and non-return valves. It is possible to protect a house without anyone knowing flood resistant measures have been installed.

The Inquiry has heard that CYC undertook several revisions to the scheme. This was because the Government guidance relating to the schemes was provided after the grants had already been offered. Although local authorities have been provided with grant money to give to residents, no additional funding has been provided to them to administer the grants.

Whilst the Inquiry was consulting, the Government published "*The Property Flood Resilience Action Plan*²⁴" which had been prepared by Peter Bonfield. The Bonfield Report made a number of recommendations and some of these have coincided with the ideas presented to the Inquiry during our consultations. The report sought to identify the reasons why people do not make sure that their properties are ready for flooding.

It still does not appear to be normal practice to make properties in high risk areas flood more resilient after a flood. The Bonfield report suggests that there should be research into whether Building Regulations can somehow be used to encourage resilient and resistant construction in high risk areas. The Bonfield Report recommended:

- improving the ways that people can be informed about the options that are open to them and the benefits of such schemes;
- supporting the schemes by the regulation of contractors to ensure quality and confidence in the measures chosen.

The Inquiry consulted with Paul Cobbing, Chief Executive of the National Flood Forum, who also suggested a need for a formal accreditation process to ensure that householders had access to contractors and surveyors, specialised in flood property measures.

²⁴https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/551615/flood-resilience-bonfield-action-plan-2016.pdf

From the evidence heard by the Inquiry, it is clear that greater awareness of the property level resilience grant scheme is needed. The Inquiry has heard that CYC were involved in 40 hours of sessions which included promoting the flood resilience grant. The Inquiry consulted with Rachael Maskell MP who has played a vital role in assisting and advocating on behalf of those affected by the flood. She also advocated for the additional funding for York and raised a question in the House of Commons which shone a light on the flood. She gave up her time to meet with the Inquiry brought a number of matters to our attention which have informed this Report. Rachael Maskell MP supported constituents that needed assistance. Alongside her other surgeries and work on behalf of her constituents she held a Flood Resilience Conference to bring residents and agencies together in March 2015 which also included information about property resilience measures.

To the Inquiry, there seems to be a disconnection between information about the benefits that can be obtained by installing resilience measures and residents' abilities to take advantage of the scheme.

Currently Flood RE does not insist that flood resilience or resistance works are incorporated into any repair work for policies they cover – preferring the like for like repairs scheme. This appears to the Inquiry to be a missed opportunity to greater support for property owners, given the fact that the Government has made up to £5,000 per property available and level of take up means there must be in unused grant monies.

One proposal to ensure greater uptake of the scheme and to raise flood protection in an area would be for the grant to be made available immediately after a major flood. Funding would be allocated to individual properties in the same way that council tax rebates are allocated. This grant could be made available to the loss adjuster or contractor so that the flood resilient measures can be incorporated as part of the project of reinstatement works.

The Inquiry has been told that the new version of the grant envisages that the loss adjuster will provide two sets of costs one with the “like for like” repairs and the second incorporating flood resilient measures. However, we have been told that in reality, this has not happened.

Business Grants

The Inquiry consulted with Make it York who took on the administration of the recovery packages for businesses. There were two levels of funding: the first was a grant of up to £2,500 for emergency relief and the second was for up to £5,000 for making properties more resilient.

Within a week of the flood, Make it York delivered an application pack to all the businesses that had flooded to assist them to take advantage of the funds.

As with the residential grants, concerns were raised about ease of access to the grants. Businesses found filing cabinets were flooded which had contained all their insurance documents and receipts which created delays. A LEP Flood Recovery Fund to provide support towards the cost of replacing or repairing capital equipment damaged was available but the take up of this was low in York.

The focus of the grants is about getting trading going again and safeguarding jobs, but some businesses were closed for many months. There seemed to be a gap in helping businesses to re-establish themselves once the repairs had been completed. It was suggested to the Inquiry that a marketing grant to enable businesses to promote themselves again once they are up and running would fill a gap in the recovery assistance available.

There were examples of businesses adopting creative measures to re-establish themselves after the flood. Many badly affected businesses were located in Fossgate and Walmgate and the traders started a Fossgate Festival to attract people to the area.

There is a willingness from Make it York to provide every assistance they can to support businesses and businesses themselves showed impressive initiative to help themselves there is still a need for the funds to reflect thoughts about what is required once repairs have been completed.

To understand the problems that were caused for businesses the Inquiry focused on two specific businesses to look in detail about how they were affected (see [Appendix 7](#)).

Conclusions:

- *despite the availability of flood resilience grants there are still a number of obstacles preventing widespread uptake, including residents finding the process complex and frustrating;*
- *currently Flood RE does not insist that flood resilience or resistance works are incorporated into any repair work for policies they cover;*

- *Make it York have been assisting businesses to access and apply for the funds available;*
- *flooded businesses often remained closed for many months and have had to adopt creative measures to re-establish themselves after the flood.*

Recommendations:

- **the Inquiry supports the recommendations of the Bonfield Report and would encourage CYC and Government to adopt them;**
- **consideration should be given by Government to make the Property Level Resilience Grant automatically available to the property owners or their contractors before repair works start²⁵;**
- **residential and business properties need to be made more flood resilient and CYC and Make it York should explore ways to support and encourage that process;**
- **flood Re should consider requiring insurers to incorporate flood resilience measures into any reinstatement works after a property has been flooded;**
- **the Government should consider providing funds to local authorities to assist with the administration of the Property Level Resilience Grants;**
- **CYC should review the grant processes in order to learn from and improve their processes.**
- **CYC should consider providing a list of accredited/approved surveyors and contractors to residents to ensure quality and confidence in the measures chosen;**
- **CYC and Make it York should encourage businesses in flood risk areas to increase their resilience and prepare business continuity plans;**
- **the Government should undertake a review of the post-flood recovery grants, including an assessment of whether a marketing grant for businesses could be introduced in conjunction with CYC and grant recipients in order to improve its administration and accessibility.**

²⁵ There would still be a need for an independent survey of the property by a chartered surveyor (or similar) to ensure the works approved are appropriate, in line with the PRG guidelines and value for money, but this could be undertaken during the strip out and drying out phase.

Insurance

Home Insurance

The Insurance Industry plays a vital role in helping many people recover from flooding. Having insurance in place also gives a measure of reassurance to residents should the worst happen and they are flooded again. In speaking to residents and business owners in York the Inquiry has heard about a range of difficulties associated with obtaining insurance cover in the first place and also making sure that the insurance pays out for a claim.

In January 2016, the Chief Executive of CYC and representatives of the Association of British Insurers (ABI) met with several business owners in York which had been arranged by Rachael Maskell MP for York. We were told that advice and guidance was provided as to how the claims process should work after a flood.

The Inquiry has heard what a lengthy process it can be restoring and repairing properties and difficulties with insurance claims can only add to this distress.

The ABI provided us with the following statistics:

- after the flood the number of claims fully or partly settled after six months was 93% (this number breaks down to 95% of domestic customers and 89% of commercial customers having had their claims at least partially settled);
- **insurers paid out £70 million in emergency payments after the floods.**

From speaking to residents and businesses owners that were affected, the Inquiry has learnt that **the process of claiming on insurance was not straightforward in many cases**. At the point of the public meetings we heard about a number of businesses and residents who were still experiencing significant problems.

The Inquiry also sought information from residents about the take up of insurance cover that was being offered by Flood Re. We heard reports of conflicting advice being given and some applications have been rejected because the property was “out of the Flood Re area”. We have also heard about vast differences in quotations which have ranged from £146 to £3,000 p.a. Disappointingly, some residents reported an increase in their premium even after the introduction of Flood Re.

Business Insurance

The Inquiry has specifically raised the issue of business insurance with the ABI because businesses are outside the scope of the Flood Re scheme.

As business insurance is not covered by Flood Re, there are businesses in York who have been unable to obtain insurance and some which have flooded for the first time in 2015 who find themselves unable to re-insure. The Inquiry has discussed the possibility of creating a scheme similar to Flood Re for businesses.

We have been told that this is not a practical solution because of the great differences between business and household insurance. The ABI have pointed to a number of different features which make a business insurance scheme difficult to operate.

First, the vast differences in sizes and types of businesses mean that a commercial scheme that replicates Flood Re would be very complex to construct, whereas Flood Re is based on council tax bands which means that it can be standardised.

Business insurance has to accommodate a number of variables, not only the size of property but also the types of business, amount of stock and how the business operates. We have been told that it was difficult to make the Flood Re scheme affordable and these challenges are amplified in relation to a business scheme.

These concerns link into the fact that the issue of cross subsidisation in relation to business is contentious as it can interfere with the competition of businesses. Therefore, there may be an inherent unfairness in subsidising the flood risk of these businesses who may benefit from a preferential riverside location.

An issue picked up by The EFRA Committee is that business flood insurance was unaffordable for many businesses, particularly for SMEs. The British Insurance Brokers' Association (BIBA) reported that 85% of brokers considered it had become harder to place business flood cover in recent years. The Federation of Small Businesses' (FSB) research found that **9% of small businesses at risk of flooding had difficulty finding insurance, 3% considered cover to be unaffordable and 6% had been refused flood insurance cover.**

The Inquiry can understand that the issue of business insurance creates an extra level of complexity over and above that of the housing insurance scheme. But the effect on trade and businesses in certain areas which may now become “blighted” is something that is of concern to the entire community. The ABI have told the Inquiry that the BIBA is currently developing a solution which is specifically designed to offer affordable cover to those businesses deemed high risk. The ABI is supportive of the scheme and has assured us that they will continue to lobby the Government for long-term funding commitments to flood risk management that will better protect homes and businesses from flood risks in the future.

Conclusions:

- *after the flood, 93% of claims were fully or partly settled after six months (this number breaks down to 95% of domestic customers and 89% of commercial customers having had their claims at least partially settled);*
- *insurers paid out £70 million in emergency payments after the floods;*
- *business flood insurance is unaffordable for many businesses, particularly for SMEs;*
- *there are conflicting accounts as to whether the implementation of Flood Re has delivered the impact it hoped.*

Recommendations:

- **it would be beneficial if those companies who offer Flood RE ensure that their sales staff are fully aware of the criteria for acceptance to Flood Re and promote its use;**
- **CYC should continue to promote and raise awareness of Flood Re to those residents in areas at risk of flooding;**
- **the Government should give consideration to an extension of Flood Re for businesses.**

Two Ridings Community Foundation (TRCF)

TRCF launched the York Disaster Appeal on behalf of the York Disaster Fund on 28 December 2015. The York Disaster Fund had been set up in 2000 as a result of the floods that year and it kick started this appeal by releasing its remaining funds of £45,000 to assist the York Disaster Appeal. Within 48 hours of the appeal starting, Nestle donated £100,000.

The York Disaster appeal helped 215 individual households (as of 30 August 2016), four charities who were flooded, and eight small businesses who were flooded. It also supported four charities working with people who had been flooded.

This assistance equates to approximately 54% of those households flooded in York. The total amount distributed to 30 August 2016 was £598,508. The average payment per household at phase one was £464 and at Phase Two was £2,410.

During Phase 1 the fund awarded £200 to any household that was flooded. Further support was made on an assessment of need including income, savings and whether the property had insurance. Typical payments were up to £700. TRCF worked with CYC's benefits team to develop an application process that CYC could signpost and support.

TRCF also worked with CYC to determine how they could best assist the Travellers at James Street.

TRCF provided the Inquiry with a number of anonymised examples of help given to the residents:

- help to cover petrol costs to enable them to continue to travel to their work in York whilst living in emergency accommodation outside of the city;
- a table top fridge and cooker to enable them to remain at home when shared kitchen facilities were flooded;
- urgent provision of bunk beds to accommodate two children in emergency accommodation.

During Phase 2, March 2015 onwards, TRCF focused on providing tailored, transitional support for people moving back into their homes, providing top ups to the Government resilience funding and also supporting small businesses. By this stage TRCF knew that they had 100% match funding from the Government which meant that **the fund for York came to £1.35 million.**

Case workers were recruited, initially from Yorkshire Housing and York Citizens Advice Bureau, later supplemented by TRCF freelance assessors. TRCF were able to fund York CAB to provide an

experienced outreach worker to assist people who were experiencing financial difficulties. This represented a change in the approach to assessing need because people were experiencing multiple and ongoing issues.

Many people reported feeling overwhelmed with financial, practical and emotional concerns as “*getting back on their feet*” took much longer than anticipated. This approach meant that people could talk about their experiences and identify what support was needed to get back on their feet again.

All Phase 2 applicants received a home visit. Over 150 have been carried out to date, which provided much needed support, ensured accountability and the validity of claims. At this stage, needs were assessed individually and items such as carpets, essential furniture and replacement white goods were provided.

Some long-term issues were identified:

- health impacts – TRCF found that existing health conditions have been aggravated by the impact of the flood and/or recovery. Case workers reported that respiratory problems were being made worse and mental health problems were exacerbated;
- disruption to home – people lost personal possessions and often had to be evacuated with little or no warning which was very traumatic for a lot of people;
- family relationships – people were affected in many ways including the strain of moving in with family members or being separated from family members or living in cramped conditions. In some cases this has caused the breakdown of relationships;
- living in a home being renovated, managing builders and insurers or coping with financial pressures has caused people to feel upset, frustrated and depressed;
- older people – without extended support or family networks found it difficult to cope with the upheaval of being evacuated or having to live in temporary accommodation. TRCF told us of some older residents who initially went into a care home for respite care but ended up staying;
- small business owners who lost the ability to earn for extended periods or who even went out of business;
- some residents in privately rented accommodation were made homeless.

The Inquiry has been provided with a number of case studies (**Appendix 8**) that TRCF shared. **Recovery from flooding does not simply end when people are able to move back into their homes.**

The recovery process is a slow one in which people often must deal with a range of setbacks including with insurance, builders and family members.

TRCF told us of their concern that the business hardship fund did not launch until June which meant that small businesses were left struggling for five months which may have impacted on their survival. CYC provided TRCF with access to cash cards so that payments could be made to residents who did not have bank accounts, often those who were most vulnerable. CYC also shared a list of addresses of those who flooded straightway.

TRCF and CYC jointly funded a case worker which meant that information could be shared between the two organisations to support the most vulnerable. CYC and TRCF jointly worked to support the Traveller Community.

There were some concerns raised by residents to the TRCF about the inflexibility in extending council tax exemptions. The Inquiry has heard directly from residents who had concerns with council tax exemptions and from residents concerned about the practical arrangements with parking permits when they were in temporary accommodation whilst properties were being repaired. The Inquiry has also heard from residents that there was a concern that artificial deadlines were being put in place by CYC for council tax exemptions.

This is an issue that the Inquiry examined. Council tax relief was funded by Central Government. Local Authorities, including CYC, were advised that this would be funded for the first three months (to the end of March 2016). Where residents were still unable to return, CYC were allowed to extend the relief which they did so. The Inquiry have been told that currently the Government has not set an end date for the relief but there is a lack of clarity as to what funding the Government will provide. There are always tensions in an issue such as this. Residents who are in difficult financial circumstances as a result of their properties being flooded need assistance quickly.

However, CYC has to strike a balance between flexibility and control to avoid fraudulent activity and the Inquiry accepts this.

The Inquiry has also discussed TRCF's work in terms of the recovery after the flood. The help being provided by TRCF is ongoing for a significant number of people. TRCF are aware of people still living in temporary accommodation or in homes still affected by damp or flood damage.

Recovery can be a long process and TRCF have recommended to the Inquiry informal support networks such as Fossy Flossy's, the Red Tower Group and the Facebook Floods Group which have provided many residents with support. The Inquiry were able to speak with the Red Tower Group to understand how they had helped residents particularly around Navigation Road during and after the flood.

Specifically, in terms of the work that TRCF are doing, they identified a Phase 3 in their service, which was still in development when the Inquiry consulted with TRCF. Phase 3 was to be implemented in October 2015 onwards. The purpose of this phase is to offer long term practical, financial and emotional support for people affected by the flooding to assist in their long-term recovery.

The Inquiry recognises that recovery after a flood is complex process and does not end when the physical repairs are complete.

Conclusions:

- *overall it appears to the Inquiry that TRCF collaborated well with other Third Sector organisations in York such as York Citizens Advice Bureau, York Community Furniture Store and Yorkshire Homes Improvement Agency. Collectively they provided help and support to residents who had been flooded;*
- *TRCF worked directly with CYC which was felt by everyone to have been effective overall;*
- *recovery after the flood is a long process with vulnerable residents requiring long term practical, financial and emotional support.*

Recommendations:

- **CYC to reinforce the existing training guidance to those departments directly dealing with issues arising from flooding events in the future;**
- **CYC to consider whether they can provide ongoing support to council tenants following the flooding when they have moved back in;**
- **TRCF to continue to work with CYC and NYLRF to share lessons from the recovery phase to inform planning for future emergencies.**

Community Ideas

Flood Wardens

There has been a system of flood wardens in York supported and trained by both CYC and the EA. However, participation has dwindled in recent years. The Inquiry spoke with residents, particularly from the Foss catchment area, who showed an enthusiasm for the scheme. The great benefit of flood wardens is that they have local knowledge of their community and can provide up to date information on the ground.

Community Plans

CYC have told us that across the city, 16 communities either have existing community emergency plans or are in the process of creating them which will include details about how to react in a flood, coordinate community volunteers, identify vulnerable people in the community and provide short-term safe refuges for people displaced from their homes. It is vital to harness the knowledge learnt after Boxing Day so that this information can be retained to make communities across York more resilient. We saw examples of organisations seeking to establish more ad hoc community associations. For example, Red Tower (on Foss Islands Road) are currently setting up a community interest company and hope to provide a community hub for local residents following the assistance they provided following the flood.

Conclusions:

- *after the flood there is a renewed interest in the flood warden scheme that operated within York;*
- *many communities are in the process of developing community and neighbourhood plans.*

Recommendations:

- **to capture the current enthusiasm for flood wardens some training should be considered for any new volunteers;**
- **CYC should continue to encourage communities to prepare Community Emergency Plans;**
- **York CVS and the Third Sector should consider how they can encourage and promote community groups that have formed in response to the floods.**

The Future

There is a common aim shared by everybody who contributed to this Inquiry – that lessons can be learnt from Boxing Day 2015. **What impressed the Inquiry were the remarkable efforts that have been made by so many people to support and restore the city after the flood.** The Boxing Day floods have brought the issue of flooding to the forefront of people’s attention. Throughout the year many agencies and organisations have been working to capture the energy and willingness to effect change to create a more resilient York.

Better Understanding of Risk

The Government commissioned and published the National Flood Resilience Review (NFRR) following the extreme flood events of December 2015. One of the themes of the review was to *“improve the understanding of the fluvial and coastal flood risk in England”*. It is essential that the flood risk is communicated and understood by those it affects.

The NFRR identified steps to improve the communication of the science behind flood risk. These include improving the ways that estimations of the likelihood of events are communicated so that they are unambiguous and readily understandable.

The NFRR took as a starting point the fact that the standard terms for describing risk, (such as a 1 in 50 year risk or 1 in 100 year risk) are difficult to interpret. There is no doubt that **improvements are needed in how flood risk is communicated to people whose properties or businesses lie within the relevant flood zones and the protection that flood defences supply.** There was a huge difference in how “flood aware” residents of York are.

Some residents had an impressive knowledge and acute understanding of the implications the rising river levels had to their property. Their awareness was such that they were able to formulate plans to protect their property and possessions and when to initiate them. Other residents, including some whose properties were protected behind the Foss Barrier, did not realise that their property was at any risk of flooding. This presents a challenge when designing a flood warning scheme and communicating the risk of flooding.

The NFRR also placed an emphasis on improving the resilience of cities and communities by focusing on protecting the key local infrastructure. York witnessed the severe impact that is caused when crucial infrastructure assets (such as the Stonebow telephone exchange) are lost.

Therefore, the Inquiry would support a strengthened partnership between CYC and the utility providers so that there is a clear understanding of the emergency plan and organisations roles and expectations contained within it.

Conclusions:

- *the efforts of the people of York to restore the city to normal after the Boxing Day floods were remarkable;*
- *flooding will recur in the city of York;*
- *residents' "flood awareness" currently varies more than it should.*

Recommendations:

- **the Inquiry endorses the six steps identified to improve communication about flood risk identified by the NFRR and would recommend that these were taken into consideration by CYC and the EA in future communications about flood risk.**
- **CYC and utility providers should work more closely to improve the resilience of critical infrastructure and ensure that they all have a better understanding of their obligations under the emergency plans.**

Catchment Management

During the course of gathering evidence for the Inquiry, panel members took the opportunity to review and discuss available catchment management techniques. This involved taking evidence from existing flood risk management agencies, attending flood risk management conferences in York and seeking the views of academics and of interested residents.

Much of this work has been superseded by the publication of the EFRA committee report "*Future flood prevention Second Report of Session 2016–17*"²⁸ (see Appendix 9) which highlights the Government's proposals for a holistic catchment management approach. The Inquiry endorses the views of the EFRA committee. It seems that looking forward there is much to commend about Holistic Catchment Management. This is because managing water flows from the top to bottom of river catchments helps to reduce flood risk, which may reduce the need to simply build higher flood defences in cities.

²⁸ <http://www.publications.parliament.uk/pa/cm201617/cmselect/cmenvfru/115/115.pdf>

The EA are also exploring ways that catchment management can be used within the Foss and Ouse Catchment areas to better protect residents and manage the fluvial flood risk.

We have spoken to the York Consortium of Drainage Boards (IDB) which manage the majority of the ordinary watercourses in York. The network of watercourses within their districts extends well beyond the CYC boundary into adjoining authority areas. Therefore, any problems in the Ouse and Foss catchment involve concerns that are of importance to communities beyond York. This closer focus on the flooding is an opportunity to look at wider catchment management issues.

We spoke with the IDB about ways to minimise the impact of flooding on York in the future, in particular catchment and planning issues. Any proposals to changes in planning and development need to be carefully considered but the Inquiry considers that development control must form part of mitigating flood risk.

It has been suggested that there needs to be greater consideration of the impact on the sewerage and drainage network before planning permission is granted to new development and the use of (SUDS) Sustainable Drainage Systems. The IDB is considering new technology that can reduce the flow of water into the drainage systems which in the long term could reduce the impact on York.

Water attenuation is an important piece of the jigsaw as we need to think about the delay of water coming off the land (upland land management) and out of properties to get into the river. If designed correctly, this would mean that the water reaching the rivers in York will be at a more even rate which could help to reduce the level of peak flows in the lower catchment areas (the cause of the December 2015 flood).

As challenges increase, we need an integrated strategy to manage the flood plan. This region is divided in 4 catchment areas but the watercourses are not quite so obliging. The Inquiry has heard that the local authorities do share ideas to coordinate their efforts so that solutions can be reached that can take into account the whole of the catchment area.

It is the Inquiry's view that RMA's need to coordinate managing holistic catchment flood risk in the Ouse and Foss catchments by:

- working in partnership with other risk management authorities, especially the IDB's;
- having an appreciation of where flooding is likely to occur, how often and its potential impact;

- taking reasonable steps to reduce the probability of events occurring;
- identifying and implementing (where funding permits) measures that reduce the consequences of flooding when this does occur;
- developing a clear picture of the flooding caused by different sources and how they interact;
- understanding the causes of historic flood events and understanding likely impacts in the future.

Currently more data is needed as to how effective large scale catchment management schemes might be. EFRA recommend that the EA work with academics and flood risk management bodies including IDB's and local catchment partnerships to fill this evidence gap.

This is not a new idea and there have been catchment flood management plans based on river basin districts previously.

These considered all types of inland flooding, from rivers, groundwater, surface water and tidal flooding and looked at the likely impacts of climate change and the effects of how we use and manage the land.

In York there are excellent examples of collaboration - at the 2016 York Festival of Ideas, one of the themes was "*Managing Our Land for Now and Tomorrow*" which gathered academics, the police, utility companies, farmers, ecologists, engineers and RMA's to discuss issues such as the impact of climate change, living with floods, future-proofing homes and the future of our land.

The Inquiry spoke with academics from York University who are currently running "*The York City Environment Observatory*" in conjunction with CYC. This pilot project is aimed at better understanding the links between the quality of the natural, cultural, social and built environments and the health and wellbeing of residents and economy of the city.

Potentially if full funding is obtained, the project will seek to explore the impact and connection between flooding and the city. Collaborative projects such as these will benefit the city and assist in developing future strategic planning for flooding.

Conclusions

In the future the EA and RMA's need to:

- *improve understanding of flood risks and ensure that all stakeholders understand their roles and responsibilities for flood risk management;*
- *take a collaborative approach to reducing flood risks, using all available resources and funds in an integrated way and in so doing derive enhanced overall benefit;*
- *prevent an increase in flood risk from development where possible, by preventing additional flow entering existing drainage systems and watercourses;*
- *take a sustainable and holistic approach to flood risk management, seeking to deliver wider environmental and social benefits, climate change mitigation and improvements under the Water Framework Directive.*

Recommendations:

- **RMA's, of which the IDB is one, need to share ideas to coordinate their efforts so that solutions can be reached that can take into account the whole of the catchment area. This includes considering new areas or methods for water attenuation and storage;**
- **the Inquiry has been told about the benefits of whole catchment models therefore we would recommend additional modelling of the waterways in York, particularly the Foss;**
- **consideration should be given to developing the most effective ways of ensuring that development does not result in increased flood risk, including the consideration of land drainage and whether developments should be able to automatically connect to the current sewage system;**
CYC should continue its commitment to co-ordination with neighbouring local authorities so that catchment-wide solutions can be developed.

York's Plan

Over the next 5 years, the EA along with CYC are working on improving flood defences throughout the city and finding new ways to store water and manage the flow across the whole catchment to minimise the impact of flooding on the city. As a first stage, **£45 million of Government money has been provided to make these improvements.**

In November 2016, the EA in conjunction with CYC put on a presentation to outline some options to improve the flood defences of the city. On one day of the exhibition alone, over 190 people visited to share their views.

The plans that have been presented are ambitious and the EA has invited the residents and business owners to shape the way flood risk is managed. The Inquiry has learnt from the great wealth of knowledge that residents of York have gained by living alongside the rivers in York.

We have shared the information we have been given via the questionnaires and public sessions with the EA. But there is a significant amount of local expertise that the Inquiry has just begun to tap into and we would encourage people in the affected communities to consider the EA's plans and provide their suggestions to shape the future of the city.

The plan has the following aims:

- to enhance the way the development planning system can reduce the risk and impacts of flooding;
- to improve forecasting tools to provide more timely and targeted flood warnings;
- to improve upstream storage and natural flood management techniques to regulate and reduce the flow of water into the city.

What Improvements Are Being Made to the Foss Barrier?

A £17 million programme to upgrade the barrier commenced in April 2016 and the works are due to complete by the end of 2017.

Improvement works include the upgrading of the Foss Barrier pumping station. **The new pumps will have an initial increased total capacity of 40 cubic metres per second (an increase from 30 cubic metres per second) and they will be operational by the end of 2016.**

A new power supply to the pumping station will be installed during 2017 and this will enable the new pumps to deal with 50 cubic metres per second.

New equipment rooms are to be constructed above flood levels and new control equipment will be installed during 2017.

A new generator building is also to be constructed during 2017, a new increased main power feed to the site, and a secondary back up mains feed, will take pumping capability up to approximately 50 cubic metres per second. In addition to main and backup power, power can be supplied through standby generators that can power all pumps to 75% capacity.

All of the remedial works recommended in the CH2M report in May 2016 are to be undertaken as part of the programme of works. During the programme of upgrading works the pumping station and barrier will remain fully operational and capable of dealing with peak flows on the Foss of up to 40 cubic metres per second during the winter of 2016.

Whilst the upgrading of the Foss Barrier will provide a greater level of protection it must be understood that the risk of flooding due to extreme storm events remains and residents and business owners in flood risk areas should be encouraged to sign up for the EA warning systems and continue to implement flood resistance/resilience measures in their properties.

[What Improvements Are Being Made to York's Flood Defences?](#)

The Inquiry has been told that programme of works to upgrade York's defences will take in, but not be limited to, an area from Clifton Ings to Naburn and the purpose is to better protect more than 2,000 properties.

The options that the Inquiry has been told about include; channel realignment, upstream storage and raising and building earth embankments and new flood walls.

Some residents presented to the Inquiry their ideas for defences in their areas. In particular the Inquiry were impressed by a detailed plan for a demountable defence in Clementhorpe which is now being considered by the EA.

Initial proposals for the range of options that could be undertaken were presented by the EA and supported by CYC at a public exhibition in May 2016. Feedback was encouraged from the communities most affected by the proposals.

The options have been developed further during the course of 2016. Following these consultations and presentation of the proposals to the Secretary of State for the Environment, the final proposals will be fully developed during 2017 with work planned to start in 2018.

The programme of work will take place over the next five years and involves upgrading the defences along the River Ouse with the clear objective of making York more resilient to flooding. The stated ambition of the EA is to protect York to a 1 in 100 year (or 1%) standard plus an allowance to deal with climate change. In York, this will require an increase in the heights of flood defences.

The £45 million additional funding is seen by the EA as “kick-start” funding for the work required to achieve their ambitions and they have said it **is very unlikely to be enough to deliver all their desired improvements**. Some of the projects will therefore have to be funded partly or wholly through other routes and some will fall beyond the 5-year timescale of the £45 million additional Government funding.

In some places, Kings Staith being an obvious example, delivering the level of defence planned for elsewhere in the city (1 in 100 year plus climate change) would be technically difficult to achieve and would almost certainly be aesthetically undesirable. In these particular areas, the EA in conjunction with CYC, would seek to achieve the installation of the highest acceptable level of the defence.

The proposals that have been presented by the EA have been broken down into different communities where the requirements and challenges are different. The proposals are contained in an EA publication called “*How we’re reducing the risk of flooding for York*²⁹” which was produced on 17 November 2016 and remains open for consultation.

²⁹ <https://www.gov.uk/government/news/five-year-plan-to-reduce-flood-risk-in-york>

The best way to ensure that York is protected and resilient in the future is for agencies and residents alike to collaborate and share knowledge. Therefore the Inquiry would encourage any residents that have not yet done so to share their views upon the proposals and influence the future of York.

Conclusions:

- *the Inquiry welcome the proposed programme of works to better protect the city of York over the next five years but note that the EA have stated that the Government allocated £45million funding “...is very unlikely to deliver all of their desired improvements”;*
- *additional funding and the appropriate resources for the EA and CYC therefore should be confirmed at the earliest opportunity to enable all the necessary works to be undertaken including the uplands water catchment management proposals;*
- *confirmation of the necessary additional funding and resources will enable the residents and businesses of the city of York to be confident and reassured that all steps are being taken to better protect the city from future flooding events.*

Recommendations:

- **the Inquiry fully supports the public consultation on the proposed flood defences upgrades in York and would encourage residents to express their views to the EA;**
- **the Inquiry would encourage the EA to consider early implementation, subject to Government funding rules, of their plans to protect the currently unprotected parts of York;**
- **the Inquiry would encourage the EA to consider demountable defences in unprotected areas of York including Clementhorpe;**
- **additional funding and the appropriate resources for the EA and CYC should therefore be confirmed at the earliest opportunity to enable all the necessary works to be undertaken including the uplands water catchment management proposals.**

Inquiry Recommendations

Local Emergency Response Recommendations

- **RMA and Emergency Responders should review their emergency and business continuity plans to incorporate the lessons learnt during the Boxing Day flood. This will increase resilience and ensure that they are robust enough to cope with a sustained period of emergency.**

EA Recommendations

- **the EA should further develop its tools and techniques for predicting and modelling river flooding, particularly on the Foss, taking in to account extreme and multiple events.**
- **where possible, the EA should endeavour to discuss decisions such as opening the Foss Barrier, with their multi-agency partners;**
- **the EA should work with its partners to progressively develop and bring into use flood visualisation and mapping tools that are designed to meet the needs of flood-risk managers and emergency responders;**
- **the EA should continue to work with the utility companies (i.e. Category 2 Responders) to improve their understanding of risk and their capacity to make more resilient assets.**
- **EA to consider as part of their ongoing review of Flood Warning measures, loud hailers and/or the installations of sirens along the urban stretch of the Foss catchment, together with a plan for education of the public, annual testing and maintenance;**
- **EA should consider the feasibility of an opt-out telephone flood warning schemes to all homes and businesses liable to flooding, including those with ex-directory numbers;**
- **EA should consider reviewing trigger levels to ensure that the flood warning measures can be issued in a timely manner, to allow residents and businesses the maximum possibility of instigating their own flood resilience measures;**
- **EA to incorporate information about how the Flood Warnings operate in their next educational campaign.**

CYC Recommendations

- **CYC should do their best to ensure that staff on the customer service line are kept up to date with information, including road closures and contact details to hand out during an emergency. A direct link to Silver Command could be considered;**
- **RMA should consider developing plans for door-knocking, coordinated by CYC, to enhance flood warnings before flooding and to provide information and assess welfare needs once flooding has receded;**
- **CYC should consider making reciprocal arrangements with another council or outsource the service to a customer care centre to ensure a resilient customer service and provide an appropriate backup communications system;**
- **CYC should continue to improve the resilience of the customer care department during an emergency which should consider providing maps and locating them in the same place as the communications team.**
- **RMA should consider the resilience of their communication systems to ensure that they can cope in the event of critical infrastructure failure. This should include an evaluation of the use of RAYNET (the Radio Amateurs' Emergency Network);**
- **EA and CYC to consider sending letters annually to residents in flood risk areas, reminding them of the flood risk and emergency plans, o encourage them to prepare personal emergency plans, to have flood boxes and remove all important possessions to a safe place;**
- **CYC staff to record their good practice during the flood event so that this can be used as a source of guidance for future emergencies;**
- **RMA to review and enhance their Emergency Plan so that it contains clear roles and responsibilities for warning and informing and a clear evacuation plan. This should include sufficient information to access the details of vulnerable residents so that the effort can be coordinated effectively;**
- **CYC to review the internal resources required to deliver their role as LLFA. This should include considering the provisions to fulfil their flood risk management role .CYC should trial training reserve emergency planning officers which will offer resilience to the current duty rota.**

Demountable Defence Recommendations

- **CYC should investigate the use and deployment of both temporary and demountable barriers along the river Foss and Ouse where appropriate;**
- **CYC should conduct a review of how to involve volunteers in filling sandbags. This should be carried out to ensure that a protocol is in place that has considered health and safety issues;**
- **CYC should give some considerations as to whether a more efficient method can be adopted to communicate the addresses of residents requesting sandbags.**

Communications Recommendations

- **NYLRF, CYC and EA should consider reviewing their communication strategy to embed further system and protocols to engage with social media;**
- **RMA should ensure that they have a robust business continuity strategy so that in the event of a strategic communications failure for any reason a reliable alternative is in place;**
- **RMA should ensure that media briefings are coordinated to avoid conflicting messages.**

Councillors Recommendations

- **flood/Emergency Procedure Awareness training should be considered/repeated for councillors and councillors should commit to attend the training;**
- **a short guidance document should be produced for councillors so that they have reference material to assist with what to do in an emergency;**
- **information should be given or made available for councillors to access during an emergency so that a consistent message can be communicated to residents.**

James Street Recommendations

- **CYC and the Travellers' Trust should give consideration as to whether a specific evacuation plan is needed for the site, if so this should be shared with residents;**
- **CYC should consider whether the site could be made more resilient to flooding which includes looking at flood alleviation measures to see if greater protection can be provided;**
- **efforts should be made to see whether insurance can be secured, via Flood Re, by residents of the James Street site.**

NYP Recommendations

- the Inquiry agrees with NYP, CYC and NYLRF proposal that a different venue needs identifying for Silver Command to use in any future flood incidents. This should mean that those people working hard to respond to an emergency on our behalf can do so in an environment that facilitates them in carrying out their role;
- if a problem arises with an asset, including the Foss Barrier or other flood protection measure, partner agencies should be consulted, where the situation allows, and/or notified, before a decision is taken by the asset owner that would impact on the emergency response;
- trigger levels should be reviewed in the multi-agency flood plan to ensure that they allow sufficient time for consultation;
- maps of York identifying the potential flood zones and predicted inundation, along with information about vulnerable residents should be made available to Silver Command, as soon as it convenes;
- with the flood risk details known, an in-depth Evacuation plan should be developed as part of the multi-agency plan. Flood risk and information about residents should be incorporated;
- agencies should consider as to whether relevant flood visualisation data, held in electronic map format, can be made available online to Gold and Silver Commands;
- NYLRF to continue to provide training including simulations of emergency situations and the Emergency Responders should endeavour to participate in such exercises.

NYFR Recommendations

- NYFR to formalise the arrangements adopted because of the Boxing Day floods as a model for future emergency deployments;
- NYFR to consider a review of the coordination of a multi-agency flood rescue to establish a clear command structure and protocol to incorporate the volunteer services.

NYLRF Recommendations

- NYLRF and Risk Management Agencies should consider whether Bronze Command can be located separately from any Rest Centre that is set up in an accessible location;
- SRMRT to review their deployment plans/shift patterns to ensure that there is sufficient resilience for personnel to be deployed for a safe amount of time and so that procedures can be adopted to see if working arrangements can be agreed with other rescue organisations. Any requirements for additional equipment be met;

- **SilverCommand to ensure Mountain Rescue have relevant flood zone/inundation maps to assist with evacuation as soon as possible;**
- **emergency Responders to consider a review of the coordination of a multi-agency flood rescue to establish a clear command structure and protocol to incorporate the volunteer services potentially under the control of the Fire and Rescue Service;**
- **when the multi-agency flood plan is updated, NYLRF to consider input from the Mountain Rescue Service to enhance the emergency planning for evacuation and to consider suitable rest areas so that volunteer organisations can be given food and rest.**

YAS Recommendation

- **YAS to review their business continuity and emergency plans to ensure their resilience in light of what was learnt during the response to the Boxing Day flood.**

Military Response Recommendation

- **the multi-agency Emergency Plan should be reviewed to ensure that there is sufficient resilience should military assistance be unavailable.**

Utilities Recommendations

- **NYLRF, CYC and the utility companies should continue to work together to share data and coordinate their actions so that there is a clear understanding of the parties roles and responsibilities as defined in the multi-agency Emergency Plan;**
- **NYLRF, CYC, EA and the utility companies should continue to work together to improve the understanding of risk and their capacity to make at risk critical assets more resilient;**
- **BT should conduct a review of the resilience of their critical infrastructure to ensure that there is a suitable plan in place to protect the assets in case of future flooding, this may include retaining demountable flood defences;**
- **BT should remain signed up to EA Flood Alerts and Warnings and have a robust system in place to monitor and respond appropriately to them;**
- **BT should review its business continuity to ensure that there are suitable and time critical contingency plans should the Stonebow Exchange be at risk again.**

Voluntary Sector Recommendations

- **the role of the voluntary sector is already mentioned in the multi-agency Emergency Flood Plan but the Inquiry feel that this needs to be updated considering the work that has been done by the various Third Sector organisations;**

- York CVS and CYC/NYLRF should ensure that contact details are updated regularly so that they can be used to mobilise and coordinate the volunteer effort;
- York CVS should agree a protocol with the NYLRF/CYC as to how the voluntary sector will be involved in emergency situations;
- consideration should be given by York CVS to support an event or emergency drill to ensure that the learning captured by the “Ready for Anything” conferences held this year are not lost;
- multi-agencies including CYC should consider whether Third Sector input could be utilised to provide support in identifying and assisting the vulnerable in future emergency situations;
- CYC and Multi-agencies should consider how a clear message could be given inviting/tailoring donations to what is required and creating a clear policy to deal with surplus donations;
- MIRT should review their plans to incorporate the lessons learnt from December including considering zoning rest centres so that they can be set up in areas of the city where they are easily accessible to the residents that need them.

Recovery Recommendations

- CYC and NYLRF should evaluate and share lessons from the recovery phases to inform their planning for future emergencies;
- CYC should consider whether there is any solution to the issue created by the fact that often the most vulnerable tenants were allocated ground-floor flats (the most affected by flooding);
- CYC to consider the take-up of property flood resistance and resilience by residents and businesses.
- Government to consider whether there could be a mechanism to ensure that adequate resources are available to local authorities to be applied to the recovery phase.

Grants Recommendations

- the Inquiry supports the recommendations of the Bonfield Report and would encourage CYC and Government to adopt them;

- **consideration should be given by Government to make the Property Level Resilience Grant automatically available to the property owners or their contractors before repair works start³⁰;**
- **residential and business properties need to be made more flood resilient and CYC and Make it York should explore ways to support and encourage that process;**
- **flood Re should consider requiring insurers to incorporate flood resilience measures into any reinstatement works after a property has been flooded;**
- **the Government should consider providing funds to local authorities to assist with the administration of the Property Level Resilience Grants;**
- **CYC should review the grant processes in order to learn from and improve their processes.**

Insurance Recommendations

- **it would be beneficial if those companies who offer Flood RE ensure that their sales staff are fully aware of the criteria for acceptance to Flood Re and promote its use;**
- **CYC should continue to promote and raise awareness of Flood Re to those residents in areas at risk of flooding;**
- **the Government should give consideration to an extension of Flood Re for businesses.**

TRCF Recommendations

- **CYC to reinforce the existing training guidance to those departments directly dealing with issues arising from flooding events in the future;**
- **CYC to consider whether they can provide ongoing support to council tenants following the flooding when they have moved back in;**
- **TRCF to continue to work with CYC and NYLRF to share lessons from the recovery phase to inform planning for future emergencies.**

Community Ideas Recommendations

- **to capture the current enthusiasm for flood wardens some training should be considered for any new volunteers;**
- **CYC should continue to encourage communities to prepare Community Emergency Plans;**

³⁰ There would still be a need for an independent survey of the property by a chartered surveyor (or similar) to ensure the works approved are appropriate, in line with the PRG guidelines and value for money, but this could be undertaken during the strip out and drying out phase.

- **York CVS and the Third Sector should consider how they can encourage and promote community groups that have formed in response to the floods.**

The Future Recommendations

- **the Inquiry endorses the six steps identified to improve communication about flood risk identified by the NFRR and would recommend that these were taken into consideration by CYC and the EA in future communications about flood risk.**
- **CYC and utility providers should work more closely to improve the resilience of critical infrastructure and ensure that they all have a better understanding of their obligations under the emergency plans.**

Catchment Management Recommendations

- **the Inquiry endorses the six steps identified to improve communication about flood risk identified by the NFRR and would recommend that these were taken into consideration by CYC and the EA in future communications about flood risk.**
- **CYC and utility providers should work more closely to improve the resilience of critical infrastructure and ensure that they all have a better understanding of their obligations under the emergency plans.**

Flood Defence Upgrade Recommendations

- **the Inquiry fully supports the public consultation on the proposed flood defences upgrades in York and would encourage residents to express their views to the EA;**
- **the Inquiry would encourage the EA to consider early implementation, subject to Government funding rules, of their plans to protect the currently unprotected parts of York;**
- **the Inquiry would encourage the EA to consider demountable defences in unprotected areas of York including Clementhorpe;**
- **additional funding and the appropriate resources for the EA and CYC should therefore be confirmed at the earliest opportunity to enable all the necessary works to be undertaken including the uplands water catchment management proposals.**

Acknowledgements

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