



RESILIENT YORK:

Sustaining An Historic City Through Flooding & Beyond

The Huntingdon Room, King's Manor, York

Friday 4th November 2016



UNIVERSITY
of York



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CONFERENCE PROGRAM

Chairpersons:

Morning session: Dr. GILL CHITTY (Chair of Board of Studies, Director of Studies, MA in Conservation Studies, *University of York*)

Afternoon session: Dr. JANE GRENVILLE (Chair of *York Civic Trust's* Planning Committee, independent historic building researcher, & formerly *University of York* Deputy Vice-Chancellor)

8.45 – 9.15 **Registration**

MORNING SESSION: THE LOCAL CONTEXT

9.15 – 9.40 **Welcome**
Dr. JANE GRENVILLE

An Historical Perspective on Flooding in York
Dr. DAVID FRASER (Chief Executive, *York Civic Trust*)

9.40 – 11.00 **1. Yorkshire flooding case studies: how are we coping?**

The Merchant Adventurers Hall's Unwelcome Christmas Present
Capt. STEPHEN UPRIGHT, RN (Clerk to *The Company of Merchant Adventurers of the City of York*)

You're in a Basement, Below the Water Table and You're Flooded – What do You do Next?
IAN PANTER (Head of Conservation, *York Archaeological Trust*)

St Michael's Church, Mytholmroyd
RICHARD STORAH (Director & Architect, *Storah Architecture*)

Questions and plenary discussion

11.00 – 11.20 **Refreshments**

11.20 – 1.00 **2. Flooding research and management in York**

National Perspectives / New Thinking; New Thinking / National Perspectives
NEIL REDFERN (Principal Inspector of Ancient Monuments & Development Management Team Manager (Yorkshire), *Historic England*)

York – Living and Adapting to Flood Risk
STEVE WRAGG (Flood Risk & Asset Manager, *City of York Council*)

Local Flood Culture in the Historic Core of York: A method towards resilient buildings
ALESSANDRA SPREGA (White Rose College of the Arts & Humanities PhD student,
University of York)

Identification and Quantification of Environmental Impact on Heritage Buildings: The Parnassus experience

Prof. DINA D'AYALA, (Professor of Structural Engineering, Department of Civil,
Environmental & Geomatic Engineering, *University College London*)

Questions and plenary discussion

1.00 – 2.00 **Lunch**

AFTERNOON SESSION: THE BIGGER PICTURE

2.00 – 3.40 **3. Community and specialist responses**

Reassessing Flood Risk at York using Historical Information for the River Ouse

Dr. NEIL MACDONALD (Institute of Risk Management, *University of Liverpool*)

Making our Places and Communities more Flood Resilient

TIM GODSON (Team Leader for Resilience & Emergencies Division (Northern),
Department of Communities and Local Government Resilience Team)

The York City Environment Observatory: Drawing the links between the quality of the environment and the impacts on health, wellbeing and the economy

Dr. LORRAINE YOUNDS (Research and Innovation Manager: Urban Living, *University of York*)

Recovery Issues and the Affected Community's Perspective

HEATHER SHEPHERD (Community Support & Flood Recovery Specialist, *The National Flood Forum*)

Questions and plenary discussion

3.40 – 4.00 **Refreshments**

4.00 – 5.00 **Roundtable with speakers' debate**

- How can the civic and research community work together with people in York as a laboratory for dealing with some of these issues?
- Big issues, how do we deal with it on a local scale, individual level?
- What can the Civic Trust and the University take forward as at directed action?

5.00 **Closing words and next steps**

Conference Organisers:

Dr. GILL CHITTY (Chair of Board of Studies, Director of Studies, MA in Conservation Studies, *University of York*)

Dr. DAVID FRASER (Chief Executive, *York Civic Trust*)

DUNCAN MARKS (Postgraduate student, MA in Conservation Studies, *University of York*)

TRACY WILCOCKSON (Chairperson, *York Conservation Alumni Association*)

CONFERENCE SPONSORS

The 2016 Resilient York Conference is a partnership event organised and facilitated by York Civic Trust, York Conservation Alumni Association, and the University of York's Department of Archaeology, assisted by the Two Ridings Community Foundation.

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York Civic Trust is a membership organisation, open to all who wish to protect and enhance York's architectural and cultural heritage, to champion good design and to advance the high place which York holds amongst the cities of the world. The Trust values its independence, but seeks to work collaboratively with the City of York Council and other organisations.

York Conservation Alumni Association is the network for hundreds of alumni from the University of York's internationally recognised Conservation Studies programme which has been running for over 40 years. York Conservation alumni work around the world and stay connected with the Centre for Conservation Studies' research and programmes.

The **University of York's Department of Archaeology** is recognised worldwide as a vibrant research community and a centre of excellent teaching. It was awarded the Queen's Anniversary Prize 2011 in recognition of its outstanding and innovative approaches to archaeology. The department has core strengths in prehistoric, medieval, and later historical archaeology, a centre of excellence in computing and bioarchaeology, and a strong international reputation in the fields of cultural heritage, architectural conservation, and landscape research.

Two Ridings Community Foundation is one of 48 community foundations in the UK with the shared aim of helping individuals, families, entrepreneurs, companies, charitable trusts and public sector bodies connect with, support and invest in their local communities across the UK. Launched on 5 January 2016, the Foundation's North Yorkshire Flood Appeal raises funds to directly support individuals and families in hardship and vital community organisations and resident groups in the areas affected by Storm Eva in December 2015. It provides emergency response support, including providing grants for essential household items and repairs, and clean-up support via charitable donations and grants.



PRESENTATION ABSTRACTS

Prof. DINA D'AYALA (Professor of Structural Engineering, Department of Civil, Environmental & Geomatic Engineering, University College London, *University College London*)

Title: 'Identification and Quantification of Environmental Impact on Heritage Buildings: The Parnassus Experience'

Abstract: Current climatic trends point out important changes in major environmental parameters which seem to cause more frequent extreme weather events of accelerating intensity, such as extreme precipitation and flooding. These events, globally and in the UK, have a very strong impact on the built environment, and historic or heritage buildings are even more vulnerable to this impact due to their age and hence accumulated material or structural damage, that can be exacerbated by means of, among others, moisture ingress induced by these extreme weather events. For this reason, Parnassus Project was set up in 2010 with the aim of identifying and quantifying the climatic impact on the UK architectural heritage through extensive environmental monitoring and laboratory testing, with specific emphasis on flooding and wind-driven rain. This talk will outline the major findings from this research with case studies throughout the UK, including Barker Tower in York.

Dr. DAVID FRASER (Chief Executive, *York Civic Trust*)

Title: 'An Historical Perspective on Flooding'

Abstract: York sits at the confluence of the Ouse and the Foss, and is influenced by a large catchment area. The citizens of York have been affected by floods many times. The paper will summarise the worst flooding events in York in the last thousand years and will use some contemporary images and records to illustrate their effects. The earliest significant report of flooding comes from 1263 and in 1316 earthworks of York Castle were swept away. In 1564 Ouse Bridge was damaged by floating ice. The highest floods ever recorded in York came in 1625 and 1638. Throughout the twentieth century a series of well-documented floods hit the city, with the floods of 2000 being the highest of the century. The paper sets the scene for our preparations for the floods of the future.

TIM GODSON (Team Leader for Resilience & Emergencies Division (Northern), *Department for Communities & Local Government, Leeds*)

Title: 'Making our Places and Communities More Flood Resilient'

Abstract: The talk will cover the government's legislative and organisational framework for dealing with emergencies and longer-term flood prevention. It will cover some personal experiences of operating this framework over flood emergencies that impacted on Yorkshire and beyond in 2013-14 and 2015. The talk will cover the findings of the government's recently published National Flood Emergency Framework and how across agencies we can use its findings to develop more resilient places. Having attended a United Nations conference in Florence recently I will bring some international perspectives on making our places and communities flood resilient.

Dr. NEIL MACDONALD (Senior Lecturer in Physical Geography, *University of Liverpool*)

Title: 'Reassessing Flood Risk at York Using Historical Information for the River Ouse'

Abstract: The reassessment of flood risk at York, UK, is pertinent in light of several major floods over the last couple of decades, and heightened concerns flooding nationally. Systematic flood level readings from 1877 and a wealth of documentary records dating back to the thirteenth century provides a rich history of flood records. This extended flood record provides an opportunity to reassess estimates of flood frequency over a time scale not normally possible within flood frequency analysis. This paper re-evaluates flood frequency at York, using novel new approaches which embed historical information into the flood risk estimation process. Use of historical information is found to yield risk estimates which differ from those achieved using gauged records alone.

IAN PANTER (Head of Conservation, *York Archaeological Trust*)

Title: 'You're in a Basement, Below the Water Table and You're Flooded – What do You do next?'

Abstract: On Sunday 27th December 2015 the Jorvik Viking Centre was inundated with flood waters from the River Foss, the first major disaster to befall the museum since opening in 1984. However, as a registered museum the York Archaeological Trust already had in place an emergency plan which was implemented during the early evening of the 27th resulting in the rapid, but careful, removal of circa 1000 artefacts from the display before the floods hit. Whilst the artefacts were saved, much of the set and other displays were irreparably damaged and the Centre remains shut until Easter 2017 whilst the major overhaul is completed. This paper will consider the events of that night, and look at the lessons learned and how we've had to adapt as a below-ground attraction in a flood risk area

NEIL REDFERN (Principal Inspector of Ancient Monuments & Development Management Team Manager (Yorkshire), *Historic England*)

Title: 'National Perspectives / New Thinking; New Thinking / National Perspectives'

Abstract: Is it time to give up flood prevention strategies with all the fixed defences they entail as kneejerk and short-sighted approaches to flood events? Too often they seem to be driven by the need to be seen to be doing something rather than understanding how we can foster more resilient* communities. How do we change the emphasis to encompass broader water management strategies, resilience strategies and a less fabric first approach to the management of the historic environment and therefore help people and communities be better able to cope. Using my experience I will consider how the immediate and obvious answers are not always the right or best thing to do. We have been dealing with flooding and water management issues for generations as illustrated in York yet the City is still a vibrant and successful place. So why do we see such emotive responses and shouts of doom and gloom regarding heritage assets after flooding? Is it time for us to look at the bigger picture and accept the renewal of heritage asset after flooding is just part of their and our evolving story.

**Here I use resilience not as used in emergency planning but rather in the sense of how we need to change heritage assets and peoples perspectives to better cope with changing weather patterns.*

HEATHER SHEPHERD (Community Support & Flood Recovery Specialist Member, *The National Flood Forum*)

Title: 'Recovery Issues and the Affected Community's Perspective'

Synopsis: What are some of the issues in flood recovery and how are the flood affected feeling; how a disaster can have an outcome of future resilience when communities are empowered to lead the way.

ALESSANDRA SPREGA (White Rose College of the Arts & Humanities PhD student, *University of York*)

Title: 'Local Flood Culture in the Historic Core of York: A method towards resilient buildings'

Abstract: Over the last few decades, the cultural heritage of York has been threatened by an increasing number of floods due to climate change. This study provides an analysis of a particular historic building in York, Cumberland House, in which a new methodology is tested to increase the resilience of traditional building materials in order to safeguard the building's authenticity and integrity. This paper aims to highlight the architectural elements which form the Local Flood Culture of York. Understanding the traditional measures which were used to mitigate against flooding is a crucial aspect which enhances the conservation discourse on the prevention culture in flood-prone areas.

RICHARD STORAH (Director & Architect, *Storah Architecture*)

Title: 'St Michael's Church, Mytholmroyd'

Abstract: On Boxing Day 2015, flooding occurred throughout the Calder Valley. In Mytholmroyd, the Rivers Elphin and Calder combined at their highest level recorded, over 3.5m above the usual peak. Three buildings were washed away; homes and businesses were left uninhabitable. St Michael's Church is alongside the Calder in the centre of the town. The rivers combined in the churchyard, leveling gravestones and boundary walls and flooding the church and church hall to a depth of 1.2m. Recovery was initially slow with drying out hampered by a poultice of fine silt over the ground, sub-floor voids, floors and internal finishes. A low-impact approach of opening up, dehumidifying and ventilating the church and sub-floors proved ineffective in the colder winter months, but allowed time to consider how to improve the building and build in flood resilience measures whilst retaining historic significance and a sense of continuity. A low key reordering is proposed, leveling floors and building in flood resilience measures. The Environment Agency are involved as they propose widening the Calder by removing part of the churchyard and underpinning the north of the church.

Capt. STEPHEN UPRIGHT, RN (Clerk to *The Company of Merchant Adventurers of the City of York*)

Title: 'The Merchant Adventurers Hall's Unwelcome Christmas Present'

Abstract: In the mid-14th Century *The Merchant Adventurers Hall* was built on a vulnerable site beside the River Foss for undoubtedly commercial reasons and must have suffered many flooding events over the centuries. Since the building of the Foss Barrier after the 1982 floods there had been no flooding

incidents in the Hall until Boxing Day 2015 when the barrier failed. The water reached a depth of 1.1 metres in the Undercroft of the Hall and although the water was only in the Hall for a short time there was significant damage. The talk will discuss the flooding event itself; its impact on the ancient and modern fabric of the building; the effect on the collections; the long recovery process and our efforts to build in further resilience.

STEVE WRAGG (Flood Risk & Asset Manager, *City of York Council*)

Title: 'York – Living and Adapting to Flood Risk'

Abstract: The floods of December 2015 resulted in the flooding of 627 properties, many of these properties being flooded for the first time since 1982 from record flood flows in the River Foss catchment. Many alongside the River Ouse have undertaken measures to make themselves resilient to flooding, but years of managed flood risks in communities along the River Foss and its tributaries mean many were less resilient here and the impacts have been far reaching. City of York Council and the Environment are working in partnership to identify the long-term interventions to improve flood protection in the city. This work will look at the improvements that are needed to flood defence assets across the city and the potential actions across the wider catchment to manage future climatic change. This presentation will highlight the historic and current flood risks in the city, the work of all partners to manage these risks and the future impacts of flooding and the ways in which we need to work together to reduce the impacts on our homes, businesses and lives.

Dr. LORRAINE YOUNDS (Research and Innovation Manager: Urban Living, *University of York*)

Title: The York City Environment Observatory: Drawing the links between the quality of the environment and the impacts on health, wellbeing and the economy'

Abstract: The York City Environment Observatory (YCEO) pilot project is one of five programmes funded by RCUK and Innovate UK under its Urban Partnerships programme. The vision for the YCEO is to establish York as an exemplar city for better understanding the links between the quality of the natural, cultural, social and built environments and the health and wellbeing of citizens and the economy of the city. The YCEO will employ cutting-edge monitoring and data analytic technologies to provide intelligence to allow informed decisions to be made on the design and management of the city and surrounding environments into the future, providing long term benefits for York and surrounding regions. The technology and approaches developed in the observatory will be transferable to other urban areas in the UK and internationally for instrumenting, monitoring, managing and designing their built and natural environments to maximise benefits to their citizens.

SPEAKERS' BIOGRAPHIES



Prof. DINA D'AYALA is Head of Structures and Co-director of the EPI-Centre research centre at University College London. She is a structural engineer with a humanities background and her research focus is the protection of architectural heritage and urban settlements from natural hazard. She believes that to preserve to posterity the authenticity of heritage in different locations worldwide, a common and systemic interdisciplinary approach should be followed, delivering sustainable heritage structures within resilient communities. Dina's current interdisciplinary research includes the development of resilient measure to reduce vulnerability to flood and wind driven rain of historic buildings in the UK. She is also joint editor of the Bulletin of Earthquake Engineering, and member of the editorial board of the International Journal for Architectural Heritage. She has been a consultant to the WB, IDA, UNDP and UNESCO on projects of heritage conservation and hazard protection in the Middle East, Ethiopia, Turkey, Iraq, Nepal etc.



Dr. DAVID FRASER is a geographer and archaeologist by training; and a cultural resource manager by profession. He has worked for English Heritage as Inspector and Regional Director; and was Environment Director in the Government Office for Yorkshire and the Humber. In the latter post he was involved in policy formation for climate change; and directly in the practical aftermath of the 2007 floods.



TIM GODSON: I have been working in the Department of Communities and Local Government Resilience and Emergencies Division, based in Leeds since it came into being in 2011. I work with Local Resilience Forums in the north of England on preparing and dealing with emergencies locally and helping them to interact with other LRFs and with Government. A major part of my work has been leading on a variety of flooding issues for the Division and the Department as a whole, including on our response to the flood events and on flood insurance. Before joining DCLG, I worked for Defra for 28 years, working in a number of local and national roles, normally on topical issues such as pesticides, GM crops, Foot and Mouth Disease, climate change and waste. In my own time I am keen on sport and biodiversity and am a resident of York.



Dr. NEIL MACDONALD has published over 50 publications in international peer reviewed journals, with research grant awards totalling over £1.25M with funding from NERC; EPSRC; ESRC; AHRC; British Academy and the Carnegie Trust and was part of the team that secured £5.29M for the EPSRC and ESRC Centre for Doctoral Training (CDT) on Quantification and Management of Risk & Uncertainty in Complex Systems & Environments. A number of projects have been undertaken in collaboration with industrial partners, including Severn-Trent, United Utilities and the Environment Agency, focused on floods, droughts and past weather extremes. He sat on the main committee of British Hydrological Society 2007-13 and led an EU working group on historical floods (eCOST ES0901) and is on the steering group of the recently formed PAGES group exploring palaeo-floods.



IAN PANTER: As Head of Conservation at the York Archaeological Trust, I am responsible for the operation of the commercial laboratories conserving a wide range of artefacts from terrestrial, waterlogged and marine environments, working for clients from the UK and abroad. Also my remit includes the conservation of the finds displayed at our attractions including the Jorvik Viking Centre, Barley Hall and DiG, and led the team that went in and got all the artefacts out of the JVC before the flood waters rushed in.



NEIL REDFERN has worked for Historic England in York for 15 years and is currently Principle Inspector of Ancient Monuments in Yorkshire. He is responsible for managing development management advice in the region. He has over 20 years experience of cultural heritage management, archaeological fieldwork, survey and assessment and museum practice through working for English Heritage, the Cambridge Archaeological Unit, Council for British Archaeology (CBA) and the Wordsworth Trust, Cumbria.

He is particularly interested in the practical and philosophical challenges faced in securing the conservation and enhancement of heritage sites as relevant places for people today and in how we articulate their social/economic value to owners, managers and the wider community. Recent work has included co-ordinating Historic England's advice in Yorkshire in response to the Boxing Day Floods of 2015 and as a national activity lead looking at how we understand and respond to major environmental threats.



HEATHER SHEPHERD works for The National Flood Forum with focus on Community Engagement and Flood Recovery. Heather has suffered flooding herself and has worked in flooding for 18 years. Amongst her many roles, for the past 10 of these, she has provided long term recovery advice and support for Communities, Councils & LRF's, a few of these include; the major floods of Yorkshire, Cumbria, Lancashire, West Sussex, Kent, Surrey, Calderdale, Liverpool, Hampshire. Although Heather now works managing and advising, she still likes to ensure she keeps working at the heart of communities where possible, creating partnership working

to reduce flood risk and increase community resilience. Heather gave evidence to the EFRA committee at the winter floods of 2015-16 inquiry. She is also a member of the Midlands RFCC and received an MBE for her services to flooded communities.



ALESSANDRA SPREGA received a BA and MA in Architecture and Restoration from the University of Roma Tre (Rome) in 2011. She participated in international research projects with the University of Roma Tre and the Pontificia Universidad Católica del Perú (PUCP) into the seismic reinforcement of traditional earthen building. She obtained her second Master's degree in Conservation Studies at the University of York and she has recently been awarded the WRoCAH studentship to undertake a PhD in Conservation Studies by the Department of Archeology at York.

Her research will focus on the damage sustained by the historic environment and the built heritage as a result of flooding specifically in York.



RICK STORAH is a Director of Storah Architecture. He is an accredited conservation architect, with projects throughout the country, but principally in the North West and West Yorkshire. He is inspecting architect to around 80 churches of various denominations and is a member of the Manchester Diocesan Advisory Committee. Richard has an interest in mills and industrial heritage and is inspecting architect for several regional industrial museums. He is a member of the BSI Committee for the Conservation of cultural heritage and was on drafting panels for BSEN16095:2012 Condition survey of historic buildings and BS7913:2013 Guide to the conservation of historic buildings.



Captain STEPHEN UPRIGHT, Royal Navy: Stephen served for 33 years in the Royal Navy during which he commanded three submarines. His service included a circumnavigation of the globe in a submarine under his command, service in the 1991 Gulf War and a rounding of Cape Horn under sail in a naval yacht. After retirement from the Service in 2010 he became Clerk to the Company of Merchant Adventurers of the City of York and he is now responsible for, amongst other things, the custody of the Company's ancient Hall. Stephen is an enthusiastic yachtsman, a lifelong student of history and a keen countryside walker.



STEVE WRAGG has worked in flood risk management over almost 20 years and has experienced the industry and its changes from a range of roles across this time. After an initial employment as a consultant engineer Steve worked for the Environment Agency for 12 years managing flood risk projects and teams across North and South Yorkshire, during this time Steve was involved in a range of significant flood events across the Yorkshire and Humber region. Following the 2007 floods and the development of Lead Local Flood Authorities Steve took up the role of Flood Risk Planning Manager for Hull City Council where he developed the delivery of the role and the requirements of the Flood and Water Management Act. Steve joined City of York Council in May 2014 in a similar role. Steve also chairs the Local Authority Capacity Building Steering Group for the EA and Defra and is involved in a number of national groups and advisory groups.



Dr. LORRAINE YOUDS is the Research and Innovation Manager for Urban Living at the University of York. As part of her role, Lorraine manages the York City Environment Observatory pilot project and the CAPACITIE Marie Curie Initial Training Programme. Lorraine has a background in earth and environmental science, completing geology and environmental science Masters degrees and then going on to attain a PhD focused on decision-making for electricity generation in the UK (University of Manchester). She also has experience of working in a local authority as Environmental Policy Officer for North Yorkshire County Council and has worked in environmental consultancy.

