



Department
for Transport

Flooding and Climate Change – APSE Seminar, 9 February 2017

Department for Transport





Preparations for Winter

- Important the transport sector, including local highway authorities, have robust contingency plans in place to mitigate against any significant weather that we may encounter over the winter period.
- In October 2015, Parliamentary Under Secretary of State for Transport wrote to remind local highway authorities of winter preparations.
- This follows on from various reviews undertaken after previous severe winter weather encountered since 2010.



27 October 2015

Dear Colleague,

WINTER 2015/16

We are all too familiar with the UK weather being unpredictable and experience from recent winters has reminded us of the wisdom of planning for all eventualities. It is therefore important that the transport sector, including local highway authorities, have robust contingency plans in place to mitigate against any significant weather that we may encounter over the winter period.

Last year and following on from the wet winter of 2013/14 we wrote to you to highlight the independent report on transport resilience. This report made a number of recommendations to organisations including local authorities. I wish to take this opportunity to remind you of this report. The report can be found at the following weblink:

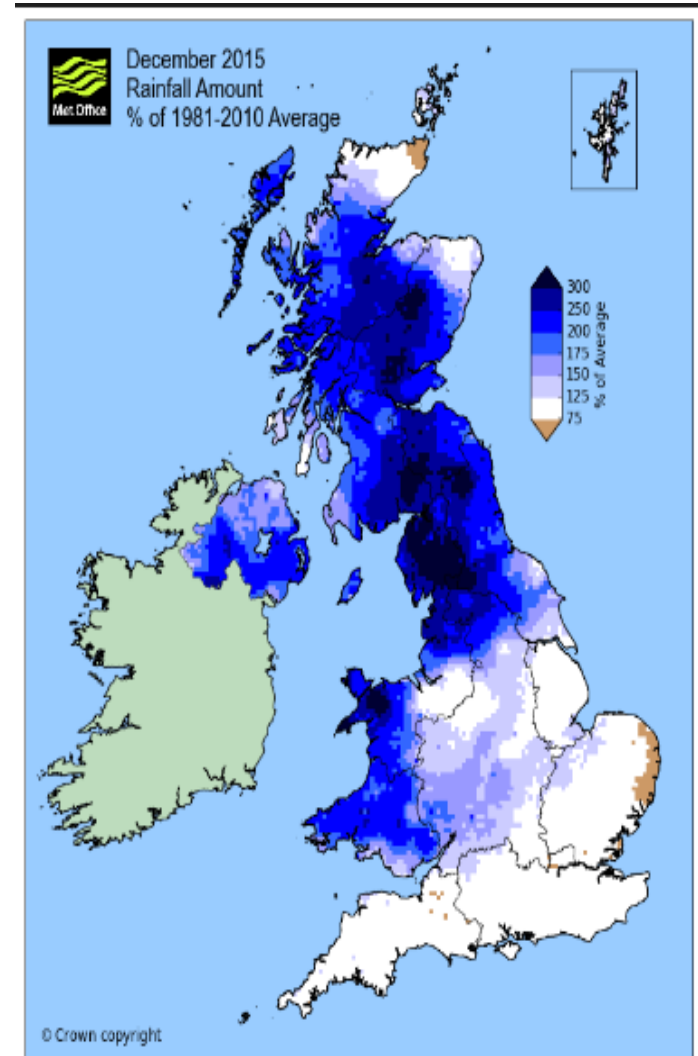
<https://www.gov.uk/government/publications/transport-resilience-review-recommendations>

I am sure that your authority is already ensuring that drains and gullies that fall under your council's responsibility are inspected and cleansed to help reduce the risk of surface water flooding. It is also important that all necessary steps are undertaken to mitigate against any severe weather and this should include reviewing and updating winter service and other contingency plans and taking into account any lessons learnt from previous winters. It is also important that your authority works closely with your Local Resilience Forum and other key organisations and responders within your area, as well as ensuring effective



Scale and Context

- ▶ The **2015–16 Great Britain Storms** were a series of heavy rainfall events which led to flooding during the winter of late 2015 and early 2016.
- ▶ For example, **Storm Desmond** broke the United Kingdom's 24-hour rainfall record, with 341.4 mm of rain falling at Honister Pass in Cumbria on 5 December 2015.
- ▶ Further Storms were encountered – including **Eva, Frank and Gertrude** to add to the flooding and damage to properties and infrastructure.





Department
for Transport

Examples of damage to Local Highway Infrastructure in 15/16 storms



All pictures courtesy of Google Images

Moving Britain Ahead



Ministerial Recovery Group

The strategic objective for a Ministerial Recovery Group (MRG) is to stabilise, restore and return to normality.

TERMS OF REFERENCE

- engender public confidence in the recovery process at all levels;
- ensure effective, co-ordinated support by central government and other national bodies to the work of local authorities in helping communities affected by the floods return to normality;
- ensure that local authorities and other recovery agencies fulfil their role and that where necessary local issues are considered and resolved at the national level; and
- support mainstreaming of any residual recovery activity as soon as is possible.

KEY TASKS

- monitor the outcomes and spend of the recovery support package;
- ensure effective joined up working across national & local government (avoiding duplication/repetition) escalating issues that require resolution at the national level; and,
- ensure that inter-departmental, including Ministerial, agreement on the way forward is agreed & subsequently implemented.



Flood Recovery Funding





Department
for Transport

IS FLOODING BECOMING THE NORM????

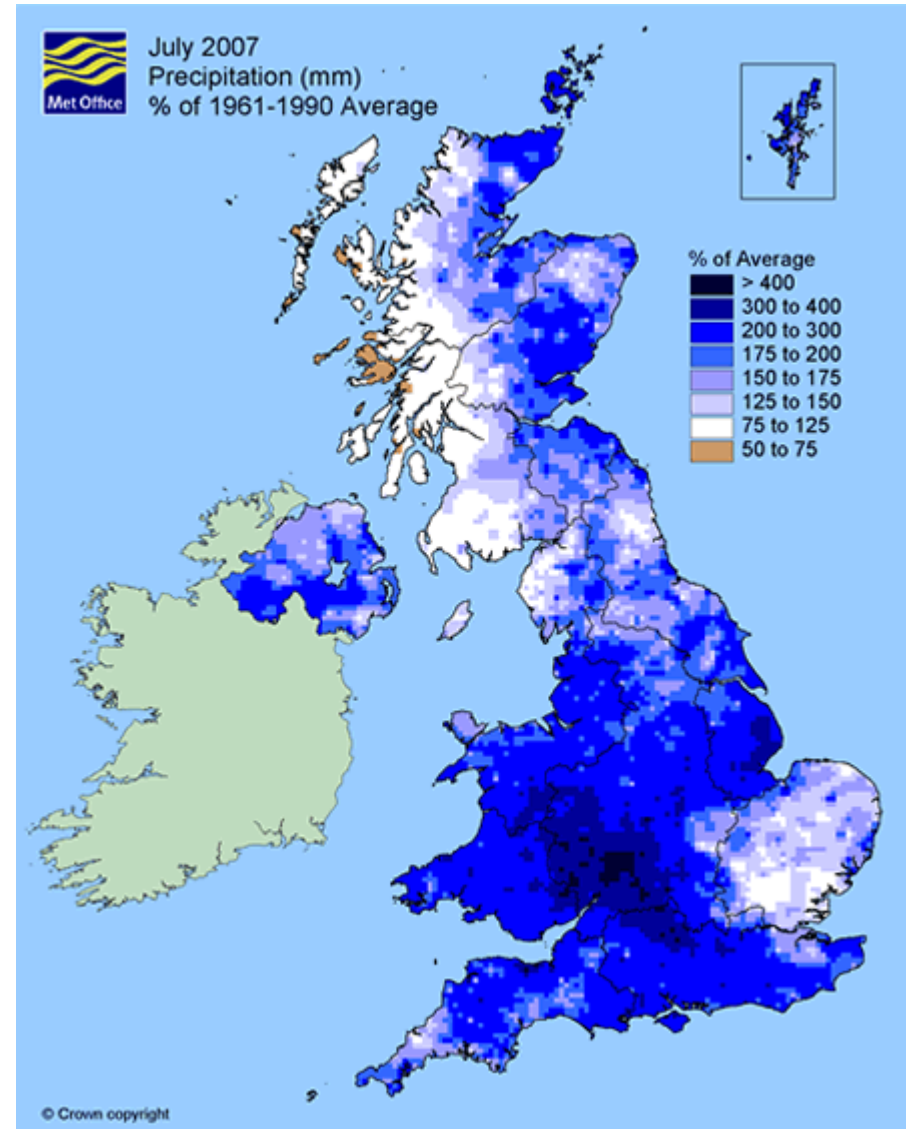




Summer 2007

A series of destructive floods occurred in parts of the United Kingdom during the summer of 2007.

The worst of the flooding occurred across Scotland on 12 June; East Yorkshire and The Midlands on 15 June; Yorkshire, The Midlands, Gloucestershire, Herefordshire and Worcestershire on 25 June; and Gloucestershire, Herefordshire, Worcestershire, Oxfordshire, Berkshire and South Wales on 28 July 2007.





November 2009

Cumbria

During the twenty-four hours before Friday 20 November 2009, rainfall of over 300 mm was recorded in Cumbria. Flooding along the Borrowdale and Derwent Valley meant that some areas were up to 8 feet deep in water. The surge of water off the fells of the Lake District which flowed into Workington down the River Derwent washed away a road bridge and a footbridge





Winter 2010/11

The winter of 2010/11 brought heavy snowfalls, record low temperatures, travel chaos and school disruption to the islands of Britain and Ireland. It saw the earliest widespread winter snowfall since 1993 with snow falling as early as 24 November across Northumberland and North Yorkshire. **It was the recorded as the coldest December for over 100 years.**

A maximum snow depth of 30 inches (76 cm) was recorded on 1 December in the Peak District, Sheffield, the Cotswold Hills and the Forest of Dean. In this event Scotland and Northern England were most severely affected.

On 9 December, temperatures recovered across much of the UK, causing a partial thaw. However, on 16 December a cold front reintroduced a cold, arctic airstream. This cold spell brought further snow and ice chaos back to the British Isles with Southern England and Wales bearing the brunt of the wintry conditions. This led to severe disruption to the road and rail network with several airports being closed including London Heathrow Airport for a time.



Coastal Flooding – Early December

The period began on 5 December 2013 when a deep low pressure area moved from the Atlantic over Scotland and the North Sea inducing a storm surge in the Irish Sea and North Sea coasts of the United Kingdom.

In the North Sea some of the highest level tides were recorded in the Humber and Thames estuaries, exceeding levels which occurred during the disastrous North Sea flood of 1953.

Flooding occurred in Tyneside, Teeside, along the Yorkshire coast, around the Humber and the Wash, where in particular the town of Boston, Lincolnshire was badly affected by when the high tide overtopped defences – **see Picture.**





Winter 2013/14 - continued

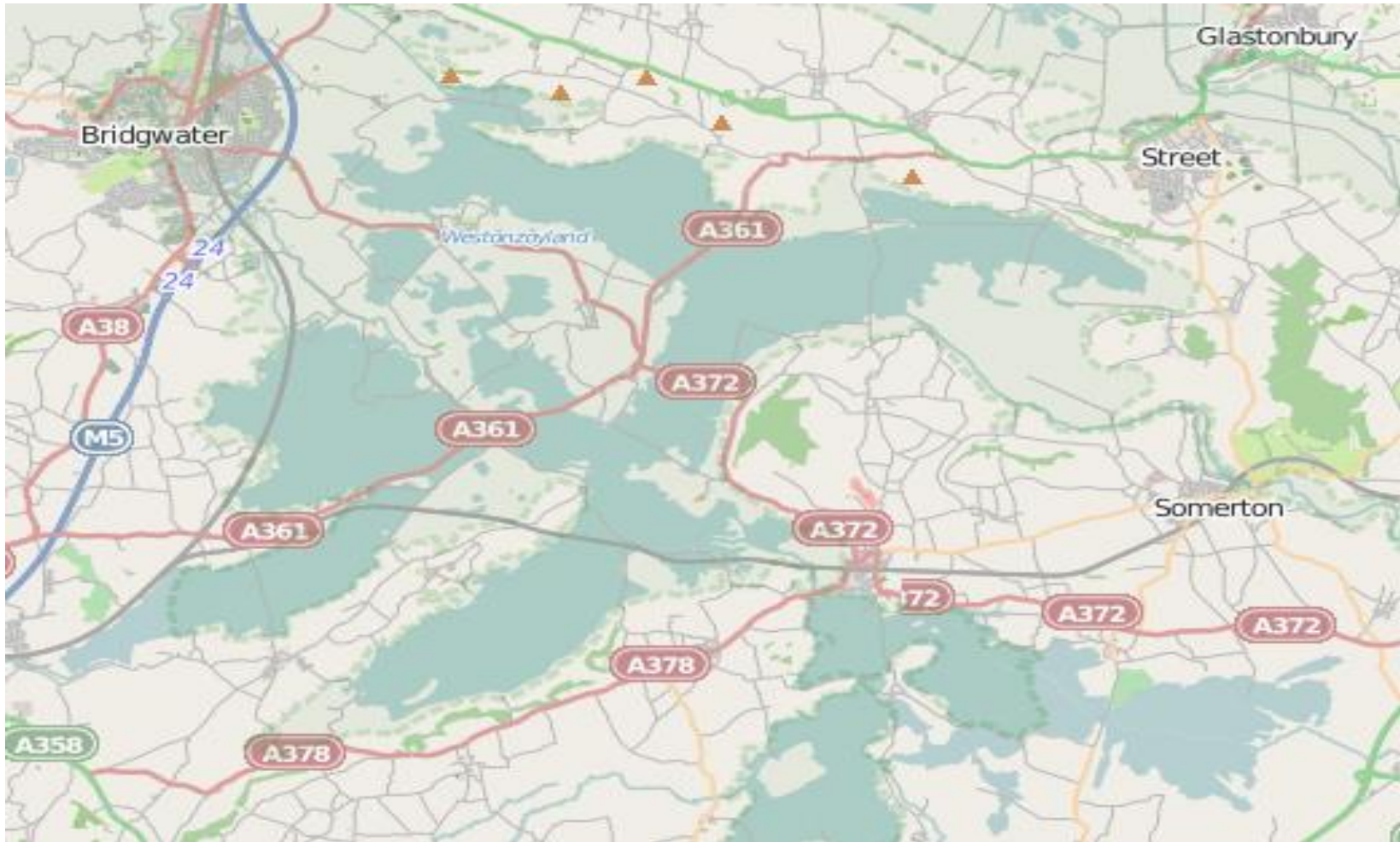
The 2013–2014 United Kingdom winter floods saw areas of the United Kingdom inundated following severe storms. The south of England saw heavy rainfalls associated with these storms which caused widespread flooding, power cuts and major disruptions to transport.

Economically the worst affected areas were Somerset, Devon, Dorset and Cornwall in the south west and the Thames Valley in the south east. **The Met Office reported the storms were responsible for the wettest December to January period since 1876.**

The flood phenomena ranged from coastal flooding, pluvial flooding, fluvial flooding to groundwater flooding. The flooding resulted in the inundation of the majority of the Somerset Levels and saw local roads and the main railway line to Cornwall and West Devon at Dawlish severed for several weeks.



Winter 2013/14 - continued





Department
for Transport

Winter 2013/14 - continued





Winter 2014/15

Whilst some would say that Winter 2014/2015 was relatively benign and quiet, especially when compared to the exceptionally stormy weather of 2013/14, the UK did have some significant storms in mid-December 2014, mid-January and late February 2015 – with what some called the “**Weather Bomb**”.





Department
for Transport

Winter 2014/15 continued





Department
for Transport

Next Steps





UK Climate Change Risk Assessment 2017

The **UK Climate Change Risk Assessment 2017 Evidence Report** published July 2016 provides comprehensive analysis of the risks and opportunities posed by climate change to the UK.

The 2000-page report, which provides advice to Government, covers the following areas:

- Natural environment and natural assets
- Infrastructure
- People and the built environment
- Business and industry
- International dimensions

Infrastructure Chapter - <https://www.theccc.org.uk/uk-climate-change-risk-assessment-2017/ccra-chapters/infrastructure/>

Factsheet highlights risks to infrastructure due to climate change - <https://documents.theccc.org.uk/wp-content/uploads/2016/07/CCRA-Ch4-Infrastructure-fact-sheet.pdf>





UK Climate Change Risk Assessment 2017 - continued

FLOODING AND EROSION

More infrastructure assets will be at high risk of flooding due to heavier rainfall and rising sea levels.



HIGHER TEMPERATURE EXTREMES

Railways, roads, telecommunication and electricity networks will be more vulnerable to heat extremes.



INFRASTRUCTURE NETWORKS RELY ON EACH OTHER...

As weather extremes increase, heavier rainfall could cause more rail embankment failures.



...SO DISRUPTIONS TO ONE HAVE AN IMPACT ON OTHERS

More powerful storms could increase disruption to transport networks and overhead power and communication cables.



HEAVIER RAINFALL

STRONGER WINDS

CLIMATE CHANGE RISKS

TO UK INFRASTRUCTURE





National Flood Resilience Review 2016

Review of how we assess flood risk, reduce the likelihood of flooding, and make the country as resilient as possible to flooding.

Published September 2016 -

<https://www.gov.uk/government/publications/national-flood-resilience-review>

This review has looked at how we:

- understand the risks of river and coastal flooding from extreme weather over the next 10 years
- assess the resilience of key local infrastructure (such as energy, water, transport and communications), and identify ways to protect it better
- improve how we respond to flood incidents, including through new temporary flood defences.





National Flood Resilience Review 2016 - continued

Work that Department for Transport is NOW undertaking as part of the National Flood Resilience Review:

- We will continue to improve our knowledge of infrastructure resilience. Following this winter's storms and floods, **the Department for Transport has commissioned research to identify communities which are at risk of becoming isolated due to a severe flood event** (i.e. one making all access roads impassable) and will share its research with Local Highways Authorities to ensure that the communities identified are prioritised for temporary and permanent flood resilience measures.
- As a first step to tackle the challenge of assessing interdependencies, **the Department for Transport and the utilities will work together to identify those bridges which are a single point of failure for other infrastructure operators** (for example by carrying telephone or power cables) and could be at risk in a severe flood event, so that sectors can develop mitigating actions to protect services.