



Department
for Transport

Transport Resilience Review: Update Report

March 2015

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1. Introduction

- 1.1 The winter of 2013-14 saw the highest winter rainfall across southern England since records began, resulting in widespread flooding and extensive wind and coastal damage. In addition, the east coast contended with a significant tidal surge. Events put substantial stresses on the operation of our road, rail, maritime and aviation sectors.
- 1.2 In November 2014 the Secretary of State for Transport published the [Government Response](#) to Richard Brown's [Transport Resilience Review](#) (July 2014), which endorsed the recommendations made in the review and set out expectations for the delivery of actions to improve the resilience of our transport networks.
- 1.3 The Review examined the problems encountered by major transport modes, assessed lessons learned and put forward practical recommendations to improve resilience both in the short and long term. The majority of recommendations addressed the impacts of the wet and windy conditions experienced during the winter of 2013-14 that resulted in flooding and damage to a number of transport assets.
- 1.4 Whilst acknowledging there will always be vulnerabilities to our transport networks from extreme weather, the Government's Response to the Review was used as an opportunity to set out in detail the actions being taken in response to the Review.
- 1.5 The Department for Transport (DfT) has monitored the progress of resilience activities and will continue to do so and the following Update Report represents a snapshot of progress 4 months on from the publication of the Government Response.
- 1.6 Whilst the weather over the winter of 2014-15 has been comparatively quiet, the Transport Resilience Review prompted many to press ahead with enhancing their overall resilience to extreme weather events. The evidence seen in preparing this update provides a reasonable level of assurance that the owners and operators of our transport systems have been active in further developing their resilience to extreme weather events, but industry and operators should continue to enhance their resilience and reach an even greater level of readiness for autumn / winter of 2015.

2. Forecasting events

- 2.1 Over the past decade we have experienced a number of extreme weather events. Severe flooding occurred in the summer of 2007 which notably affected the south Midlands including Gloucestershire and Worcestershire. The severe winter of 2009-10 brought very low temperatures and significant snowfall nationally. Most recently a sequence of major storms over the winter of 2013-14 caused widespread impacts to transport with major flooding across southern England. Late 2013 also saw a significant east coast tidal surge, testing the resilience of many ports.
- 2.2 The importance of accurate and timely weather forecasting cannot be understated in its value to the effective management of transport systems in times of extreme weather. Confidence in future climate projections also enables the design, build, operation and maintenance of infrastructure to take account of likely impacts.
- 2.3 The use of proportionate weather forecasting is broadly evident across transport modes. However, there are areas where transport operators and owners can improve their resilience by better understanding the underlying risks to their assets and procuring the appropriate weather data. The following section outlines the approaches different modes are using in respect to meeting their forecasting needs.

Rail

- 2.4 The process for using clearly agreed channels for receiving weather and flood forecasts is generally well embedded within Network Rail's National Control Instructions. As a Category 2 Responder, Network Rail receives flood forecasts and warnings through the Met Office and Environment Agency's (EA) joint Flood Forecasting Centre, alongside more general forecasts from a range of its service providers. In addition, Network Rail's Weather Resilience and Climate Change programme (WRCC) has initiated a project to consolidate, enhance and integrate these services with access to them being provided via a web portal which will be available from March 2015. Improved forecasting is being delivered from May 2015 with subsequent upgrades in capability taking place until March 2016. More granular forecasting and near real-time monitoring will importantly enable each rail Route to 'tailor' service restrictions and reduce the occasions Network Rail would apply Route-wide blanket speed restrictions such as those resulting from high wind events.

Road

- 2.5** The Highways Agency (HA) has similarly clear processes for receiving weather and flood forecasts throughout the year. Particular strength comes from having Met Office staff embedded in their National Traffic Operations Centre throughout the winter period, providing bespoke forecasts, alerts, updates and briefing.
- 2.6** Having accurate weather forecasts is important for road accessibility and safety. Local Highway Authorities (LHAs) in general have processes in place to ensure that they can as far as possible, safeguard the movement and well-being of all highway users, the residents that they serve and those passing through their area of responsibility. It is also important to have good forecasting as delays have implications for the local economy. Many authorities are developing new ways of working and provide appropriate, enhanced levels of resource to deal with exceptional severe weather events. This includes reviewing their contingency plans for such events and updating strategies such as winter service. As an example, Oxfordshire have adopted Joint Severe Weather Plans to outline the joint emergency response arrangements across councils.

Ports and Airports

- 2.7** The EA and Met Office have continued to work together to improve the accuracy and lead time of coastal flood forecasts. The existing tidal surge ensemble model is now underpinned by higher resolution data following work undertaken by the Met Office and Flood Forecasting Centre after the December 2013 event. The reconfigured model shows that improvements recently implemented would have provided a higher confidence of an extreme event 12-24 hours earlier had it been operational at the time. The longer lead time adds significant scope for ports, coastal assets and communities to prepare for the onset of an event, including making necessary evacuations. The Met Office is also working towards further improving capability in the future by combining wave and surge models consistently to improve the understanding of the combined risks. Trials are expected during 2015-2016.
- 2.8** The DfT has clearly communicated to ports the importance of signing up with the Met Office and Flood Forecasting Centre to obtain regularly updated forecasts specifically relevant to their coastal locations. This will be promoted further at forthcoming ports resilience workshops. An event to bring the Met Office, EA and the Port Authorities together is being planned to explore the potential for designing and developing a service and delivery mechanism that would meet the needs of Port Authorities.
- 2.9** The Airport Operators Association confirm its member airports are making good use of the Met Office's 'Open Runway', 'Talk to the Forecaster' and 'Hazard Manager System' services. Heathrow Airport retains its commitment to having Met Office resource on site year round to monitor the operating environment and inform the processes designed to manage the issues presented from operating with virtually no redundancy in the system.

3. Understanding vulnerabilities

- 3.1** The Transport Resilience Review clearly outlined the consequences of extreme weather impacting our transport systems. To effectively manage the risks, transport operators have been working to better understand their vulnerabilities. The paragraphs below show that things are moving in the right direction but there is a need for all modes to invest effort in fully understanding their risks from the extreme weather events of today and the projected impacts of a changing climate in the future. Only by having a thorough understanding of the risks can the investment in resilience and allocation of resources be effectively targeted to mitigate the risk, lessen the impact and speed recovery.

Rail

- 3.2** As outlined in the Government Response, Network Rail has already committed to completing individual asset management plans for its coastal and estuarine defences. As part of Network Rail's existing asset management practice, it is currently reviewing its coastal and estuarine defences to ensure that appropriate risk assessments are carried out allowing the development of plans for their maintenance and/or enhancement. Due for completion by the end of March 2015, these will take into account increases in extreme weather events and will be used to prioritise the future work on these assets, feeding into business planning for the 2016/17 financial year and beyond.
- 3.3** Network Rail has also incorporated the latest EA flood risk mapping into its GIS-based asset maps which will be further enhanced later in 2015 when data from LiDAR aerial surveys of its Routes has been processed. The LiDAR data will also enhance identification of dangerous trees from site surveys and track engineer cab observations.
- 3.4** Network Rail has reviewed and modified its earthwork examination system. The recent change provides better understanding of the consequence of a slope failure across the geotechnical asset group. This methodology is now in full use. Whilst Network Rail's earthworks asset policy consciously focuses heavily on safety, proposals are also currently being developed for additional works that will improve their weather resilience. Once evaluated, these will be prioritised for delivery according to their direct and indirect economic importance of disruption.
- 3.5** A remote slope condition monitoring pilot commenced in December 2014 and is due for completion next year, at which point a full appraisal of existing technologies will have been conducted. In parallel to the pilot, alternative slope stability monitoring technologies that are earlier in their development phase will be considered and adopted as appropriate. For

example, Scotland Route is currently engaged in a trial using digital acoustic sensors to detect rock falls.

- 3.6** The impact of extreme heat on rail infrastructure has been explored by Network Rail. The projected change in maximum temperature and its impact on track has been discussed. In parallel, a project has been commissioned to provide information on how seasonal variations in temperature impact the stress within rails over a full 12 month period. This will provide evidence of the effectiveness of the current stress free temperature range in use, and results should be available early next year.

Road

- 3.7** A Research and Development project has been procured by the HA to identify potential flood risk locations on the strategic road network. Work on assessing flood vulnerability using new EA maps is ongoing. The recommendation to complete drainage records for the strategic road network is being carried out through a dedicated central programme of drainage surveys. The specification for this work has been developed, with a limited trial being undertaken to assess the viability of potential techniques to cover the whole network. The trial, scheduled for completion shortly, will inform the methods by which information is gathered for the whole network.
- 3.8** This central programme is being complemented by detailed drainage surveys to be carried out as part of any major intervention on the network - covering both major renewals and improvements. This approach will allow a substantial part of the drainage network to be covered. The timescale for completion of the whole inventory and condition data records is within the first Roads Investment Strategy control period.
- 3.9** The DfT published its latest annual 'Road Conditions in England: Official Statistics' publication series in early March 2015. This provides the latest year's figures for key statistics collected from local highways authorities, in addition to changes to some outputs in response to feedback from the sector. This publication satisfies the recommendation concerning the quality and availability of such condition data.
- 3.10** Local roads form 98% of our national highway network. LHAs have a duty under the Highways Act 1980 to ensure they, and the structures associated with them such as lighting and bridges, are well maintained. This Government is providing the funding and tools to help ensure that LHAs can meet this statutory duty.
- 3.11** Overall the Government has provided over £4.7 billion to LHAs in England outside London, between 2010 and 2015 for highways maintenance. More recently in December 2014, the Government announced how it is to allocate just under £6 billion over the six year period from 2015/16 to 2020/21 (equating to around £976m per year).
- 3.12** Good asset knowledge is key to understanding vulnerabilities and targeting investment. The Department is looking to encourage widespread use of asset management plans and following consultation in 2014, Ministers have agreed to set aside £578 million of funding as an

'incentive' element, to encourage authorities to develop asset management strategies as a commitment to undertake efficiencies. As part of this element, the Department has asked the Highways Maintenance Efficiency Programme Project Board to design a self-assessment questionnaire which Councils will need to complete and publish to determine how much additional funding they will receive over and above what they will already receive from Government. This questionnaire will include questions in respect to the resilience of networks as recommended within the Transport Resilience Review.

- 3.13** The HA will publish an updated Climate Change Risk Assessment of their assets and operations by July 2015.
- 3.14** The Department continues to recommend each highway authority consider climate change adaptation when thinking how it can bring down costs. Planning for the impacts of climate change and extreme weather, rather than reacting to it, is the best way to ensure the resilience of our networks and our ageing infrastructure which in turn will help reduce costs. On this basis, local authorities should ensure that climate change risk is embedded in their decision making procedures including planning for local roads and maintaining the highways for which they are responsible.
- 3.15** One of the recommendations in the Review suggested Local Enterprise Partnerships (LEPs) should consider the need for funding, to ensure resilience of the existing transport network which supports businesses in their areas. The DfT sent a letter to the chair of the LEP network to bring this to their attention but await to see what action will be taken.
- 3.16** To ensure that authorities do take into account resilience and climate change, the Department for Transport, through the [UK Roads Liaison Group](#), commenced a project in September 2014 to review sections of the Code of Practices for Well Maintained Highways, Well Lit Highways and the Management of Highway Structures. Within this review one of the areas under consideration is the need for further advice to be provided on climate change and resilience to build on the work that already exists.

Ports and Airports

- 3.17** We have started a broader long-term review of resilience which is scheduled to complete next year and will align well with the DfT programme of general ports resilience workshops. One of the aims of the workshops will be to look at the resilience of connecting routes to and from ports, considering their strategic importance at the national scale.

4. Contingency Planning and Resilience Measures

- 4.1** The ability to quickly and effectively respond to extreme weather events and recover from their impacts is vital. Contingency planning is an essential component of transport resilience and one we see evolving as lessons are applied from past events. On the whole, all modes have done well in taking a critical look at their current resilience measures and contingency plans and are making progress in acting where gaps have been identified.

Rail

- 4.2** The adequacy of Network Rail's contingency plans, which form part of their Business Continuity Management (BCM) strategy, have been assessed during the review of the Extreme Weather Action Team (EWAT) process. This involved the Routes, Train Operating Companies (TOCs), Freight Operating Companies (FOCs) and the National Operations Centre. The EWAT Review, completed in November 2014, confirmed that the Routes have a range of contingency plans in place including Key Route Strategies and Disruption Management strategies. The Weather Resilience and Climate Change Programme will be working closely with each Route in the second quarter of 2015 to determine how and when these plans will be exercised. This will include participation by the TOCs and FOCs. In addition, Network Rail is ensuring the adequacy of its cross-industry 'off-the-shelf' contingency plans.
- 4.3** More people have been trained to use equipment to clear fallen trees and vegetation obstructions. In addition to the greater availability of route clearance teams, the ability to increase the resources available from within the supply chain when required has also been established by the Routes.
- 4.4** The Vegetation Management Capability Development Programme is now well established. Key 2015 deliverables are as follows:
- In January, five year plans were received for the Routes. These are being developed into a sustainable long-term asset management policy, including a 10-year vegetation management strategy.
 - In February, legal advice was received that clarified responsibilities in relation to biodiversity obligations.
 - In April, costed route plans to achieve and maintain compliance are scheduled to be published.

- In August, a new framework of suppliers will be in place to increase capacity within the supply chain.
 - In September, updated rules and guidance for vegetation management will be implemented within Routes.
- 4.5** To mitigate the problems caused by water ingress to signalling equipment, a feasibility study of raising location cabinets and track height, together with economic appraisal, has been completed.
- 4.6** The provision of additional resilience through the replacement of track circuits with axle counters at sites with a high risk of flooding was considered by the Routes. As a result, the use of axle counters is now the preferred method for train detection, being incorporated into a number of schemes - which are in addition to those being converted under Network Rail's on-going Control Period (CP5) signalling renewal activities.
- 4.7** The process for deploying the temporary signalling solution (as used at Maidenhead in the winter of 2013-14) has been documented and can be deployed within appropriate timescales in order to address flooding events that are forecast four days out. Network Rail's longer term solution is being delivered as part of the Combined Positioning Alternative Signalling System (COMPASS) project. Within the project, a track-based train detection system is currently being procured and plans are in place to trial it later in 2015.
- 4.8** A list of TOC resources required for the recovery from severe weather events has been produced and used as a basis for discussions at industry-wide workshops that took place in November 2014. A 'Recovery Conference' that uses a standard agenda and an infrastructure service recovery aide-memoire is currently being rolled out to Routes. This work will be complete by the end of March 2015.
- 4.9** The Transport Resilience Review recommended that Network Rail should investigate the feasibility of convening multi-route EWAT conferences where appropriate to assist those Train Companies who operate over multiple routes. Cross-route extreme weather events and their management were reviewed in September 2014 and a National Operations Centre-led, multi-Route and operator response process was agreed and was put in place for the 2014-15 winter. This revised process is being reviewed during the first quarter of 2015 and will be amended accordingly.
- 4.10** Network Rail's process for adjusting services is embodied within the EWAT process. It involves the participation of appropriate bodies including the TOCs and FOCs. The review of this is now complete and decision makers are consequently in a position to select from a range of interventions to deliver the most practicable service.
- 4.11** The Rail Delivery Group has met to discuss a number of potential options for developing an amended approach to performance and compensation regimes during periods of extreme weather related disruption. The Group is close to agreeing an option to progress and the aim is to implement it in time for the winter of 2015-16.

- 4.12** The Office of Rail Regulation's monitoring of Network Rail's asset management capability has shown progress in asset knowledge, risk based maintenance and weather resilience.

Road

- 4.13** The HA regional severe weather plans have been developed over a number of years. There is a lessons learned process, with the plans being reviewed, updated and exercised each year prior to the winter season. The Severe Weather Plans have been reviewed in light of the Transport Resilience Review and were revised for the 2014-15 winter season. In addition, the HA crisis management process ensures suitable preparation and management of any significant disruption on the network, including severe weather.
- 4.14** One of the Review's recommendations suggested the HA should work with partners developing proposals to restrict vulnerable vehicles from using exposed sections of the Strategic Road Network during times of high winds. Initial consultation on the general principles of such restrictions took place with the Freight Transport Association (FTA) at their Transport Manager conferences in the late 2014. The FTA are now collating the feedback from their members which will inform on-going discussions with the HA.
- 4.15** A review of the traffic management methodology has taken place for the installation and removal of a full bridge closure at the QE2 Bridge, Dartford. In relation to the filtering out of vulnerable vehicles from using exposed sections of the Strategic Road Network, work at Dartford has looked to utilise segregation methods currently in place on the M20 - operation stack. Early evaluation of the "stack" potential at the Dartford river crossing has indicated some opportunities to use available goods vehicle parking at the Thurrock Services combined with a potential option to introduce further arrangements at Tilbury to hold around 500 vehicles. Further work is required to model the impacts of such operations on the traffic flows in the local area. A planning workshop took place in February 2015. Each of the options will be evaluated further and any agreed scheme will be taken forward into a more structured design / consultation stage.
- 4.16** Working in conjunction with the Met Office, the HA issues severe weather alerts to lorry fleet operators (and others) at times of forecast disruption. The HA and the Met Office are continuing to work together to develop and improve these alerts further. The HA has been supplying monthly overturned vehicle data to the Met Office to help verify the Vehicle Overturning (VOT) Hazard Impact Model. Feedback from the Met Office has been positive.
- 4.17** The HA is continuing to work closely with the FTA and Road Haulage Association (RHA) to improve the HA severe weather alerts process, for example, clarifying the difference between HA alerts and Met Office warnings, so that when the Met Office issues a warning that does not fall within the HA alert criteria, the potential impact of the weather is

explained within the Highways Agency Weather Information Service (HAWIS). The HA is also working with the Camping and Caravanning Club in supplying a list of vulnerable locations on the SRN and explaining the Severe Weather alerts process.

- 4.18** Severe Weather Plans for each Highways Agency Area provide details of service provider staffing levels, shift patterns, resources and equipment availability, and locations to ensure effective recovery operations. Lists of key suppliers such as tree surgeons are maintained in each area, and checks are made in advance of severe weather to ensure availability.

Ports and Airports

- 4.19** The DfT has recently issued updated templates for ports to check against existing plans to deal with severe weather and surges. Independently of this, the DfT is engaged in setting up Port Recovery Planning Groups along the East Coast. The recovery planning groups will be based on the Tees, Humber, Harwich Haven, Thames and Channel and will engage all East Coast ports and their resilience partners in delivering against a common agenda to mitigate the impact of a surge on ports and speed their recovery. All of these Groups are scheduled to be in action by late spring 2015.
- 4.20** The UK's airports and airlines have continued to improve their resilience to severe winter weather, with enhanced planning and incident management strategies, improved weather forecasting and significant investment in snow / ice clearance fleets.
- 4.21** In November 2014 the CAA published guidance (prepared jointly with the Airport Operators Association) for non-designated airports serving over 1million passengers per year on passenger welfare during major disruptions. This sets out some key principles and recommended practices to help airports check they have the right type of response plans and procedures to deal with disruption caused by weather and non-weather related incidents.
- 4.22** Heathrow operator Heathrow Airport Ltd (HAL) can invoke the Heathrow Procedures for Temporarily Reduced Capacity (HADACAB) procedure to manage reduced capacity when disruption is expected to occur for a prolonged period. The HADACAB processes are a well-established and tested set of procedures for agreeing reductions to flight numbers at the airfield due to significant operational events such as extreme weather. For less significant forecast disruption such as high winds, storms or even light snow, HAL has developed a set of demand versus capacity procedures that allow the following days' operation to be managed more effectively in the passengers' interest. These procedures, developed in partnership with the Civil Aviation Authority, the National Air Traffic Services, the Met Office, airlines, Aircraft Coordination Ltd and the Air Operator Certificates, were formalised for the winter of 2014-15.
- 4.23** Gatwick allocated £30m to follow up recommendations in the airport's 'McMillan Review' of the December 2013 flooding disruption, including developing improved flood modelling with the EA, and completing a flood alleviation with bespoke flood warning scheme. Gatwick has also

improved incident command and control procedures, including implementation of a CRIP (Common Recognised Information Picture) to facilitate co-operation across all partner organisations.

- 4.24** The Civil Aviation Act 2012 gives the Civil Aviation Authority powers to include operational resilience conditions within Heathrow's and Gatwick's operating licences. The licence conditions came into force on 1 April 2014 following the expiry of the existing regime, and the CAA has been developing licences for the regulated airport operators, HAL and Gatwick Airport Ltd (GAL). It is important to remember that notwithstanding the industry's resilience improvements, capacity constraints at the busiest UK airports of Heathrow and Gatwick mean they remain at risk of experiencing some disruption during severe weather.

5. Communication & Collaboration

- 5.1** Communication and collaboration were common themes that emerged from the Review.
- 5.2** The DfT continues to consult with other Government departments to update its understanding of the critical transport network, in the context of other critical infrastructure. The DfT is specifically working on updating its understanding of the dependencies with other sectors, covering both the impact on those sectors if parts of the critical transport network are unavailable, and the possibility that failures in other sectors could have knock on disruptive impacts to the critical transport network. Reflecting the complex nature of the transport network, the DfT is engaging with key regulators and industry partners to ensure all aspects of the network are captured effectively.

Rail

- 5.3** The Passenger Information During Disruption (PIDD) local plans and winter preparation sessions address the recommendation of having dedicated passenger and user communications plan for times of transport disruption. Each TOC has a PIDD local plan. These were developed in 2009 and have continued to be tested and updated annually since then. The Office of Rail Regulation operates the process of confirming that TOCs review their local plans each year. The most recent winter preparation sessions (involving Network Rail, Cross Country, First Great Western and National Rail Enquiries) to test the communications plan and processes took place in October 2014. There are a number of elements of Network Rail's PIDD local plans that have been developed over the last year:
- PIDD-01. Website Best Practice for the prominent display of warnings about disruption has been identified for desktops, mobiles and apps. This 'Good Practice Guide for providing information to customers' is now being implemented by the TOCs and National Rail Enquiries. The first organisations to adopt this best practice will be East Coast and National Rail Enquiries where customers will start to see the benefit from spring 2015.
 - PIDD-09. The journey planning code of practice now refers to the need to present contextual disruption information with journey results giving a clear sense of what is causing the delay.
 - PIDD-38. So that customers receive consistent information about multi-TOC disruptions across all channels, industry-wide social media good practice for providing information is now being captured and shared. Completion of this work is scheduled for December 2015.

We are looking to operators to ensure this good practice is consistently adopted.

- 5.4** The Rail Delivery Group have initiated work to clearly set out the responsibilities of transport infrastructure owners and their neighbours for the purpose of rights of access. Tri-partite work between Network Rail, the HA and the Local Government Association should be completed by the end of April 2015.
- 5.5** Following the events of the 2013/14 winter, Network Rail's Route teams are working much more closely with local resilience fora. These activities are led by Network Rail's Crisis Specialist and, while linked, are separate to more localised contingency planning activity which comprises TOC, FOC, National Operating Centre and Route engagement.

Road

- 5.6** The HA has an established customer-focused communications plan which encompasses all aspects of the Agency's remit, including its operations during times of transport disruption due to severe weather. Information is provided to the public via various channels – e.g. online including as a contributor to the 'Get Ready for Winter' website hosted by the Met Office, Twitter, the Highways Agency Customer Contact Centre, variable message signs on the network and via local, regional and national media activity.
- 5.7** The HA considers itself as having the latest traffic information and breaking news regarding disruptions due to severe weather prominently featured on its website homepage. Customers can also find links to weather watch, seasonal driving advice, travel alerts and Traffic England. The Agency has recently set up a customer panel, made up of 1,000 customers representing its full range of customers and neighbours, including those directly affected by its network, to evaluate and validate customer needs. The Panel will be used to test messaging regarding disruption on the network.
- 5.8** The HA have taken on board feedback from customers to refine the content on the Traffic England website. In addition to the regular updates, the website is also due to be refreshed as part of the National Traffic Information Service transformation. This is scheduled for completion by March 2015. The HA are investigating the use of variable message signs to direct customers to other sources of information, such as its website and Twitter subject to DfT agreement. The Customer Panel was commissioned to research opinion into this VMS usage and initial feedback has suggested this is not something customers want. Further investigations will now take place to fully consider the benefits of investment in technology to facilitate these changes.
- 5.9** The HA continually reviews the tactical and strategic legends used at times of disruption, including severe weather. The Customer Panel was commissioned to determine what legends are useful and credible and the full report is awaited.
- 5.10** The HA continues to engage with every Local Resilience Forum in England, attending meetings throughout the year to ensure effective

joined up planning with other operators and emergency responders. During emergency situations, the Agency also participates in multi-agency coordination groups.

- 5.11** The Local Government Association held a conference in November 2014 which looked at lessons learnt from previous winters, including the flood events in 2013/14 winter. It is clear that a number of local authorities have undertaken reviews of how the winter 2013/14 storms and floods affected the areas which they are responsible for, what actions were taken including considering multi-agency partners response and what good practice and lessons can be learnt to inform how they can better respond to such emergencies in the future.

Ports and Airports

- 5.12** Since the publication of Richard Brown's Review, the DfT has started planning a series of general resilience workshops for ports. The first tranche are likely to be held in Liverpool, Bristol, Southampton, London, Harwich, Hull and Middlesbrough in late spring / summer 2015. As per the 2013 ports workshops, they will look to improve resilience by sharing best practice on mitigating the impacts from extreme weather events including raising the level of ports preparedness.
- 5.13** The DfT expects ports to cultivate close contact with the EA, Met Office and their joint Flood Forecasting Centre through the Department's general resilience workshops. It has also urged all ports to foster closer links with Local Resilience Fora and is considering establishing a maritime resilience e-resource to improve information transfer and a continuing resilience dialogue between ports.
- 5.14** Major airports and airlines responded in detail to the Aviation Minister's request for assurance about their weather resilience plans. Airports have improved communications during incidents, i.e. with airlines, air traffic control (in NATS), emergency services and passengers. This includes greater use of social media platforms (Twitter feeds, Facebook pages) to convey up-to-the-minute information, and improved co-ordination of in-terminal information.