



Transport: winter resilience

Standard Note: SN2874
Last updated: 5 December 2012
Author: Louise Butcher
Section: Business and Transport

Over recent years there have been concerns about the ability of the UK transport network – roads, public transport and airports – to deal with extreme winter weather (freezing temperatures, heavy snowfall and flooding).

In response to these concerns, the Labour Government commissioned an independent review of winter resilience in **England**. This was undertaken by David Quarmby CBE, who published his interim report in July 2010 and his final report in October 2010. Alongside the final report he also published an independent audit of the UK's transport system. Quarmby looked at how all modes of transport had fared during the particularly harsh winters of 2008-09 and 2009-10 and offered a number of recommendations.

This note looks at the Quarmby recommendations to improve the resilience of all modes of transport to extreme weather, focusing particularly on the road network. It also explains the duty of highways authorities to ensure that safe passage along the highway is not endangered by snow or ice and looks briefly at issues of salt and grit supplies.

Information on other roads-related issues can be found on the [Roads Topical Page](#) of the Parliament website.

This information is provided to Members of Parliament in support of their parliamentary duties and is not intended to address the specific circumstances of any particular individual. It should not be relied upon as being up to date; the law or policies may have changed since it was last updated; and it should not be relied upon as legal or professional advice or as a substitute for it. A suitably qualified professional should be consulted if specific advice or information is required.

This information is provided subject to [our general terms and conditions](#) which are available online or may be provided on request in hard copy. Authors are available to discuss the content of this briefing with Members and their staff, but not with the general public.

Contents

1	Quarmby report on winter resilience, 2010	2
2	Roads	2
2.1	The law	2
2.2	Liability	3
	Local authorities	3
	Private individuals and householders	6
2.3	What happens in practice	6
2.4	Salt supplies	7
3	Rail	9
4	Aviation	10
5	Appendix: extract from Well Maintained Highways	13

1 Quarmby report on winter resilience, 2010

In March 2010 the Labour Government commissioned an independent review of the English transport system's winter resilience in response to concerns about the ability of the road and public transport networks to cope with ice and snow.¹

This was undertaken by David Quarmby CBE, who published his interim report in July 2010 and his final report in October 2010.² In December 2010 he also published an urgent audit of how well the highway authorities and transport operators in England had been coping with an unexpectedly early and severe spell of winter weather.³

Quarmby looked at how all modes of transport had fared during the particularly harsh winters of 2008-09 and 2009-10. His main conclusions and recommendations on roads, rail and aviation are given in the relevant sections below.

2 Roads

2.1 The law

In **England and Wales**, section 111 of the *Railways and Transport Safety Act 2003* inserted a new section 41(1A) into the *Highways Act 1980*, to the effect that "a highway authority is under a duty to ensure, so far as is reasonably practicable, that safe passage along a highway is not endangered by snow or ice".⁴ There are other powers in the 1980 Act:

¹ DfT press notice, "[Government to review transport response to severe weather](#)", 30 March 2010

² *The Resilience of England's Transport Systems in Winter - An Independent Review: Interim Report*, July 2010; and: *The Resilience of England's Transport Systems in Winter - An Independent Review: Final Report*, October 2010

³ *The Audit Report - The Resilience of England's Transport Systems in December 2010*, December 2010

⁴ this was not originally part of the Bill, but was inserted as a New Clause by the Labour Government following representations from the Conservative Opposition, see: [HC Deb 31 March 2003, cc718-727](#)

- Section 130 – gives the highway authority a general duty to protect the right of the public to use and enjoy the highway; and
- Section 150 puts a responsibility on the highway authority to clear snow from the highway, but only if it is causing an obstruction.

There is a question as to whether the use of the term ‘highway’ includes the pavement. There is no statutory definition of a highway, only a common law one. That definition is quite clear: a "highway is a way over which all members of the public have the right to pass and re-pass. Their use of the way must be as of right, not on sufferance or by licence".⁵ Thus the term will cover most pavements.

Prior to legislating on this in 2003, there was some confusion as to the responsibility of local authorities to grit the roads in England and Wales as a result of a court case. *Goodes v East Sussex County Council*, centred on the meaning of "maintain" as used in section 41 of the 1980 Act: whether it meant a duty to maintain the fabric of the road in good repair or a duty to prevent or remove the formation or accumulation of ice and snow. The Court of Appeal found by a majority that a highway authority, by failing to act to prevent ice forming on the surface of the road, was in breach of its statutory duty to maintain it. It concluded that the 1980 Act imposed a wider duty on councils, including gritting. However, East Sussex County Council appealed to the House of Lords, where the judges concluded that a highway authority had an absolute duty to keep the fabric of the highway in a good state of repair so as to render it safe for ordinary traffic at all seasons of the year, but that did not include a duty to remove the formation or accumulation of ice and snow on the road.⁶

In **Scotland**, the relevant statute is section 34 of the [Roads \(Scotland\) Act 1984](#), which states that “a roads authority shall take such steps as they consider reasonable to prevent snow and ice endangering the safe passage of pedestrians and vehicles over public roads”.⁷

In **Northern Ireland**, the relevant statute is Articles 9 and 10 of the *Roads (Northern Ireland) Order 1993 (NISI 1993/3160)*, which state that the Department of Regional Development “may take such steps as it considers reasonable and practicable to prevent snow or ice interfering with the safe passage of persons and vehicles using a road” and that “if an obstruction occurs in a road from accumulation of snow or from the falling down of banks on the side of the road, or from any other cause”, the Department “shall remove the obstruction”. Paragraph 7 of Article 10 provides protection from liability.

2.2 Liability

There are two issues regarding liability as it relates to clearing the highway (including the pavement) of snow and ice: the liability of local authorities and the liability of householders.

Local authorities

There are two defences available to a highway authority faced with claims under section 41 of the 1980 Act: a common law defence and a statutory defence as provided for in section 58 of the 1980 Act.

The common law defences available to the highway authority are listed in the *Encyclopaedia of Highways Law & Practice* as follows:

⁵ Sweet & Maxwell, *Encyclopaedia of Highway Law and Practice*, March 2002, para 2-335

⁶ House of Lords, *Judgments - Goodes v. East Sussex County Council*, 15 June 2000

⁷ this is a devolved matter for Scotland and further enquiries should be directed to the Scottish Parliament

Act of God or inevitable accident. A cloudburst (as in *Nicholas v. Marsland* (1876) 2 Ex.D. 1) or other natural calamity may avail a highway authority in exceptional circumstances.

Act of a third party. Clearly if another driver forces the plaintiff's vehicle off the road, he cannot sue the highway authority for damages sustained as a consequence of the condition of the grass verge. Similarly, no action would appear to lie against the highway authority if the cause of the plaintiff's injury was a sudden subsidence of the road surface due, for example, to mining operations by the National Coal Board.

Contributors negligence. It used to be thought that this defence could not be established in reply to an action on a statute; it seemed logical that it could be used as an answer only to an action in negligence. However, it was clearly established in *Caswell v. Powell Duffryn* [1939] 3 All E.R. 722 (a decision of the House of Lords), that contributory negligence could be pleaded as a defence (or as a partial defence since the Law Reform (Contributory Negligence) Act 1945 (8 & 9 Geo. 6.c. 28)) in an action for breach of statutory duty. It was made clear that this did not apply only in the context of employers and workmen in *Sparks v. Edward Ash Ltd.* [1943] 1 All E.R. 1, and the draftsman of the present statute clearly thought the defence may be available in this context, in view of his passing reference to the defence in subs. (2). It seems therefore that if the plaintiff is not keeping a proper look-out when using the highway, (either as a pedestrian or when driving a vehicle), the highway authority will have at least a partial defence if he is injured as a consequence of the non-repair of the highway. This view is supported by *Burnside v. Emerson* [1968] 11 W.L.R. 1490, in which the plaintiffs were injured when their car, travelling at about 25 m.p.h. in very wet conditions, was struck by another car, which swerved on entering a pool of water on the road. There was evidence that this other car must have been travelling at approximately 50 m.p.h. at the time of collision; its driver was killed in the collision. There was also evidence that the particular part of the road was frequently flooded in wet weather and that this was due both to a drain not being placed at the lowest part of the road (there was a dip in the road at the place of collision) and to a lack of cleaning of the drain by the servants of the second defendants (the highway authority). The trial judge held that the plaintiffs had established a cause of action against the second defendants under s.1(1) of the Highways (Miscellaneous Provisions) Act on the basis of failure to maintain the highway, and he held that the second defendants were wholly to blame. On appeal, *held* (1) that the plaintiffs had established such a case of action; but (2) that, on the facts, the deceased driver was two-thirds to blame for the accident.

Volenti non fit injuria. It is not clear how far this principle is a defence open to a highway authority. Obviously it could not be argued that a plaintiff could not recover damages simply because he had taken upon himself the "risk" of walking (or driving) on the defendant's highway, for he is entitled to assume a reasonable standard of maintenance. However, if a danger is obvious (e.g. a plank placed across an excavated trench), and there is no evidence of negligence, the highway authority may be able to escape liability if they can show the plaintiff voluntarily undertook the risk was the "author of his own misfortune." Knowledge of itself may not be sufficient to establish this defence (*Smith v. Baker* [1891] A.C. 325) but knowledge may be of value in establishing contributory negligence on the part of the plaintiff.⁸

Section 58(1) of the 1980 Act provides the highway authority with a complete defence if it can *prove* that it had taken such care as was reasonably required to ensure that the part of the highway to which the action relates was not dangerous to traffic ("traffic" being defined in

⁸ *ibid.*, para 2-111

section 329(1) of the 1980 Act to include pedestrians and animals). In assessing whether such care had been taken in any particular case, the court must have regard to the matters specified in section 58(2), not all of which will be relevant in every case:

58 Special defence in action against a highway authority for damages for non-repair of highway

(1) In an action against a highway authority in respect of damage resulting from their failure to maintain a highway maintainable at the public expense it is a defence (without prejudice to any other defence or the application of the law relating to contributory negligence) to prove that the authority had taken such care as in all the circumstances was reasonably required to secure that the part of the highway to which the action relates was not dangerous for traffic.

(2) For the purposes of a defence under subsection (1) above, the court shall in particular have regard to the following matters:—

(a) the character of the highway, and the traffic which was reasonably to be expected to use it;

(b) the standard of maintenance appropriate for a highway of that character and used by such traffic;

(c) the state of repair in which a reasonable person would have expected to find the highway;

(d) whether the highway authority knew, or could reasonably have been expected to know, that the condition of the part of the highway to which the action relates was likely to cause danger to users of the highway;

(e) where the highway authority could not reasonably have been expected to repair that part of the highway before the cause of action arose, what warning notices of its condition had been displayed;

but for the purposes of such a defence it is not relevant to prove that the highway authority had arranged for a competent person to carry out or supervise the maintenance of the part of the highway to which the action relates unless it is also proved that the authority had given him proper instructions with regard to the maintenance of the highway and that he had carried out the instructions.

(3) This section binds the Crown [...]

Generally speaking, a highway authority is expected to take reasonable care of the highway and should have procedures laid down for inspection and repair. The relevant code of practice is Section 13 and Appendix H of *Well-maintained Highways: Code of Practice for Highway Maintenance Management*, published in July 2005 by the UK Roads Liaison Group (UKRLG). It is not a statutory document but is published with the backing of central and local government. The legal position of local authorities is set out in the Code of Practice.⁹

A judge must be satisfied that a council did all that was reasonably required to avoid there being any danger to pedestrians and motorists if the council is to succeed in using the special defence provided by section 58.

⁹ UK Roads Liaison Group, [Well-maintained Highways: Code of Practice for Highway Maintenance Management](#), July 2005 (updated August 2012), section 13

Private individuals and householders

*Anyone concerned about liability should consult a legal professional.*¹⁰

During the winter 2009-10 cold snap, there were numerous press reports of local authorities apparently telling individuals and householders not to clear the pathways outside their homes as they would be liable if there were an accident. Ministers and other Members of Parliament expressed concern about these reports and about the lack of legal clarity.¹¹

The issue of householder liability was addressed as part of David Quarmby's review of winter resilience. The interim report, published in July 2010, recommended that the Government develop a code "setting out good practice for members of the public, including business owners, in clearing snow and ice from footways".¹² The then Secretary of State for Transport, Philip Hammond, accepted the recommendation and indicated that the code would be published by the end of October.¹³ David Quarmby's final report, published in October 2010, welcomed the work that had progressed to date on the 'snow code'.¹⁴ The code is available to view in its entirety on the Met Office website. Amongst other things, it states:

Don't be put off clearing paths because you're afraid someone will get injured. Remember, people walking on snow and ice have a responsibility to be careful themselves.

Follow the advice below to make sure you clear the pathway safely and effectively.

And don't believe the myths - it's unlikely you'll be sued or held legally responsible for any injuries if you have cleared the path carefully.¹⁵

The Coalition Government has since cited the 'snow code' as a 'Big Society' initiative, supporting "the overwhelming majority of people [who] want to take social action in a common sense way, whilst showing neighbourliness and generosity of spirit in these circumstances".¹⁶

2.3 What happens in practice

As indicated above, Section 13 and Appendix H of *Well-maintained Highways: Code of Practice for Highway Maintenance Management*, provides the overarching guidance to local authorities as regards winter resilience. It states: "Although sometimes termed "Winter Maintenance", the particular network management requirements during winter are not "maintenance", in the traditional sense, but specialist operational services".¹⁷ Relevant extracts from the code are provided in the appendix to this note.

The Highways Agency, which manages the nation's motorways and strategic road network, applies the *Routine & Winter Service Code*, Version 5.10, Amend No. 3, dated July 2009.

¹⁰ information on where to seek legal advice can be found in HC Library note [SN3207](#)

¹¹ see, e.g.: [HC Deb 11 January 2010, c415](#); [HC Deb 2 February 2010, c172](#); and [HC Deb 8 March 2010, c132](#)

¹² op cit., *The Resilience of England's Transport Systems in Winter - An Independent Review: Interim Report*, p17

¹³ [HC Deb 26 July 2010, c73WS](#)

¹⁴ op cit., *The Resilience of England's Transport Systems in Winter - An Independent Review: Final Report*, p117

¹⁵ Met Office, *The Snow Code* [accessed 5 December 2012]

¹⁶ [HC Deb 3 February 2011, cc876-77W](#)

¹⁷ op cit., *Well-maintained Highways: Code of Practice for Highway Maintenance Management*, para 13.1.1

Effectively, the code is designed to ensure a certain level of service on the road network, not to prescribe particular activities by the service provider.¹⁸

In his final report on winter resilience, published in October 2010, David Quarmby gave the following assessment of how highway authorities coped with bad weather:

- The Highways Agency (HA) was thought to have done a good job of keeping England's strategic roads open. Lessons had been learned from experience earlier in the decade, and there were clear procedures, standards and specifications for delivering winter service operations.
- Generally local highway authorities did a good job too, given the problems of salt supply.
- There is a need for better consultation and engagement between highway authorities and transport providers about access to their passenger facilities; and better communication with the public through broadcast and electronic media.
- There should also be a comprehensive, authoritative review of technical standards and guidance relating to both the treatments and spread rates of salt to providing clear advice on new standards by early 2011.¹⁹

In their May 2011 report on winter weather, the Transport Committee called for better medium- and long-range weather forecasting to assist transport providers and others in planning to deal with the effects of severe winter weather; and that the Highways Agency work with motoring organisations such as the AA and the RAC to launch a high profile publicity campaign about winter preparedness in autumn 2011.²⁰ In its response to the Committee, the Government said that it was "working with economic and scientific colleagues across Government to review the evidence on winter weather patterns, and test whether current levels of investment in winter resilience are optimised"; and that the Highways Agency would consider what else could be done regarding publicity.²¹

2.4 Salt supplies

Probably the main area of concern to emerge from the winter 2009-10 cold snap was the availability of salt to clear the roads.²² Salt is crucial to the winter service operation, both in precautionary treatment of the highway to stop ice forming and in snow conditions to try to remove snow from the road surface. Both these functions are aided by the action of traffic. The UK has three indigenous producers of rock salt: Salt Union in Winsford, Cheshire; Cleveland Potash in Loftus, Cleveland; and Irish Salt Mining near Carrickfergus on the Northern Ireland coast.²³ In February 2009 the Government set up 'Salt Cell', which was run by the Civil Contingencies Secretariat of the Cabinet Office, with the support of the

¹⁸ Highways Agency, *Routine & Winter Service Code*, Version 5.10, Amend No. 3, July 2009

¹⁹ op cit., *The Resilience of England's Transport Systems in Winter - An Independent Review: Final Report*, paras 11-22 & 32-34

²⁰ Transport Committee, *Keeping the UK moving: The impact on transport of the winter weather in December 2010* (fifth report of session 2010-12), HC 794, 12 May 2011, paras 15 and 21

²¹ *Government Response to the Committee's Fifth Report of Session 2010-12* (sixth special report of session 2010-12), HC 1467, 13 September 2011

²² op cit., *The Resilience of England's Transport Systems in Winter - An Independent Review: Interim Report*, paras 7.1-7.2

²³ *ibid.*, paras 2.15-2.16

Department for Transport. Salt Cell is “an emergency system of monitoring and allocating dwindling salt supplies to local highway authorities according to need”.²⁴

David Quarmby’s interim report, published in July 2010, recommended that the Highways Agency acquire, store and make available a reserve salt stock of 250,000 tonnes for ‘last resort’ use by local authorities; and that a year-round monitoring system of salt stocks and movements be implemented by DfT.²⁵ Quarmby’s final report returned to the issue of salt supplies and recommended that salt production and imports be increased; that a “new resilience benchmark of 12 days/48 runs should be adopted for pre-season stockholding for English local highway authorities”; and that to ensure ‘optimum resilience’ of the supply chain through a nationally severe winter, achieving benchmark resilience levels across Britain should be treated as the key priority, facilitated where necessary by imports.²⁶

In his statement on the publication of the final report the then Secretary of State for Transport, Philip Hammond, confirmed that he had instructed the Highways Agency to build up a 250,000-tonne national strategic salt supply of last resort, which was expected to start arriving that month (i.e. October 2010). More generally, he welcomed the recommendations to improve resilience in salt supply in the longer term through: greater efficiencies in salt utilisation; increased throughput flexibility by suppliers; the new recommended standard of 12 days/48 runs pre-season stockholding by local highway authorities; and regular monitoring of the national stock position.²⁷

The Local Government Association published its own report on winter resilience in July 2010, on the salt supply issue it said that councils had ‘significantly increased’ the amount of salt held in stocks, but that “the duration and severity of the winter far exceeded reasonable stock levels in many areas”. It recommended that the Government take the lead in securing an adequate salt supply for the coming winter and secure an agreed way of working with the salt suppliers in emergency situations; that salt suppliers improve communications with their customer base; and that groups of councils, supported by the Government as appropriate make arrangements for strategic reserves of salt held at sub-regional or regional level to be used to smooth distribution and supply problems during times of high demand.²⁸

In its May 2011 report, the Transport Committee recommended that the Government consider ways of ensuring that strategic salt supply arrangements are more transparent to local authorities and that new guidance on salt spreading rates is followed.²⁹ In its response, the Government stated that there were new arrangements in place for regular monitoring of salt stocks, in order to identify risks early on and take further action where necessary, including providing advice to local highways authorities.³⁰

Most recently, in a letter dated 23 November 2012 the Local Transport Minister, Norman Baker, said that the Government had taken the following actions in preparation for the winter 2012/13 period:

²⁴ *ibid.*, p8

²⁵ *ibid.*, p72; the Government accepted the thrust of these recommendations, see: [HC Deb 26 July 2010, cc72-73W](#)

²⁶ *op cit.*, *The Resilience of England’s Transport Systems in Winter - An Independent Review: Final Report*, p102

²⁷ [HC Deb 22 October 2010, c80WS](#)

²⁸ LGA, *Weathering the storm II: Improving UK resilience to severe winter weather*, July 2010, pp2-4

²⁹ *op cit.*, *Keeping the UK moving: The impact on transport of the winter weather in December 2010*, para 44

³⁰ *op cit.*, *Government Response to the Committee’s Fifth Report of Session 2010–12*

Actions we have taken include: (i) a substantial national strategic salt reserve with a robust distribution process in place; (ii) publishing a note on our website which provides local highway authorities with details on how, if required, to access the strategic salt stockpile; (iii) setting up a salt stock portal to monitor how much stock local highway authorities hold; and, (iv) highlighting the importance to highway authorities of making efficient use of their salt stocks.

At the end of September 2012, total salt stocks of over 2.5 million tonnes were held by local and national highway authorities in Great Britain, including strategic stockpiles. This is a similar level to that held at the same time last year, and considerably higher than was held in 2010. These figures do not include stocks held by salt suppliers which are understood to exceed levels held at this point in the last few winter seasons.³¹

3 Rail

David Quarmby's final report on winter resilience, published in October 2010, made a number of recommendations about the rail network. Quarmby praised the National Task Force (NTF)³² as an 'effective mechanism' for ensuring that the lessons were learnt across the rail industry following winter 2008-09, enabling a much swifter and more certain response in 2009-10; and London Underground for running its entire sub-surface railway throughout winter 2009-10 apart from some initial problems in the first hour of opening.

He stated that it was important that effective mechanisms existed between Network Rail and the train operators to 'facilitate swift decision-making' about implementing pre-planned timetables for severe winter weather. He also thought that there was an 'accountability gap' surrounding the implementation of contingency timetables and a potential public and consumer interest in enabling such decisions to be reviewed after the event in a transparent way. He thought that a 'modest' service reduction with 'near-normal' operating hours should be achievable in future winters with more resilient equipment allowing nearly all London 'Metro' services to run and around 80 per cent of longer distance Kent services. He also pointed to industry initiatives such as efforts to deal with the conductor rail problem and the Passenger Information During Disruption (PIDD) project, to provide clear leadership in raising communications to a high and consistent standard across the network.³³

The breakdown of five Eurostar trains in the Channel Tunnel in December 2009 and the consequent problems was investigated separately and a report was published in February 2010.³⁴

In their May 2011 report on winter resilience, the Transport Committee found that the rail industry needed to "do far more to look after the interests of passengers during periods of disruption". It urged that by the following winter, there should be clarity within the industry about who is responsible for real time information provision and that customer-focused timetable systems should always display accurate information. It also thought that failures in information provision should cost the firms responsible money. The Committee recommended that the DfT investigate the idea of using regional control centres to take

³¹ [Letter from Norman Baker](#), 23 November 2012 [HC DEP 2012-1696]

³² a standing group comprising Network Rail, all the franchised train company owners/operators, DfT, the Office for Rail Regulation (ORR), and one freight company, which meets four-weekly to address and lead collaborative action on rail industry operational, safety and performance issues

³³ op cit., [The Resilience of England's Transport Systems in Winter - An Independent Review: Final Report](#), paras 68-85

³⁴ for further information visit the [Eurostar Independent Review](#) on the Railways Archive website

charge of real time communications with passengers during periods of disruption with a view to assessing whether regulatory action was required to achieve it.³⁵

In its response to the Committee, the Government said that it ‘fully acknowledged’ that more needed to be done in this area but that it should be industry-led; but that it did not see the value in any regional role as real-time station and line route information was the role of the train operator and therefore close to the passenger, while many of the systems driving the provision of rail passenger information were at national level.³⁶

Most recently, in a letter dated 23 November 2012 the Local Transport Minister, Norman Baker, said that the Government had taken the following actions in preparation for the winter 2012/13 period:

On our railways, the Department for Transport and Network Rail have invested £38 million to help train operators keep tracks snow free and prevent rails, points and other vital equipment from freezing, and thus help meet the winter challenge. Steps taken by Network Rail and the train operating companies to improve winter resilience include the overhaul and enhancement of equipment on track, trains and signals, and the provision of specialised trains for snow and ice treatment and clearance.

The industry has commenced and continues to implement a comprehensive programme of improvements aimed progressively at improving the quality and accuracy of passenger information during disruption. In addition to information provided by individual train operators, the principal means by which the general public can keep in touch with the latest information on rail services is the National Rail Enquiry Service (NRES) ...³⁷

4 Aviation

In the UK an airport operator is solely responsible for deciding whether it is safe to operate, and it will normally advise the airlines of what services it can provide in severe weather conditions. Airlines are responsible for clearing their own aircraft of snow and ice, and this is carried out either directly by the airline’s staff or their handling agent at the airport.

David Quarmby’s final report on winter resilience, published in October 2010, made a number of recommendations about civil aviation. He observed that airport operators were required to have a ‘Snow Plan’ formalising the procedures and resources necessary to clear an airport of snow and ice. Over the 2009-10 winter period the seven major airports saw only 40 closures between them, mostly for much less than five hours. While there were seven occasions last winter when a runway was shut, Heathrow remained operational throughout by using the other runway, and the average length of a runway closure was just over an hour.³⁸

Quarmby found that there was ‘some generic evidence’ that earlier, more decisive cancellations and rescheduling (rather than ‘soldiering on’) helped to accelerate recovery to normality after a disruption, and was more helpful for passengers. In terms of de-icing and anti-icing products, he found that there was a market capable of meeting demand for these products, but that sufficient stocks should be held at the point of use. There was ‘no case’ for

³⁵ op cit., [Keeping the UK moving: The impact on transport of the winter weather in December 2010](#), paras 49-50

³⁶ op cit., [Government Response to the Committee’s Fifth Report of Session 2010–12](#)

³⁷ op cit., [Letter from Norman Baker](#)

³⁸ though because Heathrow operates at near to capacity this relatively ‘minor’ disruption caused substantial knock on effects for passengers in terms of cancellations and delays

Government intervention in this market. Finally, he thought that the Civil Aviation Authority (CAA) should make available better performance information during cold weather.³⁹

In their May 2011 report on winter resilience, the Transport Committee recommended that Heathrow and other airports should develop a welfare plan for passengers during periods of disruption and that 'in principle' it could see the benefits to passengers of imposing an emergency timetable at busy airports during periods of disruption, particularly so that passengers could be sure of whether or not their flight would take off.⁴⁰ In its response to the Committee, the Government noted that BAA had accepted the Heathrow Winter Resilience Inquiry Report's recommendation for a passenger welfare plan and that the Department would engage with other airport operators. It agreed that airports' reduced capacity plans were in essence the aviation industry's emergency timetables and that the industry needed to make sure those plans were implemented effectively.⁴¹

As indicated above, following the severe winter weather in December 2010, Heathrow established a winter resilience inquiry, chaired by David Begg, to examine how the airport could respond more effectively to future severe weather events. In March 2011 the inquiry made 14 recommendations on how Heathrow could improve the airport's resilience to disruption and deliver better passenger welfare and experience. Heathrow accepted all the recommendations. In September 2011 Heathrow published a Winter Resilience Programme update detailing the progress being made to "ensure the airport is better prepared for extreme winter weather". It committed to investing £32.4 million to implement the recommendations, had tripled the number of vehicles available for snow clearance, increased staff numbers for the same purpose; agreed a new process for managing flight cancellations during disruption and improved the support and information we provide to passengers during disruption.⁴²

Most recently, in a letter dated 23 November 2012 the Local Transport Minister, Norman Baker, said that the Government had taken the following actions in preparation for the winter 2012/13 period:

The UK's aviation industry has improved its resilience to severe winter weather. The busiest airports, Heathrow and Gatwick, have made significant investments in additional snow and ice clearance capacity. Heathrow has invested £50 million to triple its snow and ice clearance vehicle fleets and quadruple staff numbers available for snow clearance. Gatwick has invested £8 million in further snow and ice clearance equipment. And both airports have revised their operational command and control procedures to improve their response to severe weather, including working in closer co-operation with airlines and other transport providers. Other airports around the country have similarly revised and updated their operational response procedures. Airports and airlines provide continuously updated flight information via their websites and social media, so that air passengers can check the status of their planned flight.

Airlines, airport operators and aircraft de-icing companies have reviewed and improved aviation de-icer supply and contract arrangements and increased de-icer product storage capacity at airports. De-icer product suppliers are confident that they will be able to meet their aviation customers' requirements in another severe winter.

³⁹ op cit., [The Resilience of England's Transport Systems in Winter - An Independent Review: Final Report](#), paras 86-105

⁴⁰ op cit., [Keeping the UK moving: The impact on transport of the winter weather in December 2010](#), paras 52, 53 and 55

⁴¹ op cit., [Government Response to the Committee's Fifth Report of Session 2010-12](#)

⁴² Heathrow Airport press notice, "[Update on Heathrow winter resilience programme](#)", 29 September 2011

The Civil Aviation Authority monitors the aviation industry's performance in dealing with any identified weather problems, including those related to maintaining airports' operational performance. The Civil Aviation Authority also ensures airlines comply with European legislation on assisting passengers whose flights are delayed or cancelled.

The Government's Civil Aviation Bill proposes a new licensing regime for airports, with powers for the CAA to regulate more effectively, including appropriate measures to ensure an airports operational resilience as a licence condition. The target for the Bill's Royal Assent is spring 2013.⁴³

⁴³ op cit., *Letter from Norman Baker*

5 Appendix: extract from Well Maintained Highways

UK Roads Liaison Group, [Well-maintained Highways: Code of Practice for Highway Maintenance Management](#), July 2005 (updated August 2012), Section 13 and Appendix H:

13.2 WINTER SERVICE POLICY

13.2.1 Authorities should formally approve and adopt policies and priorities for Winter Service, which are coherent with wider objectives for transport, integration, accessibility and network management, including strategies for public transport, walking and cycling. They should also take into account the wider strategic objectives of the authority. **(Recommendation 1)**

13.2.2 Issues for consideration in developing policy should include:

- treatment of facilities for public transport users;
- treatment of facilities for road users;
- treatment of facilities for walking and cycling;
- treatment of transport interchanges;
- treatment of promoted facilities;
- extent of priority for emergency services;
- extent of priority for key public services and critical infrastructure;
- extent of priority for vulnerable users;
- level of service resilience required;
- other local circumstances.

13.2.3 Authorities should develop service standards for Winter Service which define the Overall Winter Period, the Core Winter Period, the level of resilience and treatment networks.

13.2.4 These policies and service standards should be developed as far as reasonably possible with users and key stakeholders and should also be based on a risk assessment to define the scope of the service. The documents should be designed and drafted to be used by staff at all levels. Authorities should utilise the time outside the winter season to put these policies and plans in place.

13.3 RESILIENCE

13.3.1 Better planning will result in a more resilient Winter Service and reduce the risk in the delivery of the service during normal and severe winter conditions. It also has the potential to deliver the service in a more efficient way. This includes not only the management of salt stocks, but other resources such as fuel, plant and labour.

13.3.2 Winter service should be regarded as part of the authority's wider resilience planning. The same disciplines, systems and processes apply, bringing a degree of rigour and challenge to the preparation of plans for winter weather.

13.3.3 The first step towards providing a more resilient service is consideration of the threats and vulnerabilities of the service. This can be achieved through a detailed appraisal of the current situation based on plausible but stretching „what-if“ scenarios.

13.3.4 By considering these scenarios, potential areas for improvement in service resilience can be identified. These should be assessed, prioritised and mitigation measures considered. It is important when considering potential mitigation to think laterally, as this may identify more cost effective solutions.

13.3.5 An important part of resilience planning is to include a planned escalation procedure. Engagement with the authority’s emergency planning department should be considered. The Winter Service Plan should be made available to the authority’s emergency planning departments such that it can be integrated with other plans such as Business Continuity Plans, Evacuation Plans and Rest Centre Establishment Plans.

Minimum Winter Networks

13.3.6 As part of their contingency planning, authorities should define a minimum winter network. This resilience network may be a subset of their normal treatment network and should provide a minimum essential service to the public, including links to the strategic network, access to key facilities and other transport needs. It is important that there is continuity across boundaries. It is recognised that authorities will have difficulty in treating all bus routes. However, arrangements should be made to enable bus operators to run minimum services.

13.3.7 Issues to consider when defining a minimum winter network are:

- What is the key infrastructure access which should be maintained? To this end, the authority’s emergency planning department should be consulted. Consideration should be given to a wide range of services, including consideration for private infrastructure. For example, water treatment works may require chemical deliveries to ensure continuity of water supply but are unlikely to be on the primary treated road network.
- How will carriageways, cycle ways and footways be prioritised across the authority’s network? Issues to be considered include treatment methods, resource requirements, type of network as a whole and alternative routes or modes of transport.
- How will the minimum winter network interface with other authorities? There is little point expending effort to keep a route open if it is snowbound in a neighbouring authority.

13.3.8 Treatment of the resilience network in practice should be considered, as the possibility of slower treatment speeds and potential congestion may create issues.

13.3.9 The trigger point and protocol for activating the minimum winter network should be agreed within the authority, documented and communicated as appropriate. In doing so agreement should be made with the emergency planning department and senior officers. The decision to activate the minimum winter network may also be made in conjunction with other authorities. The overall approach should be detailed within the Winter Service Plan.

Winter Resilience Standard

13.3.10 Authorities should consider, consult on and formally adopt local service standards for resilience of their winter service in terms of number of days continuous

severe conditions salting on a defined Minimum Winter Network for the Overall Winter Period and for the Core Winter Period. **(Recommendation 2)**

13.3.11 A resilience benchmark of 12 days/48 runs should be adopted for full pre-season salt stockholding by 1 November for English local highway authorities. **(Recommendation 2a)**.

13.3.12 In considering how to apply the benchmark, authorities should review their history of usage and mutual aid or other arrangements to consider: a) whether there is a case for increasing capacity towards 48 runs if it is currently less than this, in addition to filling the capacity they have; or b) at what level to stock – at or above the 48 runs level – where the capacity exists to do so.

13.3.13 Establishing a winter service resilience standard requires consideration of the number of days resilience to be adopted, definitions of the Overall Winter Period⁴⁴ and Core Winter Period,⁴⁵ whether it should refer to the normally salted network or to a smaller locally determined Minimum Winter Network.⁴⁶

13.3.14 Delivery of the Winter Service relies on suitable resources being available, including salt, fuel and trained staff and operatives. Any one resource in short supply puts additional strain on service delivery.

13.3.15 It is suggested that at least 6 days resilience for salt and other resources, including equipment, drivers and fuel, would represent sensible good practice for determining the number of days" resilience during the Core Winter Period. This is based on a number of days" severe conditions plus replenishment time and taking into account weekends, and combinations of public holidays and weekends such as Christmas and the New Year.

13.3.16 This approach based on a reasonable number of days" resilience in the ability to deliver a defined winter service should ensure that highway authorities hold or have easy guaranteed access to sufficient salt, gritters and drivers and other essential resources to deal with severe winter weather conditions.

13.3.17 Some highway authorities may already have a good level of resilience, but if individual authorities decide they need to increase resources, they will need to consider the practical implications and a reasonable implementation period. Implications may include any new arrangements or facilities required and cost.

13.3.18 In developing their local service standards based on days" resilience, authorities should assess the risks that are faced in the delivery of the Winter Service. The assessment should cover all items of policy and management including:

- network for treatment;
- adjoining highway networks;
- salt management policies;
- operational resources (including equipment, salt stocks and fuel);

⁴⁴ Overall Winter Period – Locally defined since the winter period may vary according to climatic conditions, but usually at least the beginning of October to end of April

⁴⁵ Core Winter Period – Locally defined since the winter period may vary according to climatic conditions, but usually at least December to February inclusive

⁴⁶ Minimum Winter Network – That part of the carriageway network normally treated in winter which provides a minimum essential service to the public, including strategic routes, access to key facilities and other transport needs

- access to Winter Service depots and salt storage areas;
- staff training;
- availability of operational staff.

13.3.19 An example of how authorities may express and apply their Winter Service resilience standard is included in Appendix H.

13.3.20 The Department for Transport has put in place a year- round salt stock monitoring system to ensure optimum resilience of salt supply, through a nationally severe winter. Authorities should provide to the Department for Transport the information required for this system in a timely manner.

[...]

H4 SERVICE RESILIENCE

Expressing the Winter Service Standard

H4.1 An example is provided below on how authorities could express and apply their Winter Service resilience standard.

Overall Winter Period 1st October to 30th April

Core Winter Period 1st November to 1st March

Days Resilience (Overall Winter Period) 3 days

Days Resilience (Core Winter Period) 6 days

Determination of minimum salt stocks by depot

H4.2 For the purpose of this example it has been assumed that in heavy snow conditions there would be 6 successive treatments at 20g/m² each day.

Table H1 – Minimum Salt Stocks					
Routes	Normal Salting Network (tonnes/run)	Minimum Winter Network (tonnes/run)	Minimum Stock		
			Full Pre season stock (12 days/ 48 runs)	Core Winter Period Minimum Network (6 days/ 36 runs)	Overall Winter Period Minimum Network (3 days/ 18 runs)
Carriageways	200	120	9600	4320	2160
Footways, cycle routes & salt bins (1 per day)	16	16	192	96	48
Total			9792	4416	2208

The minimum salt stock is therefore (to nearest 5 tonnes):

1 October to 30 October = 2210 tonnes (at all times)

1 November = 9790 tonnes

1 November to 1 March = 4416 tonnes (at all times)

1 March to 30 April = 2210 tonnes (at all times)

Notes.

1. The minimum in season stocks are the minimum to which stocks should be allowed to fall, ie restocking should take place well before the minimum is likely to be reached.

2. The early season and end of season minimum resilience stock should not be confused with the stocks likely to be required to ensure full pre season stocks are achieved for the current or for the subsequent winter season.