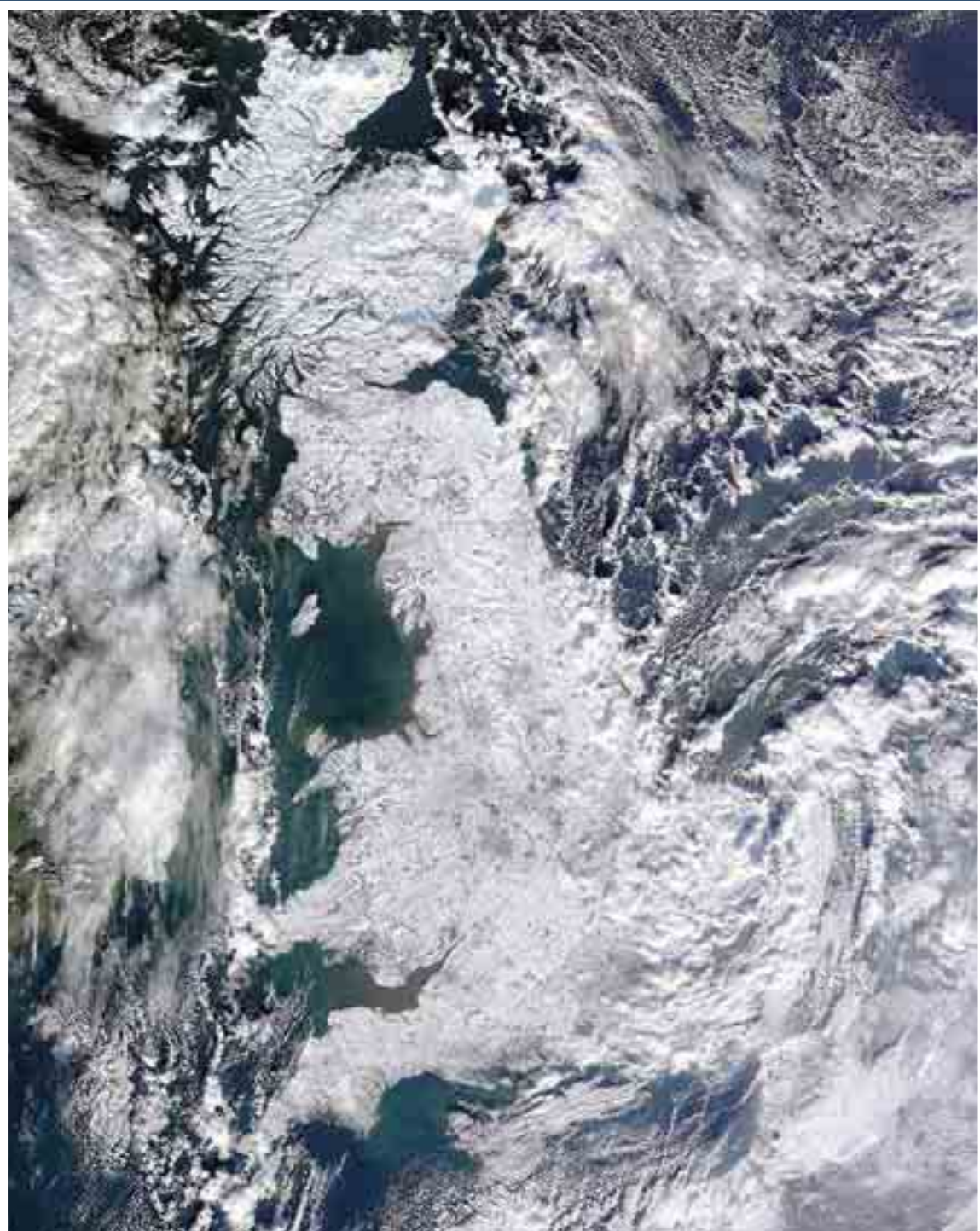




The Resilience of England's Transport Systems in Winter

An Independent Review

Interim Report
July 2010





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An independent Review of the resilience of England's transport systems

The Independent Review of Winter Resilience was announced by the then Secretary of State for Transport on 30 March 2010, to identify practical measures to improve the response of England's transport sector – road, rail and air – to severe winter weather.

The Review is being conducted by a panel comprising:

- David Quarmby CBE, Chair, currently chairman of the RAC Foundation, a former director of consultants Colin Buchanan and former chairman of the Strategic Rail Authority;
- Brian Smith, recently retired as Executive Director, Environment Services of Cambridgeshire County Council, and former President of what is now ADEPT (Association of Directors of Environment, Economy, Planning and Transport);
- Chris Green, a career railwayman whose last executive appointment was as CEO of Virgin Trains and who was co-author of the recent Better Rail Stations independent review.

The Panel were remitted, in the Review's first phase, to identify quick wins aimed at improving resilience in preparation for winter 2010/11. This has largely focused on the planning and execution of winter maintenance and the production, deployment and distribution of salt stock for the road network. It has also assessed public expectations, weather forecasting, the different approaches of highway authorities to winter maintenance, self-help by the public in clearing snow and ice and the case for national regulations and powers over salt supply and stocking. These issues are the subject of this report.

The Panel's Final Report will be published in the autumn of 2010 and will take a view on the remaining elements of its remit. These are concerned with England's preparedness for severe winter weather in future years and include the resilience of the rail and aviation industries, an assessment of how the salt supply chain might be improved in the longer term, communications with the public and the economics of winter resilience. Progress against the Panel's recommendations will also be noted.

A copy of the Review's Terms of Reference is at Appendix A.

Executive summary

Introduction

1. This is an independent Review of the resilience of England's transport systems to severe winter weather. It was commissioned by the then Secretary of State in March 2010 following the coldest and most extended winter to hit the UK for thirty years. The previous winter (2008/09) had also been severe, following a decade of relatively mild conditions.
2. Both winters were characterised by crises in the availability of road salt for gritting highways, and led to intervention by the Government in the form of the so-called Salt Cell, which monitored stocks and generated advice to salt suppliers about the allocation of dwindling salt stocks.
3. Many lessons had been learned since the 2008/09 winter, and a report in July 2009 by the UK Roads Liaison Group¹ made a wide-ranging series of recommendations to highway authorities, producers of salt and others involved in dealing with winter conditions.
4. Given the experience of the second severe winter, and with some concern how far all the lessons of the first had been acted upon, the Review was tasked to consider these matters and to recommend practical measures to improve the response of England's transport systems to severe winter weather.
5. While the Review's focus is England, it takes account of the wider UK context – particularly because the UK salt producers supply the whole of Great Britain, and Scotland and Wales were necessary and keen partners in the Salt Cell. The Review has taken evidence from the Scottish and Welsh administrations and representatives of their highway authorities, and we have benefitted from their experience and insights. The Review outcomes and Recommendations apply to England, and it will be for the Scottish and Welsh administrations to consider their relevance and what action might be taken in those countries.

The Review and this Interim Report

6. The Review is reporting in two stages – this is the Interim Report, focusing on measures which can be implemented relatively quickly in relation to England's highway networks, in preparation for winter 2010/11. The Final Report, to be published in the autumn, will consider longer term issues of resilience for the highway networks and the questions of technical standards, as well as reporting on railways and aviation, the economics of winter resilience, communications and public expectation, and longer term issues of weather forecasting and climate change.
7. This Interim Report is presented in two parts – Part A presenting Background and Evidence, and Part B discussing Key Issues and setting out our Recommendations.
8. We have received evidence from some 130 organisations in the private and public sectors, conducted Hearings with 33 of them, visited two salt mines and the operations of two highway authorities, and held many informal discussions with technical experts. We are grateful for all the help and information so freely given.

¹ UKRLG brings together those bodies responsible for operating the UK's highways: Department for Transport, Scottish Government, Welsh Assembly, Northern Ireland Roads Service and representatives of local highway authorities. UKRLG provides advice to central and local government on roads issues.

Highway authorities

9. Nearly 150 local highway authorities are responsible for more than 97% of England's road mileage, carrying some 70% of all traffic. The remaining traffic is on the strategic road network of motorways and trunk roads, maintained and operated by the Highways Agency, working through contractors. All highway authorities have statutory duties to ensure as far as is reasonably practical that 'safe passage along the highway is not endangered by snow or ice'. There is an established Code of Practice for highway authorities which covers the planning and delivery of winter service², and this was updated in December 2009 following the UKRLG report of July 2009.
10. We asked whether the UKRLG recommendations and the updated Code of Practice were thought to be appropriate and fit for purpose: almost universally they were, although many witnesses commented that the Government's endorsement of the Recommendations and their incorporation into the updated Code of Practice came too late to have much impact on the planning for and response to last winter.
11. The Highways Agency was thought to have done a good job of keeping England's strategic roads open. Lessons had been learned from experience early in the decade, and there are clear procedures, standards and specifications against which HA contractors plan and deliver their winter service operations, including the procurement and deployment of their own road salt. To help conserve salt supplies, reduce cost and improve effectiveness, the HA – following technical research – are moving to a system of salt treatment called 'pre-wet'³ and reducing specified spread rates. It is important for the Highways Agency to continue to keep methods and techniques under review, and to share their findings and experience with other highway authorities.
12. Generally local highway authorities did a good job last winter too, given the problems of salt supply. Representatives of small businesses, of freight and passenger transport operators and of road users generally have said to us that local highway authorities needed to consult more widely at the planning stage on the networks they proposed to treat. And while we had evidence of excellent initiatives by local authorities, there was room for improving in both communication of their plans and real-time updating through broadcast and electronic media of their road conditions when severe weather came. We believe that such attention to effective consultation and communication is the best way to manage public expectations of what the winter response will be (especially when there is persistent snow), a concern expressed by several witnesses.
13. Market research carried out for the Local Government Association and made available to us suggests nevertheless that the public at large take a realistic view of how much it is worth investing to achieve resilience for winter conditions, given the relatively infrequency of severe winter weather.
14. There is more scope for sharing best practice and the fruits of research in technology, equipment and treatment methods for road salting. Witnesses suggested that there is significant room for improving salt utilisation, which would reduce both costs and dependence on a potentially vulnerable supply chain for salt. The means by which research and development takes place seems to us fragmented and uncoordinated, with no strategic oversight of priorities nor of the dissemination of best practice, and we recommend action in this area.

2 UK Roads Liaison Group: *Well-Maintained Highways – a Code of Practice for Highway Maintenance Management*

3 Pre-wet salt is a system involving wetting salt with a brine solution prior to spreading. It is used by many local highway authorities.

15. Some witnesses spoke of the difficulties of getting a full recognition of best practice in some local authorities in the preparation of winter resilience plans. There is some evidence that winter resilience planning may not achieve sufficient priority or attention in smaller authorities and in more recently re-organised local authorities. It is of course entirely a matter for local authorities who are accountable to their electorates; however the reason we think it is important for all local highway authorities to do their winter planning well is simply because in conditions of salt scarcity, 'baling out' a local authority because of inadequate initial stock holding could be at the expense of those who had planned their stocks well but still needed additional supplies; this issue was a cause of some resentment last winter.
16. Treating winter planning as an integral part of overall resilience planning for the local authority – as for example happens in London – can help to ensure that appropriate processes of planning and validation are applied to the development of winter resilience plans (including salt stockholding). Best practice authorities will base their salt stock holdings on planned network coverage and previous years' experience of salt used and resilience achieved.
17. The Local Government Association has recently published their review of last winter and recommendations⁴, and our analysis, findings and recommendations do not contradict each other. They are considered further in Chapter 4 (Overview of evidence submissions – Section 1).

Salt and the supply chain

18. The main problem in the last two winters was the availability of rock salt. Following a decade of mild winters, the pre-season stockholdings of salt by English local highway authorities in November 2008 fell considerably short of what turned out to be needed for the winter of 2008/09, and led to depletion of mine-held stocks and considerable pressure on in-season salt production. The need for an emergency system of monitoring and allocating dwindling salt supplies to local highway authorities according to need was recognised in Government by the creation in February 2009 of the Salt Cell, which was run by the Civil Contingencies Secretariat (CCS) of the Cabinet Office, with the support of DfT.
19. The Salt Cell was also activated for the winter of 2009/10. As the even greater severity of this winter became evident, it was clear that pre-season stockholdings were again going to be insufficient to meet the need, in spite of being considerably higher than the year before (though not universally in line with the UKRLG recommendations of 6 days' provision for severe weather). On this occasion it was run by DfT, activated in early January 2010; in addition, the then Secretary of State issued in January 2010 "strong guidance" to all highway authorities to reduce their salt utilisation by 25%, revised to 50% a few days later. This was to be achieved by reducing the networks treated and/or reducing spread rates.
20. While the focus of this Review is England, we take account of the wider Great Britain (GB) context here because the UK salt producers supply the whole of GB, and Scotland and Wales were necessary and keen partners in the Salt Cell process.
21. The Salt Cell is generally felt with hindsight to have been effective, although something of a blunt instrument, alongside a degree of mutual aid which took place between local authorities. However, our view is that the need for a Salt Cell type of intervention should only arise under the most exceptional circumstances, so our task is to consider and recommend what measures are necessary to make the supply of salt more resilient under all but the most exceptional circumstances.

4 *Weathering the Storm II*, Local Government Association, July 2010

- 22.** At the same time, the activities by Salt Cell to collect data on salt stocks, monitor stock movements and disseminate the information are regarded by all witnesses as highly valuable, whether or not Salt Cell was operating in 'allocation' mode. The need to keep a watch on the building and movement of salt stocks well before the winter season was stressed – as has been happening during the course of this Review.
- 23.** We believe, as did many witnesses, that there should be continuous year-round monitoring of salt stocks, led by Government, to give early warning of potential problems and to be able to make strategic assessments, and we make a Recommendation to this effect. The assessments we have made in this Review, and the other Recommendations regarding planning for next winter based upon them, would not have been possible without the current monitoring data collected DfT this summer.
- 24.** Our observation is that the salt supply chain as currently configured is fundamentally vulnerable and lacks resilience. There are supply chains in other sectors of the economy – such as fertilisers and agrochemicals, as well as seasonal foods – which exhibit similar characteristics of unpredictable seasonal demand coupled with highly constrained, year-round production. What is different about salt is that a) a significant shortage has profound public policy implications; and b) the market has failed to organise the provision of buffer stocks (the absence of which would be most unusual in other sectors).
- 25.** Our task is therefore to consider and recommend what reconfiguration of the salt supply chain would make it more resilient. Our preferred approach would be to recommend the minimum highly targeted intervention while enabling the market to function as usual; heavily managed solutions are neither sustainable nor economically efficient.
- 26.** We have commissioned a special project, using supply logistics modelling and evaluation, to explore options for this, but such investigations require more time than is available for this Interim Report. We will return to the longer term reconfiguration of the supply chain in our Final Report.
- 27.** Our focus in this Interim Report is therefore on what action needs to be taken to improve resilience for next winter.
- 28.** We start by reviewing the analysis of salt stocks and flows for England last winter (see table 1 below).

Table 1: Annual analysis of salt stocks and flows for England – Year 2009-10

Total salt stocks at highway authorities and suppliers – March 2009	0.5m
Production by UK suppliers for England	1.35m
Salt imported in the year	0.15m
Salt use by highway authorities during the year	-1.8m
Total salt stocks remaining – March 2010	0.2m

Units are tonnes of salt.

29. This shows that the UK salt production supplied to England’s highway authorities between March 2009 and March 2010 was some 0.45m short of the demand, and was fulfilled by reducing stocks (held by highway authorities and suppliers) by some 0.3m tonnes between the beginning and end of the year, and by importing some 0.15m tonnes of salt during the winter season.
30. However, the 1.8m tonnes use includes the effect of conservation measures introduced as an emergency during the winter. “Strong guidance” issued from the Salt Cell and the Department for Transport in the second week in January 2010 to make drastic reductions to salt use by 25%, revised to 50% within a few days, was implemented by highway authorities across the country. We have estimated that the underlying demand during this period – which would have continued in the absence of such conservation measures and as long as salt was available – was between 0.25m and 0.4m tonnes higher than the actual demand, giving a potential annual total of 2.05 to 2.2m tonnes.
31. That is considerably in excess of UK salt production capability as allocated to England (1.45m tonnes last year), and emphasises the need for appropriate strategic planning of stocks if the objective is to be able to manage severe winters – infrequent though they are – without having to invoke drastic restrictions of the kind put in place last winter.
32. Nevertheless, the challenge for the commercial salt suppliers in setting their long term business plans is illustrated by the typical demand in a relatively mild winter (which is much more frequent) being as low as 0.75m to 1m tonnes. And we should note that the nature of salt mining and production processes does not easily lend itself to significant flexing of production levels except with major investment.
33. Table 2 below projects the analysis of stock and flow into 2010–11, set against two different benchmarks:
 - a. meeting the *underlying* demand from last winter, estimated at 2m – 2.2m tonnes;
 - b. meeting the *restricted* demand from last winter, which was 1.8m, and assumed drastic conservation measures from mid-January onwards.
34. We have also noted evidence to suggest that UK producers will have stepped up their production this year to 1.45m tonnes (allocated to England) compared with 1.35m last year.

Table 2: Annual analysis of salt stocks and flows for England – Year 2010–11

Based on underlying demand in 2009–10

Based on actual (restricted) demand in 2009–10

Total stocks at March 2010	0.2m	Total stocks at March 2010	0.2m
UK Production capacity for England	1.45m	UK Production capacity for England	1.45m
Imports required	0.75m	Imports required	0.35m
Projected salt use	-2.2m	Projected salt use	-1.8m
Target stocks March 2010	0.2m	Target stocks March 2010	0.2m

35. This demonstrates that even meeting the actual (restricted) demand of last year would require some 0.35m tonnes of imports for the forthcoming winter, some 0.2m more than last winter, even assuming a higher level of UK production (and the corresponding increases available to England).

This is because the starting stock in March 2010 was already only 0.2m tonnes, so that restocking by LHAs and the Highways Agency was generally starting from a much lower base than in March 2009 (when total stocks were 0.5m tonnes).

36. Meeting a demand of up to 2.2m would appear to require very substantial imports of some 0.75m tonnes, the feasibility of storing and redistributing which must be in doubt, if procured at one time, and the cost significant.
37. Our assessment from the monitoring data recently collected by DfT suggests that most local highway authorities are re-stocking for the forthcoming winter at significantly higher levels even than autumn 2009. Our analysis suggests this will exhaust the ability of UK suppliers to meet the pre-season demand at November 2010 by some 0.15m tonnes, and also leave suppliers with no stocks of their own.
38. We know that some 0.05m tonnes of restocking by highway authorities has already been placed with importers. The overall picture we have is set out in Table 3 below.

Table 3: Analysis of shortfalls of UK production capacity against likely demand 2010-11

Import orders already placed by LHAs	0.05m	
Identified shortfall of UK production capacity to meet highway authorities' restocking plans for November 2010	0.15m	
Remaining shortfall in-winter, based on <i>underlying</i> demand of last winter	0.55m	
Remaining shortfall in-winter, based on <i>restricted</i> demand of last winter		0.15m
Total shortfall to be met by imports	0.75m	0.35m

39. All this analysis is based on the proposition that either the underlying demand or the restricted demand of last winter should be the benchmark level of demand for salt supply below which Salt Cell should not be needed to intervene. This is a judgement call, which ideally should be based on the likelihood of this level of demand occurring, set against the cost of providing this level of resilience and the disruptive consequences of not doing so. In practice, pragmatic decisions have to be made.
40. It should be noted that we have made no allowance in this analysis for the voluntary adoption by LHAs of more economical spread rates for salt. Many witnesses said that there seemed to be no impairment to effectiveness during the period of forced salt reduction last winter, and said there should be a comprehensive review of current technical standards. We agree and have recommended to this effect. Meanwhile, we can make a conservative assumption that perhaps 5 or 10% reduction in salt use next winter could result from some authorities adopting reduced rates (we know the Highways Agency is changing specifications for their contractors with this objective).
41. With such uncertainty, the timing of any decision to procure imports and treat them as strategic buffer stock becomes critical, as the later it is made the more data about weather and salt use on which they can be based. We suggest a pragmatic 2-stage approach in which an initial quantity of (say) 0.25m tonnes should be procured ahead of November 2010 and treated as strategic buffer stock; and then at the end of December 2010, this analysis should be updated against the latest forecast for the winter, and a decision made whether further strategic stocks should be imported, and how much.

42. Options to procure and manage this include:

- Persuading producers to create substantial buffer stocks at their mines or elsewhere, but the current high rate of restocking by local highway authorities coupled with limitations on salt production makes this unrealistic for the coming winter.
- Persuading groups of local highway authorities to get together to create sub-regional buffer stocks may be a longer term solution, but in the short term would be patchy at best, would require imports, and would involve additional expenditure at a particularly difficult time for local authorities facing substantial expenditure cuts.
- The Highways Agency could be tasked to acquire, store and make available this initial requirement for 0.25m tonnes of salt through import, as reserve stocks for the nation's local highway authorities as well as for its own possible use. This should be done in a formally distinct way and quite separately from its current functions. It should be made available at a premium price which (at least for salt actually used) covers the cost of the salt itself together with storage, handling and onward delivery. In this way local highway authorities are incentivised to continue to build and replenish their salt stocks in line with their normal practice, and to continue to source from the UK commercial suppliers so long as salt continues to be available – rather than to rely on the HA-managed reserve stock until they really need it.

43. We prefer the third option. The advantages are:

- a) the HA as a Government agency can be tasked by the Secretary of State to do this, if so minded;
- b) the HA, working with its contractors, has all the necessary competence and experience and may have some existing capacity on its operational estate;
- c) the scale of the HA's own winter operations means that such buffer stocks can be rotated and even absorbed by the Agency in the event of change of policy; and
- d) it covers the whole of England.

44. This is the basis of our Recommendation. We have not had the opportunity to explore the cost or detailed feasibility with the Highways Agency, or to explore the implications of risk and cost to the DfT; this would now be a matter for the DfT if our Recommendation is generally accepted.

Footways

45. Local Authorities and many other witnesses spoke of public concern over the condition of footways (pavements and other pedestrian areas) in the recent severe winter. The reality is that very few local authorities prioritise the precautionary treatment of footways. Mention was also made over the confusion which arose last winter as to what steps individual householders and small businesses and shops could take to help themselves and others in tackling snow and ice, as the media had featured pieces relating to the potential legal liability of individuals if someone then had a fall.

46. We note that in Germany, Austria and Switzerland householders and shopkeepers are actually required to keep the pavement, and sometimes their side of a local road, clear of snow and ice; there is in a place a low-cost public liability insurance which provides cover for any resulting claims. There are similar expectations in the Netherlands.

47. So far as concerns England, although we believe the bar to proving a claim for negligence is quite high, and it is unlikely (though not impossible) that an individual would be sued under such circumstances, there is an opportunity for government to publish simple national guidelines for those who want to clear their frontages, which if observed would provide a defence in the event of litigation. These could be made available by local authorities to their householders.
48. We were impressed that some local authorities who were proactive in encouraging individuals to take action had offered reassurance to the public that reasonable action would not leave them liable. For example Westminster City Council issued a four-point guide for the public on tackling snow and ice (see Chapter 11 (Footways))
49. We are recommending that DfT, consulting as necessary with others including experts and local government representatives, should develop and publish as a matter of urgency a simple code of good practice for members of the public and for business owners.

Weather forecasting and climate change

50. Weather forecasting can be considered in three distinct ways – the short term forecasts up to five days ahead, which inform the operational decisions of highway authorities; medium term forecasts for up to 30 days which can inform resourcing decisions; and seasonal and longer term weather prediction to inform policy and strategic planning.
51. Short term forecasts provided by the Met Office and increasingly by the private sector (predominantly MeteoGroup) are of a high quality, frequency, detail and – most importantly – accuracy. Highway authorities and salt producers are generally well satisfied.
52. Forecasting weather beyond 5 days is more problematical, due to the chaotic nature of weather systems and the particular location of the UK, subject to Atlantic and other weather systems. The key point is that for periods up to 30 days the suppliers tend to forecast as risk rather than definitive events, and the concept of probabilities can be more complicated for the general public and media to interpret. But they are of increasing value to businesses and other organisations as a basis for resourcing and planning decisions.
53. The real challenge is seasonal forecasts – i.e. for 3-6 months ahead – and beyond. The ability to put probabilities on the alternative scenarios even for the next winter would be particularly helpful. And longer term policy would be greatly informed by an understanding of what climate change is doing to the future likelihoods of mild or severe winters.
54. We have discussed these issues in some depth with the Met Office and their climate research team at the Met Office Hadley Centre, and with other experts. Our findings are presented in more depth in Chapter 12 (Weather Forecasting and Climate Change), but in summary we understand that:
 - The probability of the next winter being severe is virtually unrelated to the fact of just having experienced two severe winters, and is still about 1 in 20;
 - The effect of climate change is to gradually but steadily reduce the probability of severe winters in the UK;
 - However, when severe winters come, they could still be extreme in terms of snowfall, wind and storms, though not necessarily in relation to temperature;
 - And that consequently there will be higher risk that authorities and the public will be less experienced and capable of handling extreme winter events.

55. An important consequence of the declining occurrence of severe winters is the loss of knowledge and experience among planning and technical staff in local highway authorities and their contractors, especially if the severe winters have more intense snow events.
56. All this, in our view, reinforces the need for comprehensive resilience planning and for ensuring that the salt supply chain is resilient; but we need to understand and accept that the chance of a severe winter is still relatively small and that there will be many years when some will question the degree of resources committed to winter resilience.

The economics of winter resilience

57. We are taking the opportunity to address the strategic question – does England commit enough resource to winter resilience, given the degree of disruption when severe winter weather occurs, as well as the probability of it occurring.
58. An exercise is under way, whose results we will present in our Final Report, to set the current costs of winter service in England against the social and economic costs of disruption when it occurs. We are then looking at whether increasing the resources spend on winter resilience would give rise to an equivalent (or greater) reduction in the social and economic costs of disruption.
59. We recognise the challenge in estimating these elements, and we also recognise that – even if it appeared that more expenditure on winter resilience would be worthwhile – there would remain major issues of affordability at this time of public expenditure reduction.

The final report

60. The Final Report to be published in the autumn of 2010 will complete the task of the Review. This Interim Report contains some examples of good practice, but we would welcome further examples for inclusion in the Final Report.

Summary of recommendations

Recommendation 1: That for the forthcoming winter the need for a strategic reserve stock of salt for England's highway authorities be recognised, if the resilience to handle the risk of its being as severe as last winter is to be secured, and given the projected shortfall of UK production against the possible demand; and that the Highways Agency should be tasked, on behalf of the Secretary of State, to acquire by import, store and make available on terms to be agreed an initial reserve stock of some 0.25m tonnes of salt for 'last resort' use by local highway authorities and for itself; and that the DfT at the end of December should formally lead the consideration and review (using information and forecasts then available) of whether further additional reserve stocks should be secured for the remainder of the winter.

Recommendation 2: A systematic year-round process of collecting data, monitoring salt stocks and movements and disseminating the findings should be put in place by DfT, to give advance warning of any issues affecting prospective salt supplies and availability, and to provide the basis for regular strategic overviews of the salt supply chain and any necessary decisions by them or other parties. This should be independent of any need for the operation of Salt Cell in 'allocation' mode.

Recommendation 3: The vulnerability and lack of resilience of the salt supply chain as currently configured should be recognised; that some targeted intervention needs to be designed which will substantially improve the resilience of the supply chain with minimal impact on the normal functioning of the salt market in the UK; and to note that the development and evaluation of proposals for this is a key part of the Review Panel's stage two work, which will be presented in the Panel's Final Report in the autumn.

Recommendation 4: DfT should consult with the Scottish and Welsh authorities about the implications for Scotland and Wales of these short term recommendations for the salt supply chain.

Recommendation 5: Every local highway authority should have a robust winter service plan, and should regularly review the key elements of it, including network coverage, operational procedures and standards and appropriate salt stockholding to meet defined resilience standards, all in line with current best practice.

Recommendation 6: Consultation on treated networks should be broadly drawn to include business representatives, passenger and freight transport operators and local communities, as well as health and education service providers; and to help manage public expectations should be followed by clear and comprehensive communications of winter service plans, supported by good real-time communications through media and on-line when winter conditions arrive.

Recommendation 7: As many local highway authorities already do, authorities should collaborate with and support lower-tier authorities to help ensure that maximum practical winter support can be given in areas and communities beyond the treated networks, including possibly the treatment of key footways and pedestrianised areas.

Recommendation 8: While recognising that research and technical information in this area is relatively fragmented and uncoordinated, and that available evidence needs to be presented more authoritatively, local highway authorities should be aware of the opportunities to improve salt utilisation through adopting lower spread rates and alternative treatment methods, both to reduce cost and to reduce demands on a potentially vulnerable salt supply chain.

Recommendation 9: Professional bodies and the Local Government Association should encourage the more widespread dissemination and adoption of best practice in the preparation and delivery of winter service plans.

Recommendation 10: While recognising that the resilience of salt supply is being addressed as a nationwide issue, local highway authorities can support this and should:

- all participate fully in the year-round systematic information collection and monitoring of salt stocks and movements which we are recommending should be adopted by DfT;
- ensure their own planning of salt stocks and supply is sound and carried out in accordance with best practice, and supported by practical measures to improve salt utilisation;
- put in place (or confirm where existing) mutual aid with neighbouring authorities to help address localised shortages.

Recommendation 11: Local highway authorities should treat their winter service planning as an integral part of wider general resilience planning for civil contingencies, bringing to the development of winter service plans the benefits of processes and disciplines associated with resilience planning, together with the culture of constructive challenge and validation.

Recommendation 12: The Highways Agency should be commended for the research-based measures it has put in place to improve its salt utilisation. It should:

- continue to research and monitor the efficiency of its practices and strive to improve the cost-effectiveness of its winter service operation;
- share best practice, research and knowledge with other highway authorities.

Recommendation 13: There should be a comprehensive, authoritative review of technical standards and guidance relating to both the treatment and the spread rates of salt, based on research and evidence as necessary, leading to the production of practical guidance for practitioners as well as at a policy and planning level. This should be led by the UK Roads Liaison Group (see next recommendation).

Recommendation 14: The valuable initiative and work of the National Winter Service Research Group should be brought under the wing of the UK Roads Liaison Group, who should take responsibility for and set the strategy for its work programme, including its contribution to the comprehensive review of technical standards and methods.

Recommendation 15: The Department for Transport should develop, in collaboration with local government representatives and appropriate experts, a code setting out good practice for members of the public, including business owners, in clearing snow and ice from footways. This should:

- be produced by the end of October 2010 in time for the coming winter;
- be short, along the lines of Westminster's advice to its residents;
- set a standard which, if observed, should guard the public against negligence claims;
- be made available to households by local authorities.

Recommendation 16: We note and commend the generally high quality and accuracy of short term (0–5 days) weather forecasting now available to support the operational decisions of highway authorities and their contractors, and recommend that the weather forecasters continue to develop their capabilities both for 15–30 day forecasting to meet the resource planning needs of highway authorities, and for longer term seasonal forecasting.

Recommendation 17: Given that the probability of next winter being severe continues to be relatively small but that severe winters are still possible despite the warming trend, we recommend that winter resilience planning – and the securing of greater resilience in the supply of salt – should continue on the basis of dealing with winters of a severity similar to that of 2009–2010.

David Quarmby CBE

Brian Smith

Chris Green

Part A

Background and evidence

1. Introduction

Context and purpose of the Review

- 1.1** The winter of 2009/10 was the coldest in the UK for 30 years, with sustained periods of sub-zero temperatures, and unusual in its coverage of the whole country. Across the UK, mean monthly temperatures were well below normal for all three months of winter. The widespread snowfalls throughout the winter were near-record breaking on a number of occasions, and almost the whole of Great Britain felt the effects for similar periods of time.
- 1.2** The winter created extremely challenging conditions for the travelling public and for all forms of transport across the whole country. For the most part, transport networks coped well in the circumstances. The biggest issue became the availability of salt. This is used to keep roads clear of ice as a precautionary treatment and to turn snow into slush using traffic movement, following clearance of large accumulations through ploughing. The severity of weather conditions caused disruption for rail and aviation as well.
- 1.3** The previous winter of 2008/09 had also been severe – the worst for almost 20 years – following a decade of relatively mild conditions, and there had been shortages of salt. It had led to a number of reviews being carried out in 2009, including by the House of Commons Transport Select Committee, the London Assembly, the Local Government Association and the UK Roads Liaison Group (UKRLG);⁵ a number of local authorities carried out their own reviews as well. The July 2009 report by UKRLG made 19 recommendations to highway authorities, producers and suppliers of salt and other stakeholders to improve winter preparedness and resilience. The railway industry and the aviation sector also carried out their own reviews of experience and lessons learned.
- 1.4** In both winters the Government put in place emergency arrangements (the “Salt Cell”) to monitor salt demand and stocks and to advise the salt suppliers where the scarce supplies were best directed – recognising highway authorities needs with snow are much greater than the normal precautionary salting, undertaken to deal with temperatures around freezing and the risk of ice. The Salt Cell helped to ensure that so far as practical a level of salt spreading could continue across the country’s critical road networks while adverse conditions persisted.
- 1.5** With the experience of the second severe winter in mind, and with some concern as to whether all the lessons learned from the previous winter had been acted upon, the then Secretary of State for Transport commissioned this Review in March 2010, appointing a three-man Panel led by David Quarmby. Its purpose is to consider and recommend practical measures to improve the response of England’s transport systems to severe winter weather.
- 1.6** The Review reports in two stages, and this is the Interim Report. Its focus is on roads and road users, and on issues that should be addressed, and measures that can be implemented, relatively quickly in preparation for winter 2010/11. The Final Report will be published in the early autumn; it will consider wider aspects of resilience of transport services, including rail and aviation; it will review communications, economic impacts, the question of public expectations, and longer term issues around weather forecasting and climate change. It will also consider how the salt supply chain might be improved for the longer term.

⁵ UKRLG brings together those bodies responsible for operating the UK’s highways: Department for Transport, Scottish Government, Welsh Assembly, Northern Ireland Roads Service and representatives of local highway authorities. UKRLG provides advice to central and local government on roads issues.

- 1.7** The Review takes account of the wider UK context, particularly because of the importance of road salt, which is crucial to winter resilience, is in limited supply from three main suppliers and which serves a market for the whole of Great Britain. The Review has therefore involved the Scottish and Welsh administrations, and benefited from helpful input from their highway authorities but formally the recommendations and Review outcomes apply to England, and it will be for Scottish and Welsh administrations to consider what action might be taken in those countries.
- 1.8** The Review builds upon the recommendations of the UKRLG report of 2009, and takes account of the experience and lessons learned by public authorities, network operators and transport providers; it also takes account of the views of transport users and stakeholders. Consideration is also given to the effectiveness of communications about travel conditions, and to the contribution of weather forecasters (see Appendix A for the terms of reference).

The approach of the Review

- 1.9** The Panel has pursued two parallel avenues of inquiry. A Call for Evidence was issued on 6 May to over 200 organisations, to the trade media and to the public at large through the Review's website,⁶ and respondents were asked to address up to 27 questions. Nearly 130 responses were received and 33 organisations have so far attended Hearings to enable the Panel to explore their evidence; a further round of Hearings in connection with the Final Report will take place after this report has been published. All the responses and notes of the Hearings will be placed on the Review website when the Final Report is published.
- 1.10** Secondly, visits have been made (to the two GB salt producers, to the Highways Agency and a local authority); investigations are being carried out into statistical and economic aspects of winter disruption and resilience and a special logistical study of the salt supply chain has been commissioned; and informal meetings and discussions have been held by the Panel with experts on a range of technical issues.

Structure of this Report

- 1.11** Part A summarises the background and evidence to the Review's first stage – the roles of the different highway authorities, the way in which they provide their winter service, the experience of the winters of 2008/09 and 2009/10 and the written and oral evidence provided to the Review on winter maintenance of highways.
- 1.12** Part B is concerned with a discussion of the key issues. These are taken chapter by chapter, with the Panel's recommendations included in the relevant sections:
- Public and stakeholder expectations;
 - Salt and the supply chain;
 - Local highway authorities;
 - Strategic Road Network;
 - Salt utilisation and technical standards;
 - Footways;

6 <http://transportwinterresilience.independent.gov.uk>

- Weather forecasting and climate change;
- The economics of winter resilience.

Some general principles

1.13 The Panel has evolved some general principles in progressing the work of the Review, which it is helpful to set out at this stage.

- We have taken the UKRLG Report and its recommendations,⁷ together with the update of Section 13 of Well Maintained Highways,⁸ published in December 2009, as our starting point. Between them they set out best practice for local highway authorities in setting policy, strategy, plans and operational practice for winter service and resilience. Our call for evidence asked whether these were 'fit for purpose' and how well the best practice was observed; we have only raised questions about them in our Review where the evidence we received suggested we should. The Panel is not seeking to re-invent this particular wheel.
- With the problems of salt supply in mind, we recognise that local highway authorities are independent bodies, elected locally to make local decisions about local needs and priorities. They are therefore locally accountable, but we draw attention to the responsibilities of local authorities and to the need to adopt best practice, where the evidence justifies it.
- Rock salt for highways is on the face of it a simple and straightforward commodity, with a market place of over 200 purchasers and two main and one minor UK salt producers. But the uncertain and volatile pattern of demand coupled with heavily constrained production rates makes it a vulnerable and non-resilient supply chain in the way it works now. A significant part of our work has been devoted to understanding the drivers of this and ways of improving its resilience. Our approach is very deliberately based on enabling markets to function effectively and find good solutions, using the minimum of highly targeted interventions to improve resilience. We believe that heavily managed solutions to salt supply problems for the nation are neither sustainable, economically efficient, nor helpful for suppliers or purchasers.
- The clear national need to cut the Government funding deficit is already bringing unprecedented pressure on local highway authorities and the Highways Agency to reduce their expenditure. We have therefore been mindful of the need to maximise the cost-effectiveness of winter service operations.

Acknowledgement

1.14 The Panel would like to record its considerable thanks and appreciation to all those individuals and organisations who took time to share their knowledge, experience and insights with the Panel – by responding to the Call for Evidence, by attending the Hearings, by responding to requests for further clarification, and by hosting visits or sharing information informally.

1.15 The Panel also expresses its considerable appreciation to the support team of Chris Watts, Lloyd Miles and Richard Mace, who carried out background analysis, report drafting, special investigations, and managed the whole administration of the Review, its evidence gathering and Hearings.

⁷ UK Roads Liaison Group 'Lessons from the Severe Weather February 2009', July 2009

⁸ UK Roads Liaison Group 'Well-Maintained Highways' Complementary Guidance – Section 13 Winter Service (Section Amended 15 December 2009)

2. Background

The duties of highway authorities

- 2.1** Highway authorities in England are of two types. Local highway authorities are those elected local authorities – county and unitary councils, metropolitan districts, London boroughs and Transport for London – with responsibility for the operation and maintenance of local roads. The Highways Agency, on behalf of the then Secretary of State for Transport, is responsible for and maintains (through contractors) those major national routes known as the strategic road network – the vast majority of motorways and some ‘A’ roads.
- 2.2** Highway authorities of both types have a duty to ensure, as far as is reasonably practicable, that safe passage along the highway is not endangered by snow or ice.⁹ They also have a duty to remove an obstruction in a highway arising from the accumulation of snow.¹⁰
- 2.3** These duties are not absolute and case law suggests that a highway authority needs an adequate and proper policy for dealing with the foreseeable risks and obstructions to its highways resulting from snow and ice and to have executed that policy, in order to defend itself against claims. An authority’s policy should be based on a recognised code of practice.
- 2.4** As for the scale of winter service, the UKRLG’s *Lessons from the Severe Weather February 2009*¹¹ report estimated the cost of winter service in England to be of the order of £160 million per annum.

Local highway authorities

- 2.5** Local highway authorities are responsible for just over 180,000 miles of England’s roads – more than 97% of England’s roads by the length and carrying around 69% of traffic. They prepare and enact winter service plans including stocking road salt and salting highways. These plans describe the part of their total road network which the local authorities will treat on a precautionary basis, i.e. when the forecast is for temperatures around or below zero. Minor roads such as purely residential streets or rural lanes will tend not to be treated, whilst major routes and key routes into rural settlements are more likely to be.
- 2.6** Local practice is influenced by the relevant code of best practice. *Well Maintained Highways, A Code of Practice for Highway Maintenance Management*¹² is published by the UKRLG. *Well Maintained Highways* has a chapter dedicated to Winter Service, which was revised in December 2009, to reflect the experience of the February 2009 severe weather and the conclusions of the UKRLG. This advice suggested that resilience for six days continuous severe weather constituted ‘sensible good practice’ for highway authorities.
- 2.7** It is important to note that there is more than one specification of road salt in use by highway authorities. Salt is routinely milled by suppliers to maximum grain sizes of 6 mm or 10mm, with 6 mm having become more popular in recent years. Gritters are then calibrated for the appropriate

9 Highways Act 1980, section 41(1A)

10 Highways Act 1980, section 150

11 Available at: <http://www.ukroadsliaisongroup.org/pdfs/UKRLG%20Report%20Final.pdf>

12 Published by TSO, London, 2005 and at: <http://www.ukroadsliaisongroup.org/pdfs/Well%20maintained%20highways%20January%202010.pdf>

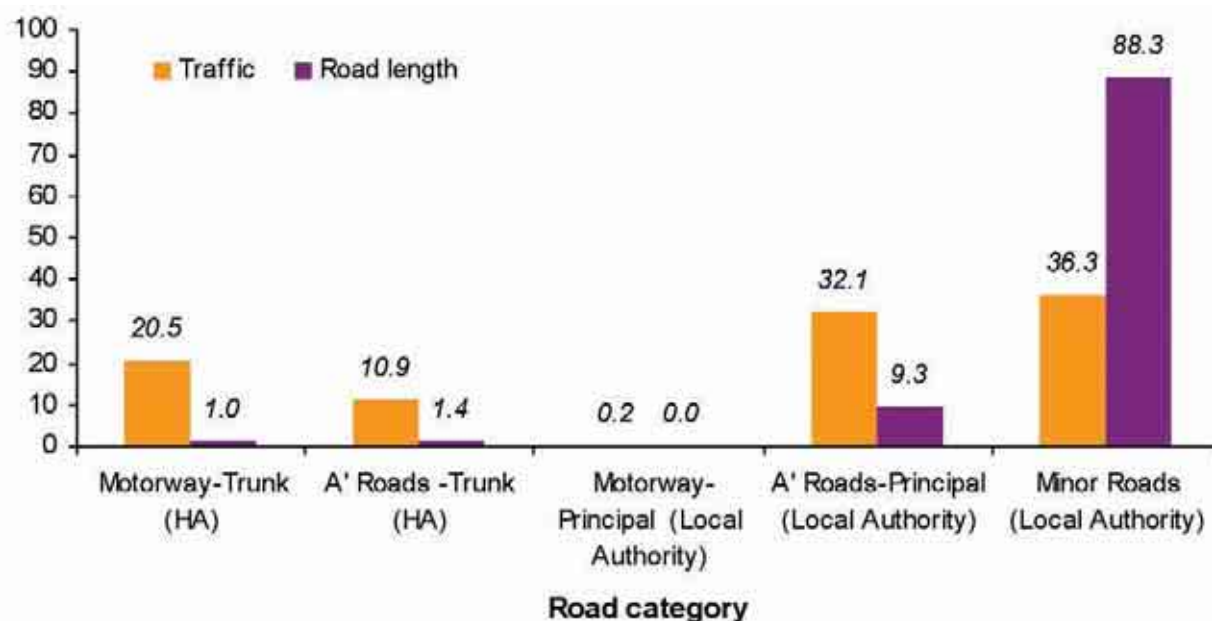
size, and can also spread at different rates (i.e. more or less salt on to the road surface depending in weather conditions). Beyond these basic products there are also 'pre-wet' systems, in which rock salt is wet with brine on the gritting lorry before being spread. This helps the salt to last longer on the road surface and to reduce salt spread beyond the target area. There are also proprietary products where salt is coated with agricultural by-products, which thaw ice at lower temperatures than salt alone and aid duration of the effectiveness of salt.

- 2.8** Many local highway authorities involve lower-tier authorities – parishes and town councils for example – in the execution of some aspects of winter service: for example, agreeing to fill street-side salt bins which are then managed and used by Parish or Town councils to tackle ice and snow on local roads and footways. Where highway authorities delegate in this way, they retain responsibility for ensuring safe passage.

Highways Agency

- 2.9** The Highway Agency is responsible for around 4,500 miles of highway in England (Figure 2.1). While only 2.4% of the total of road by length, this carries just over 31% of motorised traffic. In the event of icy or snowy conditions, the Highways Agency treats its whole network, given its strategic and highly-trafficked nature.
- 2.10** In practice, the day-to-day maintenance, including winter service, of the strategic road network is handled by contractors, overseen by Highways Agency teams. Maintenance is done either:
- by Managing Agent Contractors 'MACs' who take responsibility for maintenance of roads over a given area of the Agency network under a multi-year contract; or
 - under so called Design Build Finance Operate (DBFO) contracts set up under the Private Finance Initiative (PFI).

Figure 2.1: Percentage of road lengths and traffic by road class, England: 2009



- 2.11** The Agency's planning reflects the standards set out in the *Network Management Manual and Routine and Winter Service Code*, which the Agency publishes and which contains a lengthy section¹³ on Winter Service standards for the trunk road network. The Agency's standard for treatment of the network in persistent snow conditions is 6 treatments per day. The Agency had the equivalent of 13 days resilience at the start of the 2009/10 winter season – or 78 treatments of its full network for persistent snow conditions.
- 2.12** MACs and DBFO contractors are expected to adhere to the standards of the *Network Management Manual* in providing winter service. Failure to do so will leave them exposed to the financial consequences of failure to do so, in the event of an accident, as the Agency will expect the contractor to fund any consequent costs arising from injured parties.
- 2.13** The Agency estimates that the total annual outlay on winter service on the strategic road network is around £20 million, plus the cost of its gritter fleet, weather service and research.

Other users of road salt

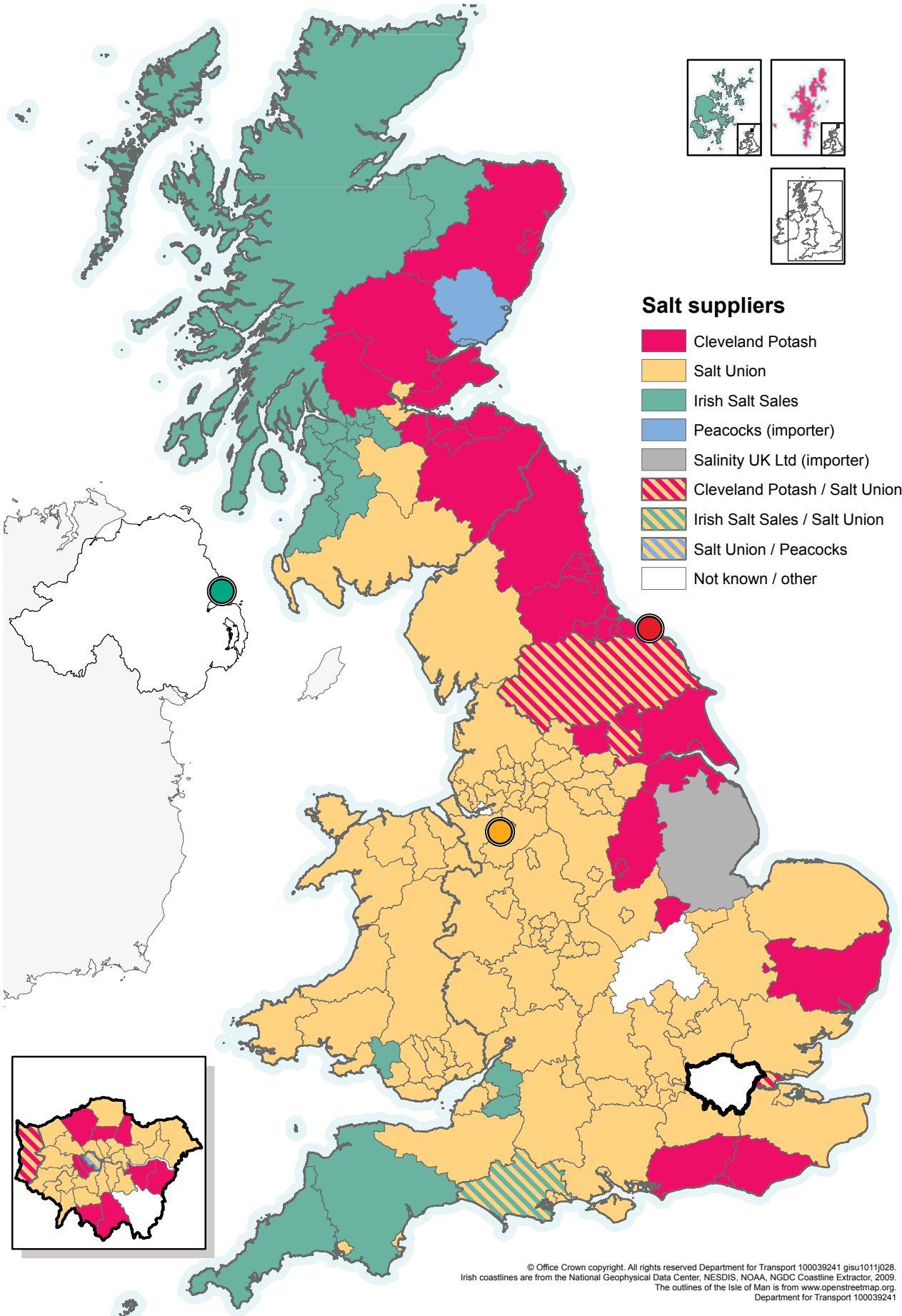
- 2.14** There are also other significant users of salt, termed 'the general trade'. This includes many important businesses and institutions, such as energy installations, hospitals, business parks and supermarkets. During the shortages of 2009/10, the general trade found it increasingly difficult to get supplies of salt and both the safety consequences of this and the potential impact on essential infrastructure beyond transport became significant issues.

The salt supply chain

- 2.15** 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.
- 2.16** The UK has three indigenous producers of rock salt: Salt Union (SU) in Winsford, Cheshire; Cleveland Potash (CP) in Loftus, Cleveland; and Irish Salt Mining (ISM) near Carrickfergus on the Northern Ireland coast. Figure 2.2 shows where these are placed in the UK, relative to their clients in winter 2009/10.

13 http://www.ha-partnernet.org.uk/minisite/PNET_UI/NMM/V1%208%20Part%205.pdf

Figure 2.2: Local highway authorities by salt supplier, as of February 2010



- 2.17** The SU Winsford mine (Figure 2.3) produces around 1 million tonnes of salt on average each year though it can increase this for short periods by around 25% when demand is high. Constraints on production include the need to maintain mining equipment, crushing and grading of the mined salt, which it is looking to address, and lifting salt to the surface.
- 2.18** Salt is transported only by road, the company's railway sidings having been sold by the mine's previous owners for redevelopment in the 1980s. Some limited movements have been tried in the past by both rail and ship, but as the site has no direct connection with either mode there were significant obstacles.
- 2.19** The primary business for CP is mining potash. However, it has to mine salt in order to develop the potash seams. CP mines approximately one tonne of salt for every one tonne of potash produced, but with salt accounting for around 33 per cent of initial mined product. We understand that CP produces about 800,000 tonnes of salt a year under standard demand conditions. CP has limited on-site storage, due to the nature of its location, which is in the North Yorkshire Moors National Park. This constrains both the extent to which it can develop its surface location, and restricts lorry movements to and from the site. It therefore has a rail link to Teesport, 8 miles away, where the limitations on storage are less restrictive, before onward transportation by ship or lorry.
- 2.20** The rock salt from CP and SU has generally been priced at around £20–30 per tonne delivered over recent years, though imports and orders beyond existing contracts reached much higher prices during the shortages of 2009/10. The price varies with the distance involved in delivery to the highway authority depot.
- 2.21** ISM produces about 500,000 tonnes per annum, but about half of this is sold to authorities in Northern Ireland and the Republic of Ireland. The other half is supplied to highway authorities in Great Britain, which tend to be on the west coast, so more suitable for delivery by ship from Northern Ireland. ISM do not believe that there is great potential to increase supply to local authorities in Great Britain, as it is difficult for them to compete with the mainland suppliers on price beyond those more westerly authorities which it already supplies.

Figure 2.3: Boulby Mine, Saltburn by the Sea



- 2.22** Figure 2.2 shows where local highway authorities in Great Britain sourced their salt from in winter 2009/10. This demonstrates the importance of transport costs in determining purchase decisions. Since salt is such a low value product, transport costs are typically 40–50% of the delivered price, though they can be much higher in severe weather. It can also be seen that supplies delivered by lorry tend to be from the nearest salt supplier. Those authorities whose location leaves them suitable for delivery by ship can take deliveries from further afield.
- 2.23** There are also importers of salt to the UK. These include Peacock, Salinity and British Salt. In years of average demand, these importers tend to supply the general trade users, whilst SU, CP and ISM supply the highway authority needs. However, in periods of high demand, such as winter 2009/10, importers are used by the highway authorities.
- 2.24** In years of average demand there are exports of salt from the UK, with the three UK suppliers able to more than meet domestic demand. There were no exports in 2009/10.
- 2.25** The contracts which highway authorities have with suppliers tend to be of up to five years duration and to be for the supply of salt at prices, delivered, which vary between pre-season and in-season. Both SU and CP operate 'stock management systems' for some customers whereby records are kept of authorities' stock levels and stocks are replenished when certain 'trigger' levels are reached.

Weather and forecasting

- 2.26** During winter, highway authorities rely on weather forecasts to take decisions as to whether to treat their precautionary network, either all or in part, and for operational plans, such as rotas and staff cover. These are provided under contract to the individual authorities by the Met Office's commercial arm and a small number of private sector providers, including MeteoGroup which has assumed a significant market share in recent years.
- 2.27** The forecasting companies provide different products: of particular interest are short-term forecasts for the coming night and medium-term forecasts. The forecaster will generally provide the authority with a short-term forecast, most often through a web interface, in the afternoon for the coming night, in order to inform the immediate decision as to whether to treat its highways. The forecaster will then update that forecast through a phone call to the authority in the intervening hours, if its intelligence changes.
- 2.28** This forecast will be sufficiently specific to advise authorities about the likely weather patterns for different parts of its network, so that judgements can be made on which parts need treatment. It will cover temperature and precipitation and allow for judgements as to what will be the best timing for any treatment.
- 2.29** The forecasters will often seek to form a good relationship with the winter service managers prior to the start of the season in order to understand better the local impacts of weather on the road network, such as frost hollows and other potential trouble spots, to make sure that these are covered in forecasts.
- 2.30** Medium-term forecasts for periods of up to a month are used to plan cover and determine staff rotas for winter service – drivers, maintenance engineers, depot and management staff.

- 2.31** Longer-range predictions are available, for example for the coming season. However, these are understandably less accurate and are closely related to the rather different issues of the likelihood of severe winter weather and our ability to anticipate it. We will pursue this issue in our Final Report.
- 2.32** A separate issue is that of climate and how longer-term climate trends might change the character of our winters. This will also be tackled in the Review's Final Report.

3. The last two winters

Winter 2008/09

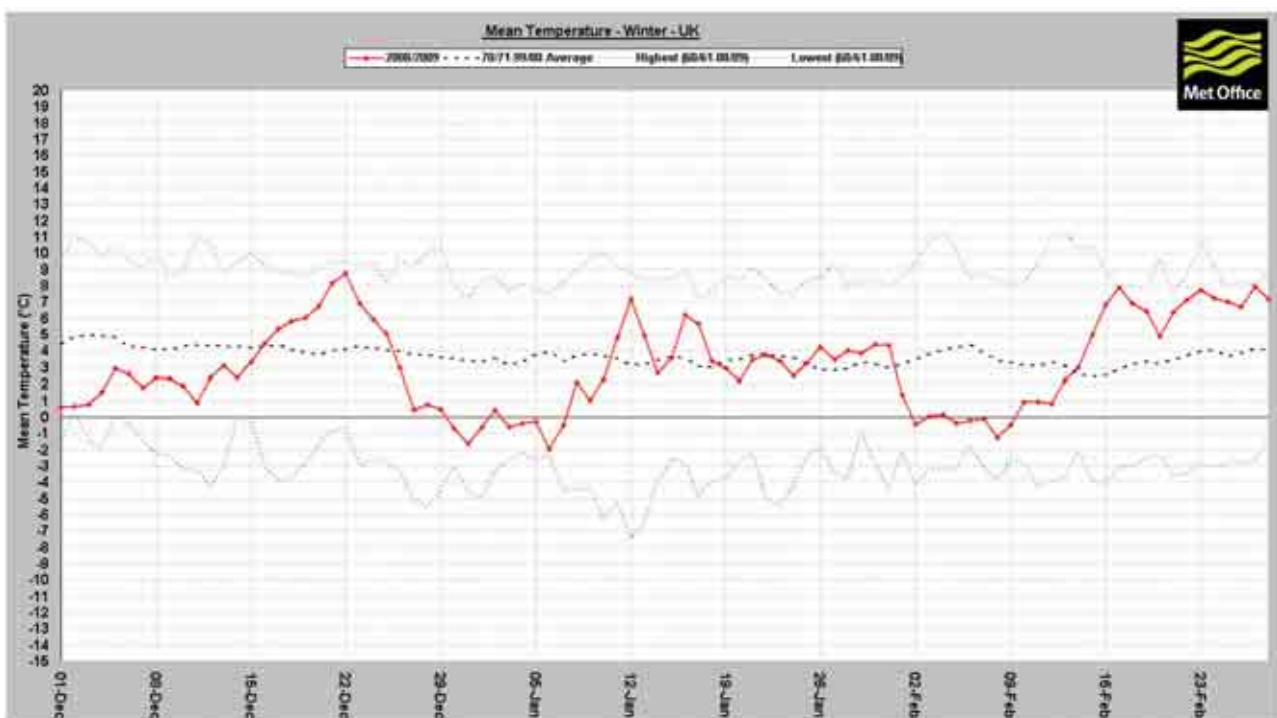
3.1 The Panel wishes to thank the Met Office for their assistance in preparing this chapter.

The weather

3.2 The winter of 2008/09 was the worst for almost 20 years and followed a decade of relatively mild winter conditions (Figure 3.1). The weather was characterised by a series of short, sharp snow events and prolonged low temperatures, which caused widespread travel disruption. The first snow event occurred between 28–30 October with snow falling most notably over South East and Central South England, coupled with very low minimum temperatures for the time of year. There were further snow events in December and January. The heaviest snow fell overnight on 1/2 February over South East and Eastern England which brought many transport networks to a standstill the following morning. London had not seen similar levels of snowfall for 18 years. Bus services were withdrawn and runways were closed at Heathrow.

3.3 A series of graphs illustrating historical weather trends can be viewed at Appendix B.

Figure 3.1: Mean temperature in winter 2008/09 for UK shown compared to average, highest and lowest



Actions of highway authorities

3.4 In summary, there were a number of contributory factors that led to a national salt shortage:

- The severe winter weather of 2008/09 occurred following a succession of relatively mild winters. The sustained low temperatures reduced salt stocks. Many highway authorities had not seen similar snowfall since 1991, with little or no snow falling in the intervening years. Consequently, many local highway authorities, quite understandably, interpreted this succession of mild winters as an indication of future winter seasons and had reduced salt stocks and winter resources.
- Many authorities had established stock management systems with their salt supplier. Whilst helping to streamline the re-stocking process, such systems tended to encourage over-reliance on in-season re-stocking through just-in-time deliveries. Such a system could not cope with widespread demand for salt.
- There was no formal guidance available to local highway authorities on minimum resilience.
- Due to environmental pressures, many highway authorities have been moving to storage of salt under cover. This has often resulted in a smaller, but better maintained salt stock.

The first operation of the Salt Cell

3.5 There was no formal trigger process that led to the establishment of the first Salt Cell. Salt suppliers had expressed concerns as to their ability to meet existing orders. Highway authorities shared similar concerns of delayed delivery times. Following discussions in early February, Ministers agreed to initiate the Salt Cell and the first meeting was held on 5 February. This first Salt Cell was chaired by the Cabinet Office Civil Contingencies Secretariat, who possessed the necessary support mechanisms to handle emergency situations. The Department for Transport agreed to lead the Salt Cell in future years and to develop the necessary protocols and procedures.

Lessons learned

- 3.6** The events of winter 2008/09 generated a number of lessons learned reviews from key organisations involved in the implementation of winter resilience. Reviews were undertaken by the UK Roads Liaison Group (UKRLG), the Local Government Association, the Transport Select Committee, the London Assembly Transport Committee and the London Regional Resilience Forum. Many other local highway authorities also carried out their own winter service reviews in response to the UKRLG recommendations.
- 3.7** UKRLG published a comprehensive review of winter 2008/09 and highway authority experiences on 4 August 2009, culminating in a package of 19 recommendations to develop and improve the highway maintenance for future winters. The report highlighted the following key lessons:

Lessons for local highway authorities:

- Better communication with the public, before and during severe winter weather.
- To consider, consult on and formally adopt a defined minimum winter salting network, including strategic routes, access to key facilities and other transport needs.

- To review pre-season salt stocks and in-season stocking arrangements to ensure they have sufficient salt to deliver the locally defined standard. UKRLG recommended at least six days' severe weather resilience, covering the core winter period.
- To review winter service plans and ensure appropriate consultation and co-ordination with other highway authorities, key public services and other stakeholders to ensure well co-ordinated plans, and consider whether collaboration with other services would improve service for the public.
- Prepare contingency plans for providing winter maintenance in a scenario of constrained salt stocks, such as salting a minimum winter network and reducing salt usage.
- To consider jointly with salt suppliers whether supplier owned salt stocks can be held in widely distributed locations around the country.
- To consider innovation in salt procurement, such as collaborative purchasing arrangements with neighbouring authorities, greater specification of supply contracts and a more diverse supply base.

Lessons for UKRLG

- To strengthen 'Well Maintained Highways', the UKRLG code of practice for highway maintenance management, with a view to influencing winter service plans for 2010/11.

Lessons for the Department for Transport

- To publish an information leaflet for highway authority elected members and senior managers on preparation for severe winter conditions.

3.8 The Department for Transport (DfT) published their response to the UKRLG report¹⁴ of July on 15th December 2009. In a written ministerial statement, the then Secretary of State welcomed the report as a thorough review and endorsed all 19 UKRLG recommendations. At the same time, DfT issued a leaflet entitled 'Are You Ready For Winter?' which raised awareness of the importance of good winter planning to locally elected members and senior managers. This leaflet can be viewed at Appendix C.

Well Maintained Highways

3.9 In tandem with the DfT announcement, UKRLG issued its updated version of *Well Maintained Highways*. The guidance was strengthened in a number of areas in accordance with recommendation 11 of the UKRLG report and provides formal advice to highway authorities to take into account when reviewing their winter service operations for winter 2010/11.

Monitoring of salt stocks pre-winter 2009/10

3.10 Following the salt shortage experienced in winter 2008/09 and the publication of the UKRLG report, the Cabinet Office Civil Contingencies Secretariat issued a survey on 26 October 2009 to all English highway authorities and the Devolved Administrations. The survey asked highway authorities to identify the level of salt stocks they intended to hold at the start of December 2009. Highway authorities were also asked what actions they had taken to begin to meet the recommendations set out in the UKRLG report. There was a very poor response rate to the survey,

14 UK Roads Liaison Group 'Lessons from the Severe Weather February 2009', July 2009

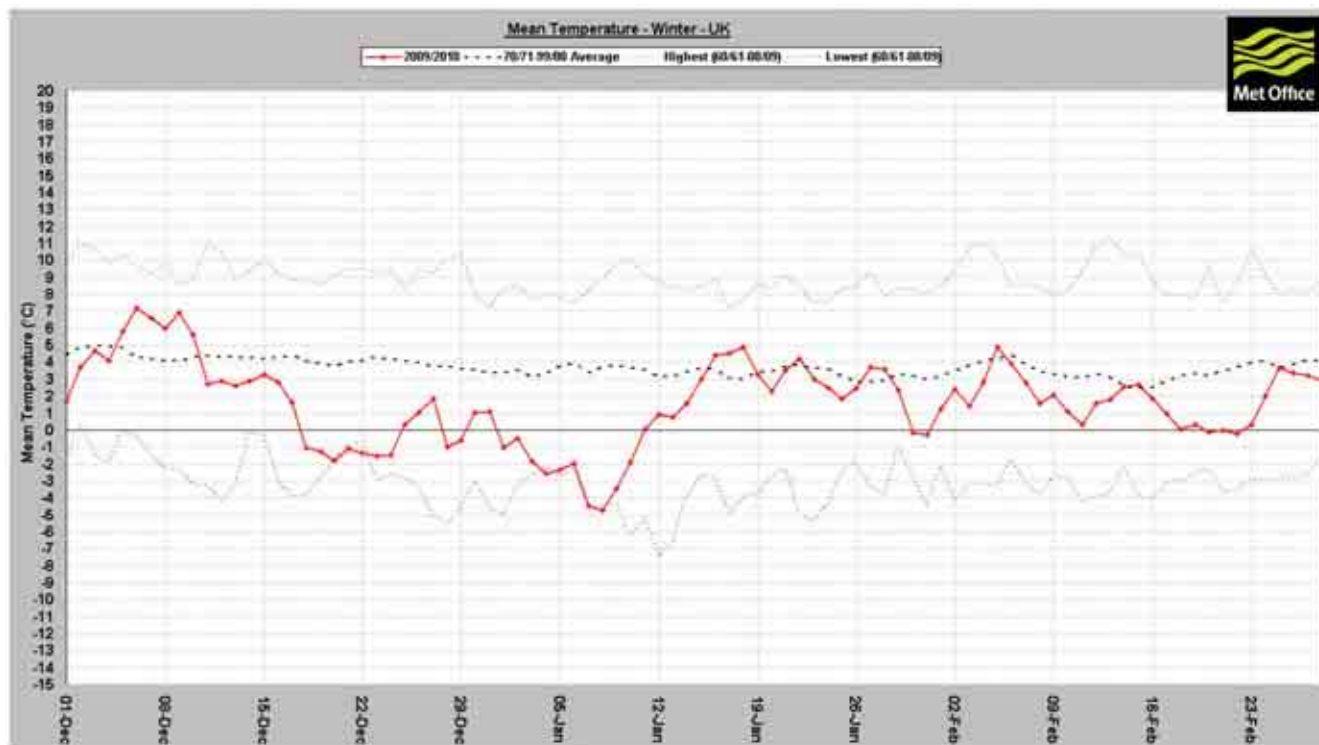
with less than half of all English highway authorities providing returns. Consequently, the survey failed to adequately gauge the level of preparedness among highway authorities for winter 2009/10.

Winter 2009/10

The weather

- 3.11** The winter of 2009/10 was the coldest in the UK for 30 years (Figure 3.2), and the duration of freezing temperatures and extent of coverage of both snow and ice were highly unusual. There were widespread and heavy snowfalls across the country.
- 3.12** From Thursday 17 December 2009 to Friday 15 January 2010 the UK experienced a spell of very low temperatures and significant snowfalls that affected almost the whole country. This was the most widespread and prolonged spell of this type across the UK since December 1981/ January 1982. Large areas of England, Wales and Northern Ireland regularly saw night-time temperatures falling well below freezing, and on occasion below -10°C , while in Scotland night-time temperatures in the Highland glens regularly fell to -15°C or lower. Daytime temperatures in many areas frequently struggled to rise above freezing, often remaining several degrees below.
- 3.13** The freezing temperatures were accompanied by widespread snowfalls on many days throughout the period. With daytime temperatures often failing to rise above freezing, little thawing occurred so fresh snowfalls added to previous accumulations. Depths of 10 to 20 cm were widespread across England and Wales, whilst across upland areas of northern England and in the Scottish Highlands, depths exceeded 30 cm in many areas.

Figure 3.2: Mean temperature in winter 2009/10 for UK shown compared to average, highest and lowest



General experience

3.14 The snowfalls and widespread freezing conditions caused very significant disruption across the UK through this period. Transport was particularly badly affected with snowfalls causing numerous road closures, and train and flight cancellations.

December

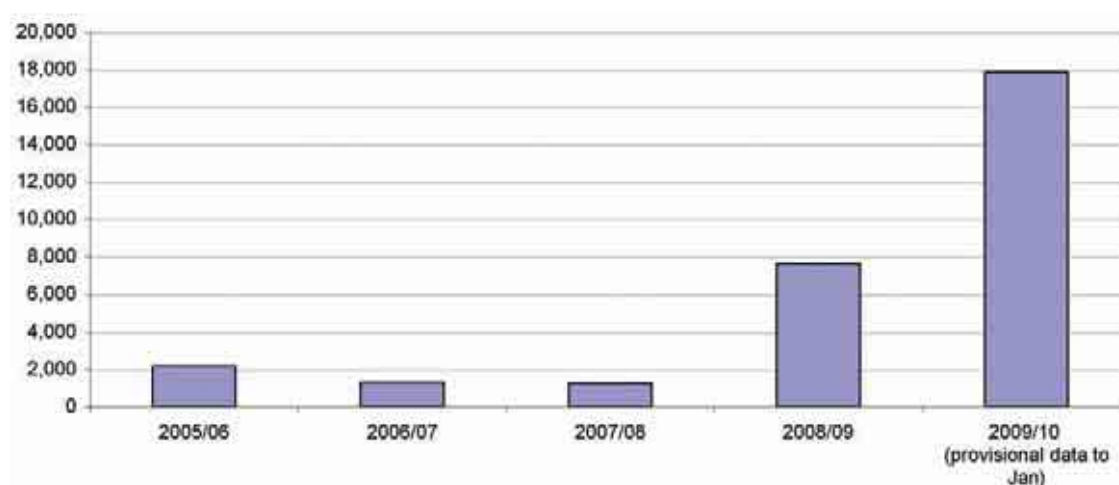
3.15 The first snowfalls on Thursday 17 to Saturday 19 December affected mainly eastern parts of the UK, but on Sunday 20th the focus shifted to northern and western parts with Northern Ireland and the Manchester area experiencing heavy snowfalls. On Monday 21st, areas west of London were badly affected, while on Tuesday 22nd and Wednesday 23rd icy conditions caused further problems. On the 23rd, rain falling on freezing surfaces in counties bordering the English Channel formed sheet ice and caused many accidents. Throughout this period the road and rail networks in Scotland were particularly badly affected by heavy snowfalls, with temperatures falling below -15°C across the Highlands. Many airports were affected including Heathrow, Gatwick, Manchester, Liverpool, Belfast and Inverness. Eurostar trains were also badly disrupted by snow in the run-up to Christmas.

3.16 The difficult conditions continued from Christmas to the New Year, although there was a brief spell of milder weather in the south.

January

3.17 The freezing conditions continued into the New Year with widespread ice causing treacherous conditions on roads and pavements, resulting in a spate of accidents and falls (Figure 3.3). The chart below shows the number of specified falls on ice and snow over the last five years. It needs to be stressed that not all of these will have been on the highway, but the number of falls in 2008/09 was six times the level experienced in 2007/08 and a further increase is reflected in the provisional figures for winter 2009/10.

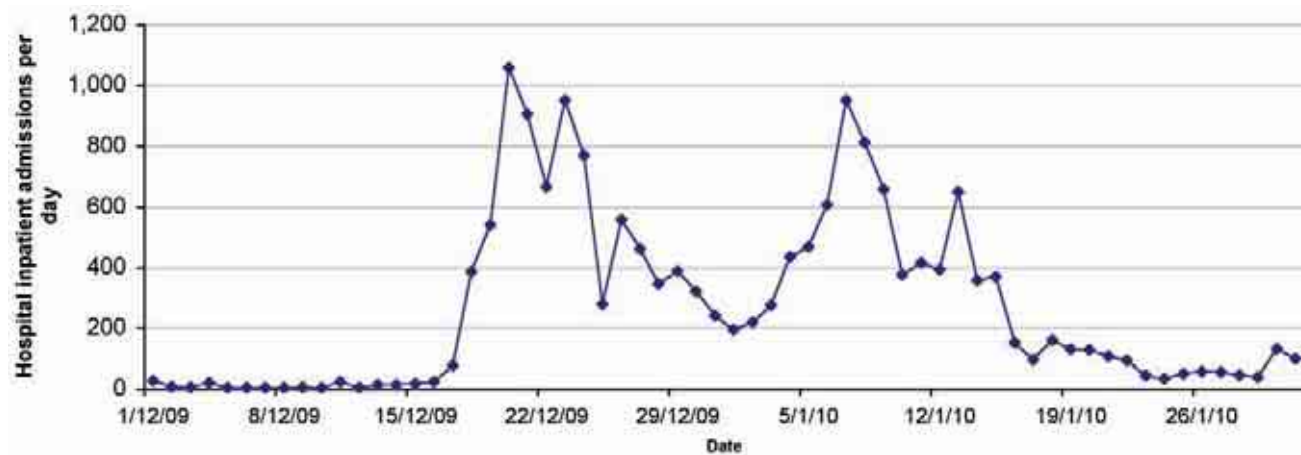
Figure 3.3: Hospital inpatient admissions for falls involving ice and snow by financial year



Source: Hospital Episode Statistics (HES), The NHS Information Centre for Health and Social Care.
Count of finished inpatient admissions with external cause of injury coded as 'W00 fall on same level involving ice and snow'

- 3.18** The figures in Figure 3.3 account only for falls specified on ice and snow and include non-highways accidents. The total number of unspecified falls rose from 143,615 in 2007/08 to 157,623 in 2008/09.
- 3.19** Figure 3.4 illustrates the pressure that falls on ice and snow can place on A&E departments nationally. In one day in December 2009 there were more than 1,000 inpatient admissions which were specified falls involving ice and snow nationwide.

Figure 3.4: Hospital inpatient admissions: Falls on same level involving ice and snow: by day December 2009 and January 2010



- 3.20** Heavy snowfalls on Monday 4 January across north-west England saw Manchester and Liverpool airports closed for a time, with further snowfalls on the 5th causing continuing problems. Overnight on 5/6 January, southern England, north-east Scotland and the Manchester area again all experienced heavy snow. A thousand motorists were stranded overnight on the A3 in Hampshire, and there were further airport closures. On Thursday 7th, electricity supplies to 25,000 homes were interrupted as trees and ice brought down power lines. The 7th and 8th were bitterly cold across the UK. As a result of the snowfalls and freezing temperatures, thousands of schools remained closed through the week. A slight thaw on Sunday 10th and Monday 11th brought a brief respite. However, there were further snowfalls in south-west England and south Wales on the 12th, while on the 13th, these became more widespread to bring renewed disruption to roads, rail and air travel. It was only by Friday 15th that conditions started to ease.
- 3.21** Despite conditions becoming more settled in the latter half of January, there were still some sharp frosts and fog at times. Bands of rain spread in from the west, heavy enough to cause localised flooding problems. In some areas it was still cold enough for the rain to turn to snow. There were reports of 10–15 cm of snow in Northumberland on 30th.

February

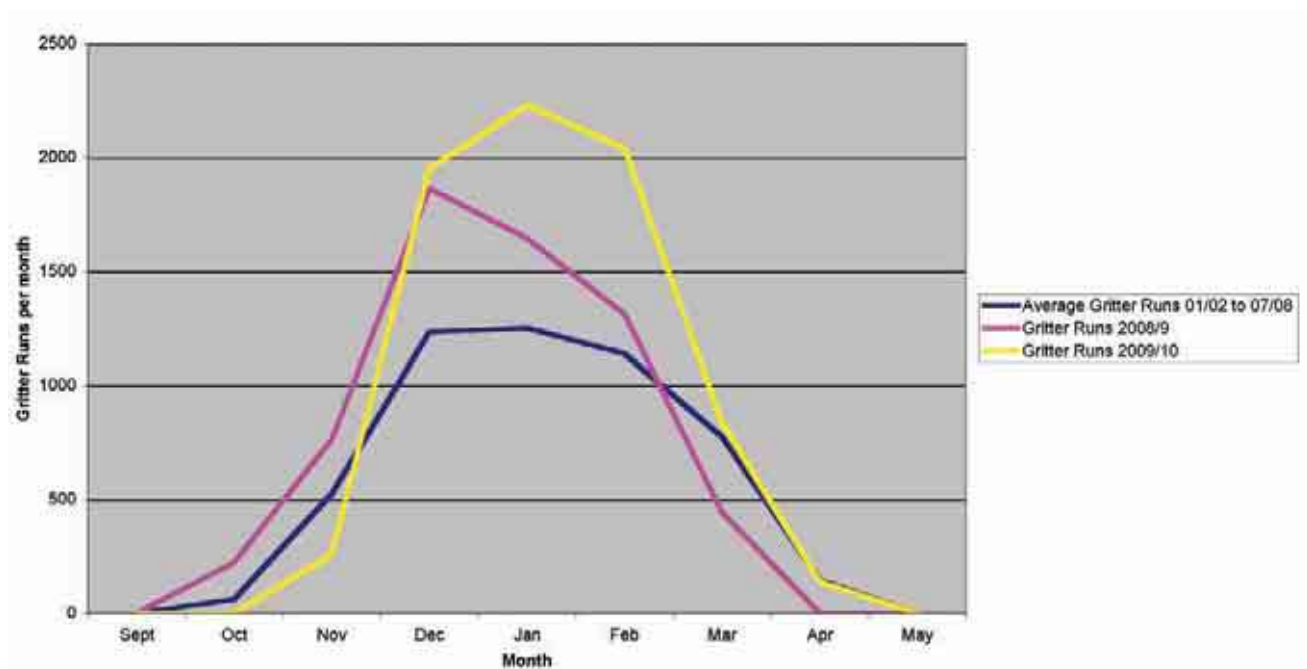
- 3.22** Snow fell across parts of the Midlands and some northern and eastern areas on the 2nd and 3rd, giving accumulations of a few centimetres. During the middle of the month, high pressure was centred to the north-west of the UK, with a predominantly easterly or north-easterly airflow. This led to an east-west split, with much of the east cloudy with showers, mostly of sleet or snow, while the west was drier with sunny intervals and overnight frost. The heaviest and most frequent showers were in the far south-east on 10th and 11th, with 10 to 20cm of snow recorded in parts of Kent and East Sussex.

3.23 Overnight frosts persisted throughout the remainder of February. When surfaces were wet during the day, many roads continued to freeze overnight, which prolonged the need for precautionary overnight gritting. Towards the end of the winter period it was not uncommon for local residents to open their curtains to sunny mornings, with temperatures above freezing during the day, unaware of the precautionary gritting that authorities were still undertaking at night.

Case study: North Yorkshire County Council

Figure 3.5 shows the number of gritters deployed by North Yorkshire County Council since 2001/02. The winter of 2009/10 can be clearly seen as the largest draw on council resources, requiring 30% more gritting runs in comparison to the average for 2001-02 to 2007/08. Because of its geographical area, North Yorkshire is one of the country's largest consumers of salt, with normal daily usage of 3,500 tonnes in snowy conditions.

Figure 3.5: Number of gritters deployed by North Yorkshire County Council over the last nine years



March

3.24 March was a month of two halves weather-wise. The first two weeks were generally dry and fine, although still fell sharply with overnight frosts in places. The second half of the month saw conditions becoming more unsettled with wind and rain at times. Daytime temperatures started to reach double figures in England, and the Salt Cell held its final meeting on 16th.

3.25 In Scotland, it turned colder through 28th and by 29th wintry showers were falling across the north. The last two days of the month saw heavy rain and snow, which affected lower levels through 31st. By the end of the day 45 cm of lying snow was reported from Aviemore. This snow drifted in the strong winds, causing widespread disruption to transport and power supplies.

The second operation of the Salt Cell

- 3.26** Following the severe salt shortages experienced in 2008/09, highway authorities ended the winter with very low salt stocks. Many highway authorities reviewed their resilience levels following the summer publication of the UKRLG report, with a view to re-stocking to the recommended minimum six days' resilience.
- 3.27** The severe winter weather that commenced in mid December 2009 brought an abrupt end to the annual re-stocking phase. As the December snowfall affected the entire country, large volumes of salt were consumed early on in the winter season. Crucially, there was no let up in the severe weather leading to the Christmas and New Year period when the availability of haulage for deliveries of salt for in-season re-stocking is traditionally scarce. During this period few salt deliveries were made to highway authorities.
- 3.28** It was this series of events that led to a number of highway authorities' salt stocks reaching extremely low levels. In January 2009, when deliveries came back on stream in the New Year, the salt suppliers had become inundated with new orders from highway authorities. Salt Union were moving 20,000 tonnes a week from their mine using 800 lorries a day, but this caused lorry tailbacks on local roads in Winsford and Middlewich with double parking and limited gaps for passing cars. The situation was exacerbated by many lorries arriving unscheduled, often under sized (i.e. 10t rather than 30t). This caused severe congestion, was unpopular with local people and also had safety issues. Furthermore, delivery timescales for those deliveries that made it out of the mines were delayed due to the difficult road conditions. Demand for salt was at such a high level that the salt suppliers could no longer meet existing supply contracts.

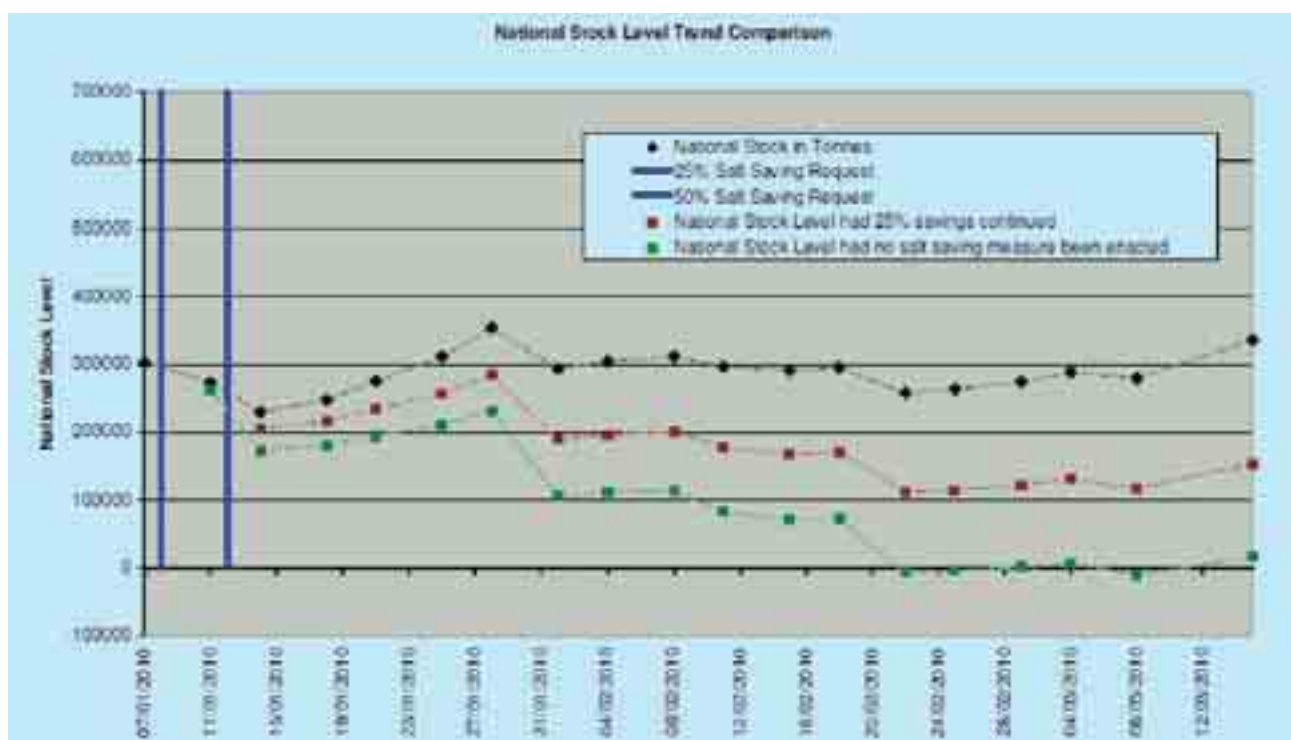
Figure 3.6: Sheeted salt stockpile



Image courtesy of Salt Union Ltd

- 3.29** Government had been alerted to concerns from some quarters about shortages just before Christmas. Salt Cell was not initiated by DfT until 6th January 2010, which many stakeholders felt, in retrospect, to be too late. UKRLG had recommended that the Salt Cell should only be considered as a last resort. But perhaps most importantly, in part due to the incomplete local authority response to the November restocking survey, aggregate information about stock levels across the country did not exist until DfT commissioned stock returns from local authorities on 26th December and then again on 4th January. Until this information was available, there was no means for DfT to adequately gauge the severity of the situation.
- 3.30** The first Salt Cell meeting was chaired by the Department for Transport, who had agreed to assume lead department responsibility. At the commencement of the Salt Cell over 68 authorities (07/01/10) found themselves with less than 2 days resilience. From the initial salt audits and modelled projections it became clear that resilience levels could not be maintained without making reductions to the rate at which salt was being consumed.
- 3.31** On 8th January, the then Secretary of State issued a direction to the Highways Agency to reduce its consumption of salt by 25%. Similarly the LGA agreed, on behalf of local authorities across England, and the Mayor of London, that local highway authorities should reduce their daily use by 25%. The severe weather persisted into the following week, which led to the Secretary of State issuing a second direction to the Highways Agency on 12th January to 'conserve the maximum possible salt usage each day, consistent with maintaining the continued safe operation of the national motorway and trunk road network'. Local authorities were also asked to conserve significantly more than the 25% agreed the previous week, by similarly reviewing their salt spreading strategy and prioritising local networks as necessary. In aggregate, highway authorities were asked to reduce their consumption by 40 to 50% compared to normal usage. Copies of both announcements can be viewed at Appendix E. Figure 3.7 is derived from actual Salt Cell data and illustrates the impact of the efficiency measures that were implemented. Had no salt saving measures been enacted it is clear that the country would have run out of salt.

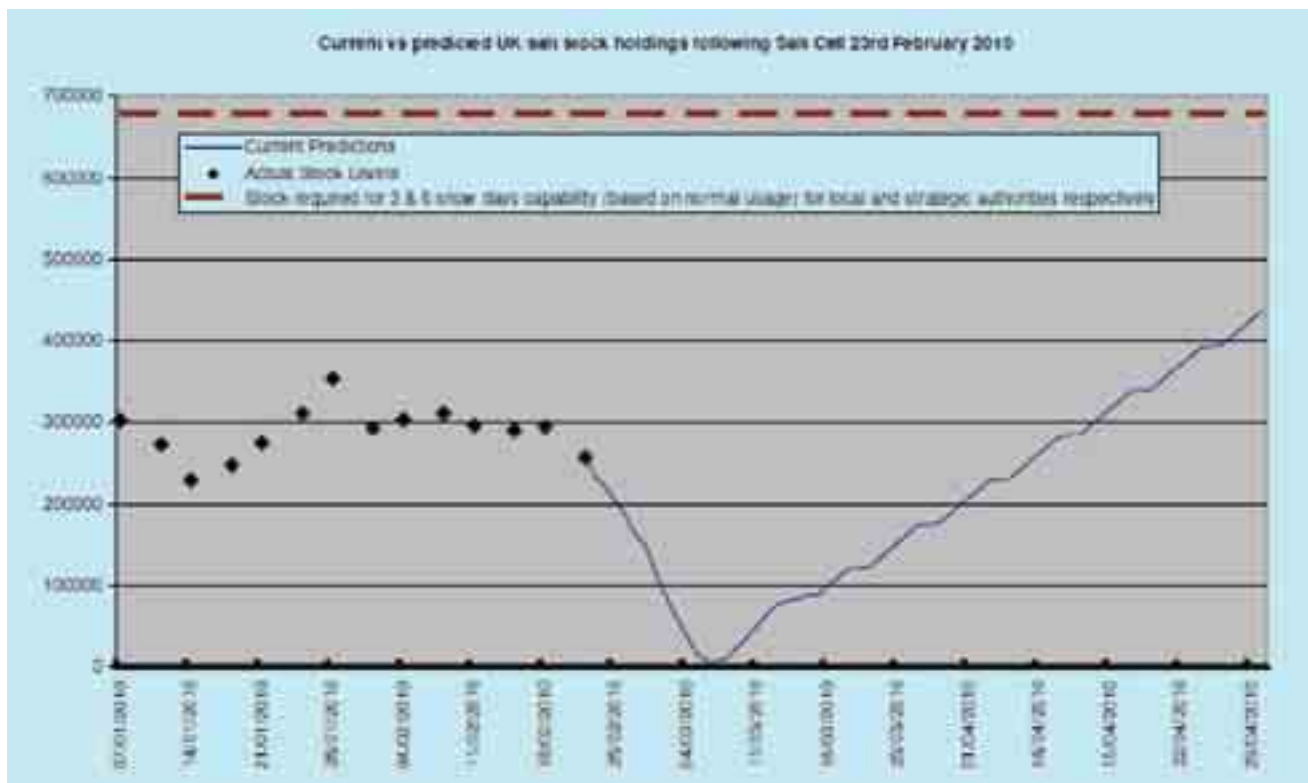
Figure 3.7: National stock level trend comparison



3.32 The Salt Cell provided advice (not direction) to salt suppliers and had interaction with Salt Union, Cleveland Potash, Irish Salt Sales and the importers Peacocks. The advisory allocations were made on a needs basis, factoring in not only authorities' current stock holding but also their needs based on regional weather forecasts. This ensured salt was directed to those most in need. When Salt Cell was first convened, 77 highway authorities found themselves with two days' resilience or less. After two cycles of the prioritisation process and the then Secretary of State's salt saving requests, authorities were able to increase their resilience to 4-5 days (allowing for salt savings). More than two thirds of all authorities benefited from the Salt Cell advice across England, Scotland and Wales. The remaining third mostly comprised Irish Salt Sales customers, who were not included in the allocation process, but generally possessed higher levels of resilience, and authorities who had imported their own salt.

3.33 The modelling process employed by the Salt Cell analysed existing stock levels and the short term weather forecasts to project the expected level of salt stocks held nationally. The weather forecasts on 23rd February produced critically low national salt stock projections for the following fortnight, illustrated in Figure 3.8.

Figure 3.8: Current versus predicted UK salt stock holdings following Salt Cell 23rd February 2010



3.34 This issue was immediately reported to Ministers, who considered the options for addressing the projected shortfall. Ministers opted to ask Cleveland Potash (via the Salt Cell) to switch production from potash to salt in order to accelerate national salt production. The final cost of the "extra production" salt was around twice the normal cost. Earlier in January, the Highways Agency purchased additional tonnages from Cleveland Potash at a similar cost. The additional salt was first offered to authorities in the North East and Yorkshire & Humberside regions and to authorities in Scotland who were experiencing sleet and snow which required intensive gritting.

- 3.35** Aside from the Salt Cell prioritisation process, the DfT also took action and provided advice to winter service managers in order to support national resilience. Derogations of the drivers' hours rules were temporarily granted for the distribution of road salt, animal feed from manufacturers to farms, de-icer products to airports, bulk milk tankers and the distribution of heating and gas oil. DfT also issued guidance to winter service managers on how to obtain coated salt and the potential efficiencies to be gained.
- 3.36** The Salt Cell held its final meeting on 16th March. It met 20 times during the course of the winter and provided advice to salt suppliers on the delivery of 529,315 tonnes of salt to those authorities in greatest need for support.

4. Overview of evidence submissions – Section 1

The call for evidence and approach adopted

- 4.1** The Panel issued a Call for Evidence to over 200 organisations on 25th April 2010 with a deadline of 25th May 2010¹⁵ (see Appendices E and F). The letter was also placed on the Panel’s website. The Panel briefed the relevant specialist media that the call for evidence had been issued, and used their own networks to alert as many people as possible so that they could submit their evidence.
- 4.2** A key part of the evidence gathering process saw the Panel hold formal Hearings with 33 organisations, visit two salt mines and two highway authorities, and discuss informally issues with various experts and groups on a range of technical matters.
- 4.3** The Call for Evidence asked for responses on a wide range of questions and issues and were grouped on the following sections, though organisations were able to respond however they saw fit:

Phase One – Winter resilience and salt stock management

1. UKRLG review and its recommendations
2. The approach to winter resilience – highways
3. Weather forecasting and communications

Phase Two – maintaining winter transport service (all modes) and longer term issues

4. Resilience of rail services in severe winter weather
5. Resilience of airports and air services in severe winter weather
6. The consequences and economic impacts of severe winter weather
7. Communications and public expectations
8. Long term weather trends

- 4.4** Nearly 130 responses were received from a wide range of public and private sector bodies, local authorities, transport operators and others. The full list of responses is provided at Appendix F and the organisations that attended meetings and Hearings with the Panel are listed at Appendix G.
- 4.5** Further Hearings are planned with representatives from the Rail and Aviation sectors at the end of July, and an evidence summary for Phase Two of the Review will be included when the Panel’s Final Report is published in the autumn 2010.
- 4.6** Below is a brief summary of some of the key issues that were raised in the written evidence and discussions held by the Panel concerning Phase One of the Review. It is the Panel’s intention to publish all the evidence submitted and notes of their discussions on the website at the end of the Review.

¹⁵ In exceptional circumstances (such as when parties were omitted from the original evidence call) an extension was allowed.

Local government

4.7 38 individual authorities and six representative organisations responded to the call for evidence from this key sector. Many of the same issues were raised by a number of local highway authorities and representative bodies, and a number of these also attended Hearings or met with the Panel. Some of the areas raised by this sector included:

UKRLG report

- Evidence suggests that the vast majority of councils had increased their stocks levels, and many held in excess of the recommended six days. By the beginning of winter in 2009, stock had risen by over fifty% from the previous season (excluding London and North East whose figures were unavailable) (LGA).
- A minimum level of stock can be specified, but to be meaningful it must be more specific than 'six days' resilience'. Evidence presented to the LGA also suggests that a single minimum standard for salt stocks would not be an effective solution as other factors need to be considered, including (LGA):
 - a. Distance from supply;
 - b. Weather variability and predictability;
 - c. Local topography;
 - d. Capacity to store salt.
- Report was excellent and addressed many key issues, but there was insufficient time to complete some of the recommendations. Many required members to be persuaded to invest, and would realistically take 2–3 years to complete (ADEPT).
- On the lack of preparation between the two winters, this was probably a combination of senior officers focusing on other issues, pressure on resources and belief that the first winter was an exception within the trend of mild winters (VARIOUS).

Many of the recommendations and advice contained within the review were already being applied by Halton. The need for increased salt stock resilience was recognised and summer time restocking meant that additional salt stocks were available (in excess of 6 day's resilience – severe weather treatment) at the start of the 09/10 winter season at the Council's depots.

(Halton Borough Council)

Other reviews

- Authorities are reviewing both winter policies and delivery plans, often with members (TAG).
- After two severe winters, many authorities are undertaking their own reviews and it is likely that they will come into line with the UKRLG's recommendations (ADEPT).
- Majority of Councils were undertaking reviews into are planning reviews into their winter service, or aspects of it. Nearly two-thirds had overspent their budgets in the last winters (APSE).

Milton Keynes Council has reviewed its resilience in respect of minimum stock holding and a recent Capital bid has been successful in respect of providing a covered salt dome. The other recommendations in the report will be reviewed as part of the 2010/11 Winter Plan development.

(Milton Keynes Council)

We are also in the process of setting up and chairing an internal group and a regional group (involving highway authorities across the region and the highways agency). The latter will be used to share best practice, consider regional resilience, including shared salt stocks, purchase arrangements etc.

(Kent County Council)

Winter planning

- Winter resilience must be seen alongside other threats, rather than in isolation. It was noted that severe winter had impacts beyond transport networks, and tested business continuity arrangements, including social care, refuse collection, day centres and schools. The preparations for events such as pandemic flu had been invaluable in many areas (LGA), but all services need to review their business continuity plans (TAG).
- Winter Plans could be reviewed more thoroughly and regularly, and involve a much wider scope of interested parties. Route based approaches simply on traffic levels were no longer sufficient, and footpaths, cycles ways, public transport, health facilities and business areas all needed to be considered and involved. Ultimately, a more open approach would provide authorities with a higher level of defence to criticism (LGA).
- Cross boundary issues for routes were an issue, though many councils did consider this in their winter plans (LGA).
- Anecdotal evidence was provided on a number of occasions that the Highways Agency was possibly over-cautious and treated its routes more frequently than local authorities, even when it was recognised that the strategic network had a high status (LGA).
- The strategic network and local roads are inter-dependent, and treatment needed to reflect this (LGA).
- Primary routes were kept open, but duty is to maintain entire network including paths and car parks and guidance is needed for residential and business areas and footways (TAG).
- Guidance to reduce salt usage was valuable, but suspected that many authorities were unable/unwilling to adopt it (ADEPT).
- Key to improving resilience was a consistent approach to best practice, but after two severe winters it was now much higher on the agenda (ADEPT).
- Use of direct labour staff unable to work on their normal duties to clear non-carriageway areas was a common practice. Use of contractors had reduced this option, though some authorities were developing protocols (ADEPT).
- Some authorities had found that their treated networks missed key facilities such as schools or bus routes, and were now reviewing these, but ideally this should be done each year (ADEPT).

- Changes made following the 2008/09 winter included (APSE):
 - Increased salt stocks;
 - Reduced spread rates and network lengths;
 - Quicker stock replenishment;
 - Following UKRLG recommendations on where and when to treat;
 - Utilisation of all staff to preserve services;
 - Re-prioritised highways programme and spend.
- But some councils made no changes. These either had no severe weather in 2008/09, were located close to salt supplier or felt had dealt with that winter effectively (APSE).

We are also reviewing the primary and secondary treated network in light of key essential services (buses, hospitals, schools etc) and critical infrastructure. Whilst a lot of winter service information is put into the public domain each year there is clearly a need for further communication with professional partners so they are clear about what the county council plans to do and their own responsibilities. This will take the form of a local pre-winter conference engaging a broad range of stakeholders.

(Devon County Council)

Figure 4.1: Salt barn



Stock holdings, mutual aid and regional stockpiles

- Willingness to enter mutual aid was tempered with concern over ability to re-supply, and this was exacerbated by the unreliability of the deliveries from Salt Cell and the suppliers. Councils were also keen to ensure that areas requesting mutual aid were reducing usage and conserving stocks before releasing any salt (LGA).

- Some areas, especially London, were able to build good regional relationships to coordinate stocks and were less vulnerable. Some regions are now looking at strategic reserves to avoid future supply problems, and this includes joint procurement and service delivery arrangements (LGA).
- UKRLG had placed the correct emphasis on 6 days resilience, but Christmas/New Year in 2009/10 required longer. There was also an issue of capacity at the smaller authorities, but simply increasing the amount of stocks alone was insufficient as efficient usage had to be achieved (ADEPT).
- While much mutual aid occurred, obstacles included technical (type of salt) and political issues (ADEPT).

We have been in discussion with neighbouring authorities through various groups such as Midlands Improvement Group and Midlands Highway Alliance and agreed to support mutual aid and storage within the region.

(Warwickshire County Council)

- It appeared that the same authorities required mutual aid in both winters. While it should always be available, advice is needed that to access mutual aid all possible measures must have been taken to reduce usage and conserve stocks. (ADEPT).
- Government should examine whether there is a need for centrally managed regional stockpiles (ADEPT).

The proposal is to maximise the available barn space in Surrey and increase our start of season stock holdings from 8,200t to 13,500t. Given the likely continuation of restricted supplies consideration is also being given for addition resilience will be built into the winter service plan as part of the annual review.

(Surrey County Council)

- A lot of councils feel that regional stores that are accessible by road and rail would be a positive step (APSE).
- Working time directive on drivers hours was a problem, but was not a universal barrier (APSE).

Mutual aid between councils and between councils and the Highways Agency played an important part in ensuring that no area ran out of salt. For those areas with some available stocks, willingness to enter into mutual aid was tempered by uncertainty about when they might receive further supplies themselves, particularly, as happened in a number of cases, when promised deliveries failed to materialise when expected due to logistical issues with the suppliers. In addition, councils were keen to ensure that all possible measures to reduce salt usage and conserve stocks were in place in areas applying for mutual aid before making stocks available.

(LGA evidence)

Salt supply

- With two suppliers dominating the market, it became evident in 2008/09 and 2009/10 that the supply chain was unable to cope with sudden increases in the demand for salt (LGA).

- This reflected an inability to increase mining capacity and logistical problems such as accessing sufficient haulage, and the suppliers were dependent on Salt Cell in both winters. Both also experienced mechanical problems at some stage during the last winter (LGA).
- Not all orders were met and communications were confused, in our survey 50% received significantly less than ordered (APSE);
- Concern in the context of re-supply as for two winters the suppliers have not been able to fulfil their contractual requirements. Government should examine incentives to increase their resilience and performance (ADEPT).
- 'Just in time' delivery worked in a stable situation, but neither supplier could cope when demand peaked.
- Two-thirds councils who responded were interested in a salt sharing brokerage with other local authorities if the need arose, while the financial efficiencies of joint storage were being considered. Some were also considering having more than one supplier in future. (APSE)
- To avoid future shortages most councils felt storing more salt was obvious. Reduced stocks, due to mild winters and cost savings, had been a problem but concern over similar pattern being repeated. (APSE)

Salt Cell

- Salt suppliers could not cope with orders and this led to Salt Cell being convened. The vast majority of councils cooperated with the request to reduce usage of salt – by reducing rates, their treated network and efficiencies (LGA).
- The uncertainty and unreliability of information on deliveries from Salt Cell was an issue, together with the lack of communication on why this was occurring. As noted above this hampered mutual aid arrangements (LGA).
- Government should recognise the strategic resilience nature of salt, and ensure that the suppliers have contingency plans for periods of high demand (LGA).
- Salt Cell operated more effectively in the second year, but there were concerns over the clarity of roles, transparency of decisions and communications. A number of councils felt it should have clear triggers, and that this should have been earlier (LGA).

The Salt Cell itself worked well in that it prioritised deliveries where they were needed most. However, it was only as good as the total amount of rock salt available, which was clearly insufficient for abnormal demand at a national level.

(Sheffield City Council)

- Salt Cell performed well in demanding circumstances and provided intelligent advice, but frustrations occurred as some authorities were not conserving usage and some not supplying data (ADEPT).
- Councils were split on whether Salt Cell had helped or hindered. Some councils felt that they had prepared for a severe winter, but were then punished when supplies diverted to others who had not. Some councils felt that Salt Cell did not communicate well, and needed closer ties with the regional offices (APSE).

- But majority supported central intervention in future and recognised that central Government had a role to play (APSE).
- Arrangements in London and Wales seemed effective (APSE).

The re-introduction of the Salt Cell was an extremely welcome development during this difficult period. Inevitably during this time the salt suppliers found themselves in an extremely difficult position regarding distribution of their commodity. In such a situation it is unreasonable to expect these companies to make decisions that are essentially in the national interest.

(Birmingham City Council)

Public expectations

- LGA's own survey revealed that the public held a rational view towards increased spending on winter resilience (61% were against this) or the diversion of resources from other priorities (45% were against this) (LGA).
- However, people's expectations in many instances exceeded councils' ability to keep roads open and clear paths, and when identifying priorities, many services believed they should be a higher than they were (LGA).
- The prolonged period of snow also saw people, service providers and businesses expecting authorities to clear minor roads and pavements, though they were already under pressure to reduce their normal network coverage which averages around 45% (LGA).

Public expectation on resilience to severe winter weather is currently high, possibly as a result of events being so infrequent. It is vital that authorities try to manage this expectation through wide, frequent and fast communication of actions. i.e. websites, local media, Parish and Town Councils.

(Buckinghamshire County Council)

- Some authorities had difficulty explaining and rationalising the reduction to a core network to conserve salt supplies (ADEPT).
- Greater engagement with second tier authorities, voluntary groups and community resources is needed to improve resilience. Self-help and the fear of litigation, as highlighted by the media, was also seen as a barrier, and the LGA survey showed a high level of support to address this area (LGA).
- Guidance is needed on what action residents can take to treat footways (TAG):
- Public also need to take ownership for assisting, and even where salt bins were provided they were often used for private property when public roads were impassable (TAG).

The Council provides 600 salt bins plus many salt piles to allow self help on many roads which do not receive a precautionary salting service. The problem this winter was that we did not have any salt to replenish them.

(Calderdale MBC)

- Public polls indicated that authorities had performed well on treating their highways, but less well off-carriageway, especially footways and salt bins (ADEPT).
- Guidance should be expanded in the areas of self help and engaging voluntary and community resources, but also on other bodies (2nd tier authorities, Primary Care Trusts, public transport, haulage etc) on their responsibilities for their own areas (ADEPT).

Other issues

- Continuous improvement, value for money, economy and efficiency are all key issues for local authorities, as is peer pressure, but the sector is wide ranging and could never be perfect (LGA).
- The public often saw transport as an issue that went beyond local authority boundaries (LGA).
- Regional cooperation, mutual aid etc were all encouraged across the sector and in many non-transport areas, but were easier in some locations than others. London was noted as a good example of regional cooperation (LGA).
- Focus was on highways and pavements, but impacted delivery of all services (APSE). Factors involved were:
 - Supply of salt;
 - Drivers hours legislation;
 - Duration of severe weather;
 - Communications, and need for updates on conditions.

'Weathering the Storm II, Improving UK resilience to severe winter weather', report by the Local Government Association, 6 July 2010

The Local Government Association (LGA) held its own review and published their report into severe winter weather, 'Weathering the Storm II' on 6 July.¹⁶ This follows up their previous report, 'Weathering the Storm'.¹⁷ The recommendations from Weathering the Storm II are provided in full at Appendix H, but in summary are:

- All relevant parties should ensure that winter plans meet priority needs locally, and that services and networks are consistent across administrative borders;
- Authorities should clearly communicate on winter service levels, both in advance and during the winter season;
- Service providers and businesses should ensure that their contingency plans can respond to reduced services and winter networks;
- Government should issue clear advice on the public clearing footways and litigation, and legislate if necessary;
- Government should recognise that salt is a resilience issue, and take a greater role in monitoring and ensuring supply;
- Salt suppliers should improve their customer communication to provide accurate information even during Salt Cell to help mutual aid;
- Government should agree with the salt suppliers how they will work together in Salt Cell and communicate with consumers, including the Government's right to intervene;
- Government should review the Salt Cell process, including publishing clear terms of reference, framework and how it will be triggered and operate;
- Councils, with Government support if necessary, should arrange regional salt reserves;
- Councils should advise Government of their restocking proposals to ensure the country is as well prepared as possible for the next winter.

16 'Weathering the Storm II, Improving UK resilience to severe winter weather'. Report by the Local Government Association, 6 July 2010.

17 'Weathering the Storm, dealing with adverse winter weather conditions in the UK'. Report by the Local Government Association, October 2009.

5. Overview of evidence submissions – Section 2

Other highway authorities

5.1 The Department for Transport and Highways Agency were asked for their written evidence and invited to attend a Hearing with the Panel. Some of the key issues from their responses are provided below.

Department for Transport (DfT)

- DfT had issued a message to highway authorities in April 2010 regarding options for the next winter including restocking and efficiencies. They were monitoring the current the situation, via the Salt Cell, and an emerging issue was the ability of the domestic suppliers to meet the high level of orders;
- Further action was needed on the dissemination of good practice in the efficient usage of salt and treatment of public highways, but a key issue would be ensuring that this was widely adopted across the winter service community;
- DfT was developing draft protocols on the initiation and operation of Salt Cell and these would provide a much sounder basis for action should it be needed. But it was also recognised that regular monitoring of salt levels would be necessary, and this would help establish this mechanism;
- A combination of increased salt stocks, economy in usage and a 'surge capacity' would be sufficient to deal with harsher winters in the future;
- Strategic stocks might be an option for next winter due to concerns over the ability of the domestic suppliers to meet demand, but long-term they were less attractive and many details had to be resolved.

Highways Agency (HA)

- HA had learned lessons from previous winters, and this meant it had far fewer problems itself with the last two. It had increased its holdings pre-winter from 11 to 13 days equivalent snow capability,¹⁸ but was concerned that the lack of preparation by some had had implications for the HA;
- HA had secured additional salt imports and reduced demand in the Great Britain market which could then focus on local authorities. They had also supplied some mutual aid;
- UKRLG report had been sound, though could have gone further, and while many local authorities were willing to implement it the key restraints were time, resources and capacity;

18 The HA developed 'capability' as a unit of measurement of the volume of salt required to treat a defined section of network for one day continuous snow, requiring six treatments of 20 g/m².

The UKRLG Review was a comprehensive analysis of the issues leading to the national salt shortage in 2008/09, together with comprehensive recommendations to help prevent a further shortage occurrence. Another national shortage the following year should not automatically suggest that the Review recommendations were insufficient by themselves to increase the UK's resilience to a sufficiently robust level.

(Highways Agency)

- Guidance and good practice, in part based on the efficiencies required in winter 2009/10, should be taken forward, though HA itself felt that it would not retain all efficiency measures. It would return, for example, to the policy of treating hard shoulders;
- HA recognised that regional stockpiles were an option, and might be able to manage them if sufficient capacity can be found, but the locations of these would not be straightforward given the varying patterns of severe weather and salt shortages.

Figure 5.1: Snow plough



Other highway bodies

- 5.2** Other highway bodies are: Asphalt Association, Chartered Institution of Highways and Transportation, Highways Term Maintenance Association, Institute of Highway Engineers, National Traffic Managers Forum.
- 5.3** Additional witnesses include contractors and consultancies, trade associations and professional institutions. These were also asked to provide written evidence, and a number attended Hearings with the Panel. Some of the key issues that they raised were:

UKRLG report

- The report includes sound advice, much of which was being implemented by highway authorities, but concern at how consistently and whether all increased their stocks sufficiently before last winter;
- It does not go far enough to ensure the situation of the last two winters will be repeated;
- It addresses many of the key issues, but authorities had insufficient time to consider, implement and complete some of the relevant recommendations. Many required members to be persuaded to invest, meaning that there would be an inevitable delay to implementation.

The Winter Review included a number of pieces of sound advice many of which were already being applied by local highway authorities but there is a question about how consistently this was happening across the Country. There is evidence that some authorities increased their initial stocks by 50-100% but equally some did not.

(CIHT/NTMF)

Other reviews

- Many authorities and organisations are also undertaking their own reviews that are not yet complete or available, though a key emerging issue was that stocks even at maximum levels were not enough this season, and six days resilience was insufficient over the Christmas/New year period;

Guidance

- Existing guidance is very general, and did not give authorities sufficient direction. It also needs to be expanded following the last winters, and include the legal aspects of self help and engaging voluntary and community resources;
- Important that lessons learnt on alternative approaches, including best practice and lower spread rates, are not lost especially where they had no impact on performance and can become normal operating practice.

It is very important that the lessons learnt from the use of alternative materials and reduced spread rates are not lost. A more pro-active approach to adjusting spread rates, use of alternatives that reduce salt use (such as additives or pre-wet) and to restricting coverage (such as the Highways Agency move to cease treating Hard Shoulders) would assist significantly in addressing the resilience and supply issue.

(National Traffic Managers Forum)

Regional stockpiles

- Option of regional stocks should be looked at, but as the supply chain is unlikely to incur the costs, these might need to be owned by Government.

Salt supply

- Domestic salt suppliers currently lack the ability to meet any sharp increase in demand, as was evident when shortages were arising by December 2009 after only a few weeks of low temperatures and one snow event;
- Stock management systems that many authorities had adopted worked well in a constant environment, but could not function when demand spiked;
- Insufficient resilience in the system – for suppliers, stocks and users, while warnings from 2009 were not sufficiently heeded;
- The inter-dependence between local authorities as shortages of salt became acute was noted, as many authorities made decisions on a local basis unaware of a looming crisis. An earlier warning system is needed;

The reliance on each authority or organisation looking at individual resilience will not in itself deal with the national situation of an extreme spike in demand.

(Highways Team Maintenance Associates)

- While access to mutual aid should be continued, this should be dependent on assurances that all possible measures have been taken to reduce usage and conserve stocks;
- It seemed to be the same authorities requiring mutual aid in both winters;

Salt Cell

- Salt Cell worked well in demanding circumstances, restoring some order to the market by providing intelligent advice based on regional weather forecasts. But issues that needed to be looked at included:
 - Whether it should have been enacted earlier;
 - Some authorities persistently did not provide data;
 - Whether its requests to reduce usage were universally followed, what action could be taken against those that ignored its advice and whether it should be mandatory;
 - The information on deliveries – timing, amount, location – was not always accurate;
 - The approach of the suppliers to Salt Cell differed;
 - More transparency on decisions, and an assessment of whether previous ones had actually been enacted, was needed;
 - Those less prepared or who did not reduce consumption unfairly benefitted from Salt Cell,
 - Road haulage was difficult in these circumstances (both weather and market conditions), and alternatives need to be looked at.

Salt Cell performed well in demanding circumstances and provided intelligent advice to suppliers taking into account weather forecasts on a regional basis. There were frustrations about salt usage as it became obvious that some authorities were not actively conserving salt and some were not supplying data.

(Institute of Highways Engineers)

The general view is that the Salt Cell worked well once in operation although there is some question about whether it should have been activated earlier and about whether it should have been able to apply more pressure to those LHAs who decided not to follow the Salt Cell and CSS guidance in the early days.

(CIHT/NTMF evidence)

Other issues

- Severe weather impacted all road users, including pedestrians and cyclists.
- Communications between neighbouring authorities is normally good on which routes are treated so that they are consistent across boundaries, but once treated networks were reduced to conserve salt this was not always maintained;
- The issues of risk and liability, once a request to reduce treatment is issued, needs to be considered, together with ensuring that contractual arrangements are clarified but do not hamper this position;
- Roads that are well maintained are more able to endure winter weather, while patched roads are more liable to form potholes and structurally fail;
- Other organisations – schools, second-tier local councils, health facilities, public transport operators, commercial organisations etc – need to be aware of what the local authority winter plans are.

Road users

5.4 Road users included road haulage, buses, road user representatives.

5.5 The Freight Transport Association and Road Haulage Association provided written evidence and attended a joint Hearing with the Panel. The key issues that they raised included:

- The issue and process for relaxing the restrictions on drivers' hours needs to be examined for gritters, road salt and principal supply chains such as animal feed, de-icer products, heating products and milk;
- Regional salt supplies would reduce the need for longer supply chains and higher lorry miles;
- The strategic network performed well, but local authorities were inconsistent and the access to key sites such as ports, rail terminals etc was a problem;
- Authorities should benchmark their winter services and adopt consistent good practice;
- Communications, including website capacity, need to be improved;
- Biofuels and the impact of cold weather on their ability to work could also be an issue, and would require good management practices.

- 5.6** A number of bus operators responded, from a small local operator to national organisations, while their representative body also submitted evidence and gave evidence to the Panel. Key issues that they raised included:
- The level of planning and consulting by local authorities for gritting bus routes, access to depots and other transport facilities was inconsistent and many could improve this part of their planning.
 - Communication during a severe weather event could be improved, and the ability for bus services to play a role in enabling people to travel in these conditions was overlooked;
 - The operators themselves should also become pro-active in these areas;
 - Salt stocks held by local authorities were inadequate prior to both winters;
 - While bus depots also held small stocks for their own use, these were rapidly depleted and the operation of Salt Cell meant it was very difficult to replenish them, though many were now reviewing their winter arrangements.
- 5.7** The Passenger Transport Executive Group (PTEG), who plan, procure and provide public transport in six city regions,¹⁹ responded on behalf of their areas. Their key issues included:
- A clear decision making process is needed for gritting routes that minimises delay, and good communications is needed before and during a weather event;
 - The lack of salt (and transfer to less prepared authorities) had an impact, though some service providers made their own arrangements for clearing ice but struggled to replenish salt stock.
 - Some PTEs are undertaking reviews with operators and authorities to resolve the communications and resources problems experienced last winter, including checking that routes are compatible.
- 5.8** The Institute of Advanced Motoring, the AA, the RAC and the RAC Foundation all attended a Hearing with the Panel, while the latter three all submitted written evidence. A wide range of issues were raised, including:
- Both the AA and RAC had contacted the LGA after the UKRLG report was published, but felt that local authorities had not acted quickly or decisively enough on its recommendations;
 - Public expectations need to be managed, and with extreme weather no transport system will cope unaffected. The implications of higher winter resilience levels were recognised, including the aversion to increased spending or diverted resources, but the issue needed a stronger economic assessment;
 - Better, more reliable public information was needed, especially when the network was reduced;
 - 'Essential travel' was a vague term. Employees often felt obliged to travel into work, but the RACF noted the incident on the A3 in January 2010 where despite repeated warnings not to travel a number of vehicles and occupants became trapped overnight;
 - A higher level of public involvement in advance would give authorities a stronger defence when extreme weather occurred;
 - Greater co-ordination between neighbouring authorities was needed on winter plans and treated routes;

19 Tyne and Wear, West Yorkshire, South Yorkshire, Greater Manchester, Merseyside and West Midlands.

- RAC and AA had both seen many records broken for call-outs etc during the last winter;
- The greater resilience of four-wheel drive vehicles had been noted in the severe weather, and that also private drivers with four-wheeled drive vehicles had performed valuable community services.

The AA believes that whilst winter maintenance plans help authorities meet their duties many are, in the case of a long hard winter, undeliverable. Many plans state that in a protracted freeze their winter road treatments will be extended to secondary and other roads – but the reverse was true during the last winter. Local roads were impassable but motorways were fully open yet few drivers could get to them.

(AA)

There is a fundamental bottleneck in that the mines cannot produce and distribute salt at a rate that matched peak demand ... the importing of additional stocks was the only opportunity to supplement local supply arrangements and this was obviously not an immediate solution.

(RAC)

Salt producers and suppliers

5.9 The Panel visited both salt suppliers in Great Britain, Cleveland Potash and Salt Union, and held a conference call with Irish Salt Supplies. The Panel would like to thank both for their invaluable cooperation and assistance in compiling the evidence for this report. The problems experienced by the salt production and supply sector during 2009 and 2010 discussed in full elsewhere in this report, and are not repeated in this section.

Figure 5.2: Loading inside a salt barn



Image courtesy of Dome UK Ltd

5.10 Evidence was also received from three salt suppliers in the United Kingdom and this reflected many of the problems experienced by all producers.

- The UKRLG report addressed most of the key issues, but its timing was too late to implement its recommendations;
- Best practice and updated technical guidance were needed to improve the efficiency of salt usage, and the UKRLG report was seen as a missed opportunity in this area by one company;
- Demand was excessive during the last two winters, and the supply and distribution system could not cope. Salt stocks held by customers had reduced over the previous years, and combined with an unrealistic delivery expectation, this caused many of the problems;
- Salt Cell was seen to have worked effectively, and received praise from one respondent, but greater resilience in the stocks held by users, and the supply system, is needed;
- The problems of arranging imports, including timing, cost and quality were noted, especially if the severe winter is affecting Europe.

We would wish to see due regard taken of best de-icing practice both here in the UK, across Europe and beyond. Many road administrations have been challenged by the need to reduce salt use either for environmental, cost or general conservation measures – making less go further.

(Peacock Salt)

Business and commercial responses

5.11 Only one organisation representing business groups provided written evidence, and accepted the Panel's invitation to attend a Hearing.

5.12 The Federation of Small Businesses (FSB) provided valuable evidence on the impact that severe winter can have on their members who form an essential part of the economy. While many did have resilience plans, and working at home was an option, their very nature meant that small businesses could be severely hit by staff absence. Those in rural areas faced particular problems where broadband and mobile coverage was less comprehensive. Overall they estimated that around 11% had closed during the winter weather and estimated that this had cost £600 million.²⁰

5.13 The FSB had already published their own winter recommendations,²¹ and areas that they felt could be improved in winter preparation were:

- Self – help on clearing footways, and more guidance on what their members and the public could do, was needed;
- Greater consultation by local authorities on their winter plans. A map showing nationally all the treated networks would have benefits, but it was noted the difficulties of running and maintaining such a facility;
- Better information was needed, and not just through the internet as many of their members did not have work access;

²⁰ Federation of Small Businesses News Release PR 2010 06 'One in seven staff in small firms could not get to work due to heavy snow falls this winter', 22 February 2010.

²¹ Federation of Small Businesses Policy Paper 'Business Continuity – Let's Keep Britain Moving', January 2010.

- School closures were a serious issue for smaller businesses and clearer guidance was suggested. Whilst a full lesson timetable may not be possible, schools could help the economy by keeping children safely occupied and not requiring parents to be absent from work at short notice;
- FSB noted that a Government Grant Scheme had been proposed during the banking crisis to help businesses unable to get credit, and suggested something along these lines be available for other crisis, including severe weather.

5.14 Five companies also contacted the review offering a variety of products and solutions regarding improving winter resilience which helped illustrate a number of products available to assist organisations prepare for winter weather.

The Devolved Administrations

5.15 As noted above, the Review only applies to England, but because of the cross-border nature of many of the issues it has involved the Scottish and Welsh administrations. Written evidence was received from all three devolved administrations, and representatives from Scotland and Wales attended a Hearing with the Panel. Their key issues included:

- Both administrations had participated in the UKRLG report and felt that it addressed the majority of winter resilience issues, but they were also now both undertaking their own reviews into winter service following last year;
- Both administrations felt that Salt Cell had been convened too late in the 2009/10 winter, but once convened it had operated effectively, though not without issues in Wales. They had also operated a smaller sub-version of Salt Cell within their own administrations that had transferred salt through mutual aid provisions;
- They agreed that salt was a critical commodity, and in future a greater level of stock monitoring was needed, and that this had to be within a Great Britain context;
- The issue of greater technical guidance and best practice should be examined, and that they would be willing to participate in the development of this. This included that salt conservation through reduction in usage did not have a significant increase in claims, and may offer better value;
- Self-help and the clearing of footways, and what the public could and could not do, was also an area that needed to be addressed;
- The Roads Service for Northern Ireland kept its strategic network open except in extreme conditions. They obtained additional salt earlier than usual due to a high rate of use in the early season, and their contract allows them to pay for salt only when used;
- It also provides 3,500 salt bins and 40,000 grit piles for self help on public roads. They also contract with farmers and others to help with snow clearing on local roads.

A review of the winter season 2009-10 is being conducted among the Scottish Roads Authorities to assist with learning from each others experiences of recent winter seasons and to assess best practice in complying with the UKRLG review's recommendations.

(Society of Chief Officers of Transportation in Scotland)

The temporary spread rates which were introduced during the crisis proved successful. Consideration should be given to using these figures for next winter, on a provisional basis, until more research can be done to reflect the number of treatments particularly in respect of the number of treatments per night, use of additives/pre-wetted salt and residual salt levels. Significant salt savings can be made here.

(Welsh Local Government Association)

Figure 5.3: Rural road in snow



Image courtesy of Safecote Ltd

London

5.16 Due to its economic importance London received a separate Hearing, but it was also felt that the snow event in London on 2nd February 2009 and the ability of London to demonstrate regional cooperation could offer valuable lessons for the Panel. The Greater London Authority's Transport Committee submitted evidence in the form of its two reports, the first 'Slipping Up?' focused on the disruption in February 2009 while the second looked at how train companies coped during 2009/10. Joint written evidence was submitted by Transport for London (TfL) and the Local Authority Panel (LAP), and representatives from these organisations attended a Hearing with the Panel. Key points of their evidence included:

- London believed that it had coped well in both winters, but more so in the latter one as lessons had been learnt in February 2009;

- London has developed a robust resilience structure, and once fully utilised this enables a high level of coordination and cooperation across the capital to deal with events such as severe weather. Mutual aid between the Boroughs, City and TfL was a significant factor in London's response to salt shortages, and TfL is able to play a key role in this structure;
- London felt that the issue of national salt stocks needed to be considered, but they were also considering regional reserves themselves. They would start the season fully stocked, but many authorities had limited capacity.
- Technical standards and best practice were issues that needed further consideration, and all parties needed to contribute towards this.
- The issue of self-help and the responsibility of local authorities in clearing footways, given London's high urban density needed to be investigated, especially as walking was often a viable alternative if public transport was disrupted.
- London had been represented on Salt Cell, and had also operated its own regional sub-version.
- TfL had invested to increase its website capacity, but this was matched by increasing demand. Other operators' sites seemed less able to cope with high levels of demand.

London supports the drive for authorities to be robust about winter service provision, training, calibration of equipment and review of spread rates and type of treatment. London already has an effective framework for collaboration, sharing of best practice and policies and plans. Procurement, stock levels, salt storage and contracts for salt provision remain to be completely resolved.

(London)

Passenger groups

- 5.17** London TravelWatch attended a Hearing with the Panel and also submitted written evidence. A key point for them was that while the strategic network was an obvious priority, people still need to use local roads, footpaths and cycleways, and they can have a worse safety record. Access to public transport can also be neglected by local authorities, but it was noted that this issue had been highlighted in February 2009 with bus routes and depots a serious problem, and that action had been taken this winter to address this.
- 5.18** Living Streets, a charity which represents pedestrians, also submitted evidence. Together both organisations highlighted the problems of icy footways that were particularly noticeable during 2009/10, including:
- That the legal position on the public clearing footpaths needed to be clarified;
 - The need for authorities to reconsider their position on treating footways and ensure that salt bins were maintained and stocked;
 - Living Streets also mentioned the position of other countries where householders were encouraged or even required to clear the public paths in front of their property.
- 5.19** Passenger Focus also attended the Hearing but had only taken over responsibility for buses at the end of February 2010 so their evidence concentrated on rail issues. This, together with the relevant points raised by London TravelWatch, will be included in the Final report.

Other stakeholders

5.20 Two organisations representing Ports responded. Their evidence noted the serious problems they had obtaining salt for their own premises during the 2010 winter, particularly when Salt Cell was in operation. They felt that while no ports had closed, the consequences of a strategically important international gateway closing, such as Dover, Immingham or Southampton, was not given sufficient priority by Salt Cell.

Other Government organisations

5.21 A key role in Salt Cell in both winters has been played by the Cabinet Office's Civil Contingency Secretariat (CCS), and the Regional Resilience Teams (RRTs) in the Government Offices that are overseen by Communities and Local Government (CLG). Both CCS and CLG submitted evidence to the Review and attended a Hearing with the Panel, while seven RRTs submitted evidence and three attended a separate Hearing.

5.22 CCS had run the first Salt Cell during 2009, a role fulfilled by DfT in 2010, but had only provided support during 2010. In both Salt Cells the RRTs had played a key role in collecting data from the local highway authorities in their respective areas and submitting this to the centre, but they also assisted within their own regions with mutual aid arrangements to transfer salt between authorities and giving a wider perspective on the winter issues affecting their areas. CLG had participated in both Salt Cells, and overall it was felt that both had met their objectives and no authority had run out of salt. Other key points raised were:

- Salt Cell, which was not operational until 6th January 2010, should have been enacted earlier as significant amounts of salt were being consumed prior to Christmas 2009;
- DfT ran Salt Cell effectively in 2010 from a transport perspective, and communicated well with other Government Departments and local authority representatives. However, DfT did not lead on all winter issues, which differed from the accepted practice;
- Government Offices adopted different approaches on who would co-ordinate regional responses for Salt Cell. Some used their RRTs, while others used their transport teams, and this may need to be clarified in future;
- A national GIS map of treated routes was investigated during Salt Cell, and while it experienced problems it is probably worth more consideration.

5.23 The Department for Education (DfE) advised that no centrally held figures were collated for school closures but they had estimated that on the worst days of winter disruption during the week commencing 4th January 2010 around 10,000 schools had closed (out of a total of 22,000). Most appeared to have closed due a combination of reasons, including 'unsafe premises', 'access problems' and 'transport problems'. A number of exam centres were also required to close, however fewer than 200 exams were missed from over 1.3 million entries. DfE emphasised that they provide guidance on keeping schools open during extreme weather, and the need for resilience planning to include severe winter weather and salt stocks, but that it would always be a local decision on whether a school stayed open. This had been reiterated on a number of occasions during the last winter.

5.24 The concern that schools were being closed to maintain attendance levels was mentioned by both DfE and the LGA, and the LGA suggested that such regulatory targets should be suspended in extreme conditions.

5.25 A number of Primary Care Trusts (PCT) also responded to the call for evidence. The economic impact of the winter weather and health care will be considered in more detail in the Final Report, but issues that are relevant to this stage of the Review included:

- Hospitals and health facilities were not part of the Salt Cell, thus had to rely on obtaining supplies (which were almost non-existent) either through private importers or local authorities;
- The inclusion of access to health facilities within local authorities' winter plans was variable.
- Staff and patients experienced difficulties getting to health facilities and volunteers were relied on in some areas;
- Ambulance services struggled in the conditions, and were on occasion forced to rely on other emergency services.
- Durham Primary Care Trust gave its local council £1 million over two years in November 2009 to fund extra winter services in an attempt to reduce injuries. The money helped fund additional footway clearance and salt boxes.

Part B

Key issues and recommendations

6. Public and business expectations

- 6.1** Winter services are for the most part taken for granted by the public and organisations. This is no different to other transport operations; they only hit the headlines when things go wrong. So, the public sees the gritters out at night, which might warn of a cold night to come and indeed have an expectation that those roads ordinarily treated will have been if there has been a frost or there are icy conditions. Even if individuals wanted more of the network to be treated (invariably 'their roads'), there is generally an acceptance of the decisions made by the local highway authority about normal coverage. This has been helped in recent years by good publicity about the treated network, both in printed and electronic form.
- 6.2** However, the Panel heard thoughtful evidence from business interests that there was insufficient consultation on the extent of proposed networks for treatment and the criteria by which the network is determined. This is an important part of managing public expectations: if, for example, a business reliant on transport is not part of the core network and understands as much, it can make its own preparations as part of its wider resilience planning.
- 6.3** The other expectation of the business community that was put to us was that there should be a responsive system in respect of relaxation of drivers' hours in times of severe weather disruption. This applied to the distribution of salt and to gritter drivers, but also to affected sectors such as the agricultural industry.
- 6.4** Exceptions to the general public acceptance of local highway authorities' precautionary networks are typically a road traffic accident, where there might be claims that the road had not been treated, or occasionally where weather conditions have nullified the treatment (e.g. heavy rain can wash the salt away), or have changed, requiring a treatment (unexpected loss of cloud cover can lead to sudden freezing). In these cases, the public, often with media support, will ask 'why wasn't it gritted?'
- 6.5** Comments made to the Panel suggest that while each local authority will make its own decisions, there are some general expectations about the network which is covered:
- There should be clear criteria underpinning the decisions. Examples might include 'all bus routes' and in rural areas, ensuring there is always one road treated to a village, to allow movement to and from the treated main roads.
 - Key links between treated roads in adjacent authorities.
 - Links to the strategic road network.
 - Main footway links to hospitals, health centres, schools and to train and bus stations.
 - Roads to and from bus depots, to ensure buses are not trapped in their depots.
 - Gritting and de-icing of pedestrianised town centres.
 - Where there is significant cycling use, treatment of key elements of the cycling network, where it is separate from the treated road network.

- 6.6** However, and part of this appears to be fuelled by the way the media reports on the problems which arise, public expectations are much higher when there is snow event. Such events inevitably bring short term problems, if only for the reason that it only takes one driver to get stuck or have an incident to have significant knock-on effects, and delays to travel. Much depends on the particular weather conditions, but it may well take a little time before the salt, using the movement and pressure of vehicle tyres, starts to be distributed and to turn the snow to slush. In other cases, where there is heavy snow, the first stage is to clear the road with a snow plough. In areas with a large network, this can take some time.
- 6.7** Even where there is acceptance of short term disruption caused by such an event, frustrations tend to build with the public if problems continue for some time. These tend to be in more rural areas, where communities can be cut off, or at least face road conditions which are very challenging. This meant that last winter, many of these communities which were not on scheduled networks were clamouring to have their roads treated, even as the local highway authorities were struggling, with limited salt supplies, to cover the basic network.
- 6.8** Last winter also saw very difficult conditions on pavements, where snow did not melt and conditions led to the formation of very icy pathways. Suddenly, there was widespread concern that these should be treated and/or be cleared, and local highway authorities came under pressure from individuals and organisations to do this, generally supported by the media, even though this is not normal practice. This issue also became linked with the question about liability issues if a householder or business owner clears outside their property.
- 6.9** The other implicit expectation is that local highway authorities would have all the salt they required to treat the conditions. It was only as supplies had to be conserved and Salt Cell was in operation that members of the public criticised lack of preparedness and foresight, and there was difficulty understanding why treatment could not be extended to those parts of the network not usually covered, including pavements, and salt bins could not also be re-filled. These criticisms were inevitably picked up by the media and this brought pressure on politicians, but they need to be put in context by the findings of the LGA commissioned research during the middle of January 2010.
- 6.10** Key findings from this research showed that:
- 61% of UK adults do not want to pay more council tax to pay for larger stockpiles of salt and grit;
 - 45% do not want other council services to receive less money to pay for larger stockpiles of salt and grit, while 32% did;
 - 57% agree that Britain rarely sees winters as severe as the current one and that it would be inappropriate to spend more money preparing.
- 6.11** The sense of these responses is therefore that the public appreciate that weather events as severe as those of winter 2009/10 are relatively rare and that there is a degree to which it might be uneconomic for local authorities to make excessive preparations for such occurrences.

7. Salt and the supply chain

- 7.1** The main problem in the last two winters was the availability of rock salt. Following a decade of mild winters, the pre-season stockholdings of salt by English local highway authorities in November 2008 fell considerably short of what turned out to be needed for the winter of 2008/09, and led to depletion of mine-held stocks and considerable pressure on in-season salt production. The need for an emergency system of monitoring and allocating dwindling salt supplies to local highway authorities according to need was recognised in Government by the creation in January 2009 of the Salt Cell, which was run by the Civil Contingencies Secretariat (CCS) of the Cabinet Office, with the support of DfT.
- 7.2** The Salt Cell was also activated for the winter of 2009/10, as it became clear that stocks and in-season production were also not going to be able to meet the need, in spite of the pre-season stocks in November 2009 being significantly higher than a year previously (though not universally in line with the UKRLG recommendations of 6 days' severe weather resilience). On this occasion it was run by DfT, activated in early January 2010; in addition, the then Secretary of State issued in January 2010 "strong guidance" to all highway authorities to drastically reduce their salt utilisation of 25%, reinforcing it with a further target reduction totalling 50% a few days later; highway authorities generally achieved this target by reducing the networks treated and/or reducing spread.
- 7.3** While the focus of this Review is England, we take account of the wider Great Britain (GB) context, and are grateful for the willing participation and cooperation of the Scottish and Welsh authorities. This is particularly important when considering salt, because the UK salt producers supply the whole of GB, and Scotland and Wales were necessary and keen partners in the Salt Cell process. Our recommendations, although focussed on England, will inevitably bear on the GB situation, and it will be appropriate for DfT to share their implications with the Scottish and Welsh authorities.
- 7.4** The Salt Cell is generally felt to have been an effective (although blunt) instrument, but it is widely believed, with hindsight, that it should have been activated earlier in the winter. In a formal sense the Salt Cell 'allocations' were advisory, but the practical effect was that many contractual commitments by salt producers were in abeyance for the duration of the emergency. Virtually all rock salt users outside the highway authorities – ports, industrial estates, hospitals – were unable to obtain salt from UK producers during this time, and many had to import. Alongside this, many local highway authorities and the Highways Agency made salt available to other authorities through mutual aid arrangements, and the salt producers did step up their production rates as far as practical within the constraints of their production systems.
- 7.5** At the same time, the activities by Salt Cell to collect data on salt stocks, monitor stock movements and disseminate the information are regarded by all witnesses as highly valuable, whether or not Salt Cell was operating in 'allocation' mode. The need to keep a watch on the building and movement of salt stocks well before the winter season was stressed – as has been happening during the course of this Review. The assessments we have made in this Review, and the Recommendations regarding planning for next winter based upon them, would not have been possible without the current monitoring data.
- 7.6** Whether this is by Salt Cell in 'information' mode or by some other mechanism would be for consideration by DfT. In any case we recommend that the regular reporting by local highway authorities and the Highways Agency should become an embedded process for the DfT (or contractor), and techniques such as web-enabled data entry should be explored to make the process easier and more straightforward for highway authorities.

Figure 7.1: Digger at Winsford Rock Salt Mine



- 7.7** Our observation is that the current salt supply chain is fundamentally vulnerable and non-resilient. There are supply chains in other sectors of the economy – such as fertilisers and agrochemicals, as well as seasonal foods – which exhibit similar characteristics of volatile seasonal demand, unpredictable in its amount, timing and duration, coupled with highly constrained, year-round production. What is different about salt is that a) a significant shortage has profound public policy implications; and b) the market has failed to organise the provision of buffer stocks (the absence of which would be most unusual in other sectors). So it works well enough in moderate conditions, but is liable to fall over in prolonged periods of high demand – and generate considerable public concern and pressure for intervention.
- 7.8** Our view is that the need for a Salt Cell-type intervention should only arise under the most exceptional circumstances, so our task is to consider and recommend what reconfiguration of the salt supply chain would deliver more resilience under all but these most exceptional conditions. Our preferred approach is one of enabling markets to continue to function effectively, using the minimum of highly targeted interventions to improve resilience; heavily managed solutions are neither sustainable nor economically efficient.
- 7.9** The Panel has already put a project in hand to create a strategic planning model for the salt supply chain, and to use this to explore a range of options for organising the supply chain, against a number of different weather scenarios. This work, and the careful consideration of its analysis and findings, require more time than is available for this Interim Report. In any case, this work is intended to guide longer term decisions rather than advise on action for the forthcoming winter. With the fruits of this work, we will return to the longer term reconfiguration of the supply chain in our Final Report.

The challenge of next winter

- 7.10** Our focus in this Interim Report is therefore on what action, if any, we believe should be taken to improve resilience for next winter. In order to assess this, we have put together an overview of the estimated stock and demand position that might arise in the forthcoming winter under different conditions, and compared it with last winter, against the background of a relatively mild winter typical of the ten years or so prior to 2008.
- 7.11** The analysis which follows is for England, but it is based on a UK analysis, and appropriate assumptions have been made about (for example) the proportion of UK salt production which is destined for England's highway authorities.

Table 7.1: Annual analysis of salt stocks and flows for England – Year 2009-10

Total salt stocks at highway authorities and suppliers – March 2009	0.5m
Production by UK suppliers for England	1.35m
Salt imported in the year	0.15m
Salt use by highway authorities during the year	-1.8m
Total salt stocks remaining – March 2010	0.2m

Units are tonnes of salt

- 7.12** This shows that the UK salt production supplied to England's highway authorities was some 0.45m short of the demand, and was fulfilled by reducing stocks (held by highway authorities and suppliers) by some 0.3m tonnes between the beginning and end of the year, and by importing some 0.15m tonnes of salt during the winter season.
- 7.13** However, this demand figure includes the effect of conservation measures introduced as an emergency during the winter. The total usage reflects about 1.2m tonnes between the onset of winter in mid-December 2009 and mid-January when the Salt Cell came into operation, and some 0.6m tonnes from then for the rest of the winter. This latter figure reflects the "strong guidance" from the Salt Cell and the Department for Transport that drastic measures to reduce salt utilisation should be implemented to conserve dwindling salt stocks. From the data available to us, we have estimated that the *underlying* demand – which would have continued in the absence of such conservation measures if salt was available – was between 0.85m and 1m tonnes, giving a total underlying demand for the whole winter of 2.05 to 2.2m tonnes.
- 7.14** That is considerably in excess of UK salt production capability, and emphasises the need for appropriate strategic planning of stocks if the objective is to be able to manage severe winters – infrequent though they are – without having to invoke drastic restrictions of the kind put in place last winter.
- 7.15** It should be noted, however, that the typical demand from England's highway authorities in a relatively mild winter (which is much more frequent) is between 0.75m and 1m tonnes. This substantial variability in demand between a severe winter and a mild winter is what faces the commercial producers of salt, and against which they have to make their investment and capacity decisions. It is worth reiterating that the nature of the salt mining and production process does not easily lend itself to flexing production levels except with significant investment: the England

share of 1.35m in 2009-10 represents a reasonably stretched level of production within current mining and processing facilities. Nevertheless evidence so far for the 2010-11 season (March 2010 to March 2011) suggests that the annual production rate has been lifted to 1.45m, a level which is particularly stretching.

7.16 We now project the stock and production figures for last year into 2010-11, and set them against two different benchmarks –

- a. meeting the *underlying* demand from last winter, estimated at 2m – 2.2m tonnes;
- b. meeting the *restricted* demand from last winter, which was 1.8m, and assumed drastic conservation measures from mid-January onwards.

7.17 Table 7.2 shows the apparent requirement for imports to be significantly higher than last winter, even assuming (from the evidence) higher levels of production from the UK suppliers.

Table 7.2: Annual analysis of salt stocks and flows for England – Year 2010–11

Based on underlying demand in 2009–10

Based on actual (restricted) demand in 2009–10

Total stocks at March 2010	0.2m	Total stocks at March 2010	0.2m
UK Production capacity for England	1.45m	UK Production capacity for England	1.45m
Imports required	0.75m	Imports required	0.35m
Projected salt use	-2.2m	Projected salt use	-1.8m
Target stocks March 2010	0.2m	Target stocks March 2010	0.2m

Units are tonnes of salt

7.18 This demonstrates that even meeting the actual (restricted) demand of last year would require some 0.35m tonnes of imports for the forthcoming winter, some 0.2m more than last winter, even assuming a higher level of UK production (and the corresponding increases available to England). This is because the starting stock in March 2010 was already only 0.2m tonnes, so that restocking by LHAs and the Highways Agency was generally starting from a much lower base than in March 2009 (when total stocks were 0.5m tonnes).

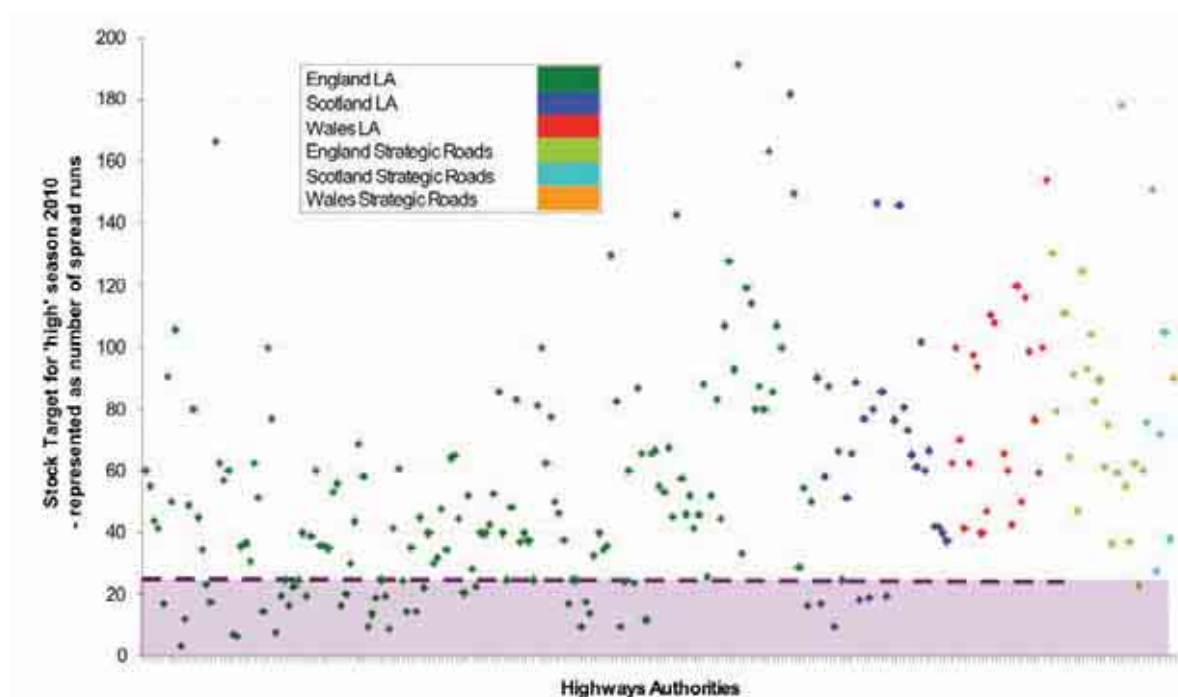
7.19 Meeting a demand of up to 2.2m would appear to require very substantial imports of some 0.75m tonnes, the feasibility of storing and redistributing which must be in doubt, and the cost significant.

7.20 It is already clear from the monitoring data available to the DfT that most local highway authorities are already re-stocking for the forthcoming winter at considerably higher levels even than in autumn 2009, and many are doing so to levels well above the last advised benchmark of 'at least' 6 days' resilience²². Chart 7.1 below plots the restocking intentions of authorities for the forthcoming winter against this benchmark resilience measure of 6 days' severe winter weather (based on 4 salting runs/day for Local Highway Authorities in snow conditions; the Highways Agency works on 6 runs/day for the strategic road network).

22 UK Roads Liaison Group "Lessons from the Severe Weather February 2009", July 2009.

- 7.21** Given the experience of the last two winters and the determination not to face the same again, and without knowing whether measures would be taken to strategically improve the resilience of the supply chain, these decisions by individual LHAs are understandable.
- 7.22** The practical effect of this degree of re-stocking, however, is not necessarily to increase the total stock available in the system, but to move all of it to the point of consumption rather than some sitting as supplier-held stocks. While there is advantage in its being at the point of consumption, some of it may turn out to be in the wrong place to meet the geographical pattern of demand, and resilience would then depend on a considerable amount of transfer between authorities taking place under mutual aid arrangements.

Chart 7.1: Highway Authorities target stocks going into 'high season' 2010/11



- 7.23** The important point is, however, that the total of this re-stocking demand not only leaves suppliers with no stock of their own as at November 2010, but it exceeds the estimated UK production capacity to November 2010 by some 0.15m tonnes, even after allowing for 0.05m tonnes of imports already placed by certain LHAs.

7.24 The picture we have therefore is as follows:

Table 7.3: Analysis of shortfalls of UK production capacity against likely demand 2010-11

Import orders already placed by LHAs	0.05m	
Identified shortfall of UK production capacity to meet highway authorities' restocking plans for November 2010	0.15m	
Remaining shortfall in-winter, based on <i>underlying</i> demand of last winter	0.55m	
Remaining shortfall in-winter, based on <i>restricted</i> demand of last winter		0.15m
Total shortfall to be met by imports	0.75m	0.35m

Units are tonnes of salt

7.25 All this analysis is based on the proposition that either the *underlying* demand or the *restricted* demand of last winter should be the benchmark level of demand for salt supply below which Salt Cell should not be needed to intervene. This is a judgement call, which ideally should be based on the likelihood of this level of demand occurring, set against the cost of providing this level of resilience and the disruptive consequences of not doing so. In practice, pragmatic decisions have to be made.

7.26 In considering what to recommend, we have two points to make:

- a. We have made no allowance for the (voluntary) adoption by LHAs of more economical spread rates for salt – ahead of any 'instructions' from government as happened last year. Chapter 10 (Salt utilisation and standards) deals with the point raised by many witnesses that, in the light of the experience of using reduced spread rates last winter and there appearing to be no impairment to effectiveness of the treatment, there should be a comprehensive, research-based review of current technical standards. We agree and have made a Recommendation to this effect. Meanwhile, in the absence of revised authoritative advice of the kind which would provide LHAs with 'cover' in the event of litigation, there may be some reluctance to voluntarily implement reduced spread rates. Nevertheless, we believe LHAs should review the opportunity to do so, and we make a recommendation to this effect. Given this, and given that the Highways Agency has now decided to issue new specifications for their contractors using some lower spread rates appropriate to the strategic network, it seems to us reasonable to assume a conservative improvement in salt utilisation for the coming winter, of some 5–10%. This would have the effect of reducing the total salt demand for given winter conditions of some 0.1m to 0.2m tonnes.
- b. The timing of any decision to procure imports and treat them as strategic buffer stock is a trade-off between securing availability at a reasonable price and in good time, against delaying the decision until the beginning of winter when the likely nature and severity of the winter can be more accurately foreseen. A pragmatic approach is to take it in two stages – to procure an initial quantity ahead of November 2010; and then at the end of December 2010 to update all this analysis against the latest forecast for the winter, and make a decision then whether further strategic stocks should be imported, and how much.

7.27 The Panel's deliberations about this whole subject have been shared closely with the DfT during the preparation of this Interim Report. And the DfT has already been considering with the

Highways Agency and other parties various actions to improve resilience, taking account of (among other things) this analysis. We believe it is helpful nevertheless to articulate the factors which lead us to our recommendations about what steps should be taken both now and later to address the resilience issues for next winter.

Conclusions

- 7.28** Our conclusion is this. UK production capacity allocated to England is not able to meet the estimated requirements for a winter like the last one – even on the basis of restricted demand – by a total shortfall of some 0.35m tonnes. Some 0.05m tonnes of this are already being sourced through imports by LHAs, but a further 0.15m shortfall exists in meeting the re-stocking plans of highway authorities by November of this year. And a further 0.2m tonnes shortfall is projected for supply in-winter. On the basis of an *unrestricted* demand to meet last winter’s conditions, this in-winter shortfall could be as high as 0.6m tonnes. Both these figures could be mitigated by 0.1 – 0.2m tonnes if it could be assumed that highway authorities voluntarily put in place measures to improve salt utilisation, based on an assessment outlined above that – in the current circumstances this could not reasonably be expected to exceed 5–10% over the country.
- 7.29** The only efficient way to respond to this shortfall for next winter is for a strategic buffer stock to be created, which would be utilised in the event of a severe winter. We suggest the two-stage process should be adopted whereby (say) 0.25m tonnes should be procured relatively urgently; and that a decision is taken at the end of December on whether further imports should be secured, based on a thorough update of salt supply, stocks and use, together with the latest weather forecasts for the rest of the winter.
- 7.30** It is necessary to consider how best these strategic stocks should be procured and managed. Options considered include
- Persuading producers to create substantial buffer stocks at their mines or elsewhere, but the current high rate of restocking by local highway authorities coupled with limitations on salt production makes this unrealistic for the coming winter;
 - Persuading groups of local highway authorities to get together to create sub-regional buffer stocks may be a longer term solution, but in the short term would be patchy at best, would require imports, and would involve additional expenditure at a particularly difficult time for local authorities facing substantial expenditure cuts.
 - The Highways Agency could be tasked to acquire, store and make available this initial requirement for 0.25m tonnes of salt through import, as reserve stocks for the nation’s local highway authorities as well as for its own possible use. This should be done in a formally distinct way and quite separately from its current functions. It should be made available at a premium price which (at least for salt actually used) covers the cost of the salt itself together with storage, handling and onward delivery. In this way local highway authorities are incentivised to continue to build and replenish their salt stocks in line with their normal practice, and to continue to source from the UK commercial suppliers so long as salt continues to be available – rather than to rely on the HA-managed reserve stock until they really need it.

7.31 We prefer the third option. The advantages are:

- a) the HA as a Government agency can be tasked by the Secretary of State to do this, if so minded;
- b) the HA, working with its contractors, has all the necessary competence and experience and may have some capacity on its operational estate;
- c) the scale of the HA's own winter operations means that such buffer stocks can be rotated and even absorbed by the Agency in the event of change of policy; and
- d) it covers the whole of England.

7.32 We have not had the opportunity to explore the cost or detailed feasibility with the Highways Agency, or to explore the implications of risk and cost to the DfT; this would now be a matter for the DfT if our recommendation is generally accepted.

Recommendation 1: That for the forthcoming winter the need for a strategic reserve stock of salt for England's highway authorities be recognised, if the resilience to handle the risk of its being as severe as last winter is to be secured, and given the projected shortfall of UK production against the possible demand; and that the Highways Agency should be tasked, on behalf of the Secretary of State, to acquire by import, store and make available on terms to be agreed an initial reserve stock of some 0.25m tonnes of salt for 'last resort' use by local highway authorities and for itself; and that the DfT at the end of December should formally lead the consideration and review (using information and forecasts then available) of whether further additional reserve stocks should be secured for the remainder of the winter.

Recommendation 2: A systematic year-round process of collecting data, monitoring salt stocks and movements and disseminating the findings should be put in place by DfT, to give advance warning of any issues affecting prospective salt supplies and availability, and to provide the basis for regular strategic overviews of the salt supply chain and any necessary decisions by them or other parties. This should be independent of any need for the operation of Salt Cell in 'allocation' mode.

Recommendation 3: The vulnerability and lack of resilience of the salt supply chain as currently configured should be recognised; that some targeted intervention needs to be designed which will substantially improve the resilience of the supply chain with minimal impact on the normal functioning of the salt market in the UK; and to note that the development and evaluation of proposals for this is a key part of the Review Panel's stage two work, which will be presented in the Panel's Final Report in the autumn.

Recommendation 4: DfT should consult with the Scottish and Welsh authorities about the implications for Scotland and Wales of these short term recommendations for the salt supply chain.

8. Local highway authorities

- 8.1** From the evidence presented to us, most Local Highway Authorities (LHAs) did a good job of managing last winter, given the nationwide difficulties of salt supply in January and February.
- 8.2** LHAs set out their policies, plans and operational procedures for the winter period in their Winter Service Plans. These may be freestanding or included in other documents. LHAs make their decisions about these plans in the light of their knowledge of their area and the need to balance the cost of winter service against the other priorities they face. There is one aspect, however, in which there is a crucial interdependence between local authorities – the supply and availability of salt under severe winter conditions. There is a collective interest in all LHAs doing a thorough job of planning and securing their salt stocks on a consistent basis, so as to minimise the need under Salt Cell conditions for those who run short through poor planning to be 'baled out', at the expense of those who have planned well (as happened last winter).
- 8.3** Chapter 13 in Well-Maintained Highways published by the UKRLG sets out best practice in the scope and content of winter service plans, and this is generally accepted. Our evidence suggests that most LHAs do prepare good and appropriate Winter Service Plans, but a number of points were made by witnesses which would enhance the quality, robustness and acceptability to the public and electorates of these plans, as well as helping to ensure that good and appropriate levels of salt stocks are held.
- 8.4** Representatives of small businesses, of freight and passenger transport operators and of road users generally felt that many local highway authorities needed to be more open and systematic at the planning stage in consulting a wide range of stakeholders on the networks they propose to treat. Typically the LHA will consult education and health representatives, but ensuring the treated networks provide access to bus depots, transport interchanges, major freight terminals, business parks and industrial estates is important to keep the local economy moving and enable people to get to work.

Figure 8.1 Road gritting



- 8.5** With the treated network plans agreed, there was room for improving both the communication of their plans and real-time updating through broadcast and electronic media of their road conditions and treatment operations when severe weather arrives. Where local authorities already do this well – and many do – it is greatly valued by communities and road users. Given that public expectations can sometimes be unrealistic about what can be done, and how quickly clearance can take place when there is heavy snow, we believe that such wide consultation at planning stage and effective communication of plans and in real-time is the best way to manage public expectations.
- 8.6** The market research carried out for the LGA mentioned in Chapter 6 (Public and business expectations) indicates that the public at large do nevertheless take a realistic view of how much resource it is worth committing to winter resilience, given the relative infrequency of severe winter weather. This, together with the current acute pressure on public expenditure, makes it important to ensure that the LHA is making the best possible use of the resources it has.
- 8.7** Many LHAs – both in two-tier areas and unitary – work well with lower tier authorities and/or local communities to secure the use of other resources both in salting local roads, and in snow clearance from footways and local roads at times of major snowfall, although last winter the shortage of salt meant that salt bins could not be replenished frequently enough. There is no reason why this should not be the general practice; the issue of ultimate responsibility and liability resting with the highway authority, which was raised by some witnesses as a limit on delegation, can be addressed, we believe, with suitable arrangements clearly set out and agreed between the respective bodies.
- 8.8** Footways generally were mentioned as being neglected by LHAs. They are rarely prioritised by LHAs in their winter service plans, against the task of keeping the main road networks clear. We recognise the practical limitations here, but believe that there are stretches of footways – to and from major stations and transport interchanges, in pedestrianised areas, in the vicinity of hospitals and schools – which should be subject to appropriate de-icing and snow clearance under severe winter conditions. The collaboration we endorse with lower-tier authorities can help to tackle this, as can the encouragement of householders and small shop owners to clear their own frontages – which is addressed in Chapter 11 (Footways).
- 8.9** The last 10 years have seen great advances in the technology, equipment and treatment methods for road salting. In spite of this, not all local highway authorities seem to observe the latest best practice; witnesses suggested that there is significant room for improving salt utilisation (through lower spread rates or different treatment methods such as 'pre-wet'), which would reduce both costs and dependence on a potentially vulnerable supply chain for salt. We recognise that, where this requires significant investment in new equipment, it may not be affordable at the present time. The means by which research and development takes place seems to us fragmented and uncoordinated, with no strategic oversight of priorities nor of the dissemination of best practice. This particular matter is addressed in Chapter 10 (Salt utilisation and technical standards).
- 8.10** Operational matters such as spread rates to be applied in different weather scenarios are a feature of winter service plans. The lack of authoritative technical research, and in some cases an unwillingness to change past practice, suggests there is scope for improvement in salt utilisation. Other operational matters to be covered should include the training of key operative, supervisory and management staff, and the maintenance and correct calibration of equipment, especially gritting vehicles.
- 8.11** Many authorities have plans in place to deploy staff from other responsibilities, e.g. from parks, gardens and street cleaning, or in the case of 2 tier areas, similar arrangements with district council staff, in a snow event. This element is clearly linked to the issue of wider resilience planning, see below.

South Gloucestershire Council – Winter Resilience Good Practice Case Study

Following a review in 2007, South Gloucestershire Council (SGC) developed a quality assured Winter Maintenance System, which brought about changes that stood SGC in good stead over the harsher winters of 2009 and 2010. It managed to keep roads clear of snow and ice, react to public and business needs, assist neighbouring authorities and maintain salt stocks. The service drew compliments from public and Councillors. The following are key elements of the Council's strategy to run a high value, low cost and effective winter maintenance operation.

Decision-making: SGC has a long-term contract with a weather forecast service and new weather stations on its network. The decision maker on duty – an experienced and trained manager – uses their local knowledge with the resulting high quality weather information to decide on salting, ploughing and staffing. This has enabled great service to the public, at the same time avoiding unnecessary salting.

Supervision, drivers and shift systems: SGC manages its entire winter operation using dedicated, in-house staff, though as part of its review, supervision and decision-making staff numbers were slimmed down. Savings were re-invested in training additional drivers to enable a 3-shift system to be implemented, allowing 24-hour operations and cover for leave, sickness and severe weather. The 24-hour operations were invoked in 08/09 and 09/10 and helped keep the network running.

Salt Stock Management: SGC retains control and ownership of its salt stock, proactively monitoring to ensure orders and supplies can be arranged well in advance of need. Salt is stored under cover. Each winter season is started with 1.5 times the normal annual need. This enables the flexibility in harsh years to re-stock without entering into the 'panic' buying scenario. The stock management strategy is backed up with good supply chain relationships to ensure deliveries when required.

Customer focus: SGC is able to be responsive to customers needs. It can use other in-house *Street Care* teams for heavy snow. At these times, all staff automatically make their way to the nearest Council office, library, elderly peoples' residence or shopping area, and start to clear snow from the footways.

Business management: SGC has invested in salt storage, the gritter fleet and staff training. Gritters are replaced every 8 years – the optimum operating life. The 3 shift system enables spare capacity during normal times to be used to aid local businesses such as major employers, shopping centres and petrochemical facilities with salting and snow ploughing, both bringing income to the authority and enabling the businesses and the local economy to recover quickly after adverse weather.

- 8.12** The information in the Plan about network coverage needs to be made available to interested parties in the area. It is widely accepted that a local authority cannot afford to precautionary treat its whole network, so the information about what is and what isn't treated needs to be widely shared at the beginning of the winter season. Many authorities produce a leaflet describing what is covered. Many have the same information on their website. Both are to be commended. There were also positive reports about the real-time information provided by local authorities about road conditions and gritting arrangements during the periods of severe weather and disruption e.g. websites, local radio, again this is to be commended.

Figure 8.2 Digger inside Winsford Rock Salt Mine



- 8.13** A key decision for every local authority, linked to its winter plan, is the volume of salt to be stored. This brings together decisions about the one-off capital costs of establishing facilities (most authorities are now moving towards covered facilities), the cost of purchasing the salt and local decisions about resilience. On purchase, most authorities have relied on a contract with just one supplier, and indeed the relatively low demand until the last two years saw prices squeezed slowly downwards. Prices have now moved upward, and this, together with the major issue of security of supply is encouraging local highway authorities to consider joint procurement, where more than one authority join together to make purchases or framework type contracts (usually involving several LAs) where the contract is with more than one supplier.
- 8.14** The Panel notes that decisions about the volume of salt to be stored are also linked to decisions about the system to be used and the particular storage requirements. A number of local highway authorities, and the Highways Agency, have moved to the pre-wet system. Others have utilised the agricultural by-products. Both reduce the amount of salt that is used, although there are different views about these products across the industry.
- 8.15** Resilience has been a key issue over the last two winters, as the previous succession of relatively mild winters had encouraged local authorities to hold less stock, with the (mistaken) assumption that the suppliers would be able to respond to any spike in demand with timely deliveries. There is clear evidence that overall, LAs plan to go into next winter with higher stock levels, although there is some evidence to suggest at the time of writing that a small number have yet to make a decision or place their order for the winter.
- 8.16** The big question is the judgement each LA makes about resilience. The UKRLG report suggested that resilience should be based on a minimum of 6 days resilience for severe weather conditions. However, the Panel's research shows that different interpretations have been placed on this across the country. There is a range from those where 6 days represents 6 runs to those where it represents up to 6 runs per day for 6 days, or more. The Panel believes that resilience should be a local decision, based on past patterns of use and decisions about volume of salt to be used, although it supports the recommendation in the UKRLG report about a minimum standard. We note that many LHAs are now stocking for next winter to levels in excess of 6 days' resilience for severe weather, based on their view of past patterns of use and local need. In most cases this appears a sensible course of action, though we will return to this subject in our Final Report, having

consulted representative bodies further. However, it is also clear that resilience should be expressed as the number of runs (assuming normal, or full spread rates).

- 8.17** Local resilience on salt stock can be improved when there is collaboration with other local authorities. This could take the form of additional storage, where two or more authorities come together to organise additional storage, or mutual aid. This might typically be arranged where an authority recognised its storage capacity was limited, and needed access to larger volumes of salt. The Panel notes that there were also examples of mutual aid last winter, when a number of authorities, close to running out, borrowed salt from other local authorities.
- 8.18** It is widely accepted that resilience requires good planning. The Panel is clear that the winter service provided by a local authority should be regarded as part of the local authority's wider resilience planning, with the same disciplines, systems and processes. Experience from the past year, when the Regional Resilience Teams were called into operation, suggests their expertise should be used as part of the review process of the plans.
- 8.19** Many local authorities, as part of their resilience planning, but recognising there is a limit to what they can do directly, also look to harness community support. This is particularly the case in a snow event, where the impact can be particularly hard on relatively remote communities. Community support often starts with the provision of salt bins (usually to parish and town councils) to allow the community to supplement the normal precautionary routes. This extends to advice to the public on what they should and should not do, right through to arrangements with local farmers in remote areas to assist with snow clearance, but again, there has been reluctance to widely embrace this because of concerns about liability.
- 8.20** As local highway authorities make judgements about the various issues covered in this section, one consideration will be cost. One of the particular difficulties faced by authorities is the variable costs from year to year, and the consequent difficulties for budgeting. One model used by a number of local authorities is to have a budget for the highly variable elements such as salt held by the relevant service based on a 5 year moving average, with extra demands or savings against this funded corporately (usually through balances). Such an approach seems a sensible way to smooth what would otherwise be rather lumpy expenditure and ensure that managers are able to take a long term view.
- 8.21** Witnesses suggested to us that the long period of mild winters prior to the last two have contributed to a loss of experience and knowledge in such areas, as well as less attention being given to training. This is of course understandable; and although severely cold winters will still remain relatively infrequent (see Chapter 12 (Weather forecasting and climate change)) this reinforces the need for the winter service plans to be sound and robust and for training, technical knowledge and competence to be sustained at a high level.
- 8.22** Some witnesses spoke of the difficulties of getting a full recognition of best practice in some local authorities in the preparation and delivery of their winter resilience plans; winter resilience planning may not achieve sufficient priority or attention in smaller and more recently re-organised local authorities. We believe more effort needs to be devoted to disseminating and encouraging the adoption of best practice, and we were pleased to have the support of the professional representatives who met us and of the Local Government Association who undertook to take this matter forward within their respective roles.
- 8.23** LHAs have understandably expressed great concern about the problems of salt and supply chain availability two winters running, and this is also reflected in the LGA report. Chapter 7 on Salt and the Supply Chain presents a thorough analysis of the problem and our recommendations

for dealing with it in the short term, and our Final Report in the autumn will give a longer term perspective on building more resilience into the supply chain. There are three ways in which LHAs can support this process – one by all LHAs participating fully in the year-round information collection and monitoring process of salt stocks and movements which we are recommending should be put in place; secondly by ensuring that their own planning of salt stocks is sound and carried out in accordance with best practice, and supported by any reasonable opportunities to improve their salt utilisation without impairing effectiveness.; and thirdly by putting in place appropriate mutual aid arrangements with neighbouring authorities which can be utilised to address particularly localised shortages. Many already do this; there are benefits in it becoming universal practice.

- 8.24** Finally, we are aware that some Local Authorities treat their winter service planning as an integral part of their more general resilience planning for civil contingencies – for example the London authorities take this approach. We strongly support this. The benefits of this are in bringing to bear the appropriate methods and disciplines for developing and validating winter resilience plans (including salt stockholding), and subjecting them to constructive challenge in line with the culture and practice of wider resilience planning.

Recommendation 5: Every local highway authority should have a robust winter service plan, and should regularly review the key elements of it, including network coverage, operational procedures and standards and appropriate salt stockholding to meet defined resilience standards, all in line with current best practice.

Recommendation 6: Consultation on treated networks should be broadly drawn to include business representatives, passenger and freight transport operators and local communities, as well as health and education service providers; and to help manage public expectations should be followed by clear and comprehensive communications of winter service plans, supported by good real-time communications through media and on-line when winter conditions arrive.

Recommendation 7: As many local highway authorities already do, authorities should collaborate with and support lower-tier authorities to help ensure that maximum practical winter support can be given in areas and communities beyond the treated networks, including possibly the treatment of key footways and pedestrianised areas.

Recommendation 8: While recognising that research and technical information in this area is relatively fragmented and uncoordinated, and that available evidence needs to be presented more authoritatively, local highway authorities should be aware of the opportunities to improve salt utilisation through adopting lower spread rates and alternative treatment methods, both to reduce cost and to reduce demands on a potentially vulnerable salt supply chain.

Recommendation 9: Professional bodies and the Local Government Association should encourage the more widespread dissemination and adoption of best practice in the preparation and delivery of winter service plans.

Recommendation 10: While recognising that the resilience of salt supply is being addressed as a nationwide issue, local highway authorities can support this and should:

- all participate fully in the year-round systematic information collection and monitoring of salt stocks and movements which we are recommending should be adopted by DfT;
- ensure their own planning of salt stocks and supply is sound and carried out in accordance with best practice, and supported by practical measures to improve salt utilisation;
- put in place (or confirm where existing) mutual aid with neighbouring authorities to help address localised shortages.

Recommendation 11: Local highway authorities should treat their winter service planning as an integral part of wider general resilience planning for civil contingencies, bringing to the development of winter service plans the benefits of processes and disciplines associated with resilience planning, together with the culture of constructive challenge and validation.

9. Strategic road network

- 9.1** The Highways Agency did not have the problems of some of the local highway authorities last winter, although it was required to reduce its salt usage (reduced spread rates and the non-treating of the hard shoulder) and there were some knock-on issues with supplies, as Salt Cell directed the available supplies to those local authorities most in need.
- 9.2** Following the disruption from a snow event in 2003, the HA has established robust arrangements with its contractors, based on clear specifications for operations and performance and requirements for salt stocks, to ensure the strategic road network remains available in all but the most extreme weather conditions, and there is quick recovery. This is important because of the amount of goods movements on the HA roads, and the many parts of the economy which rely on 'just in time' delivery.
- 9.3** A new fleet of vehicles is being introduced which will treat the whole network with 'pre-wet' salt. The greater targeting and precision of this system will contribute to a relative reduction in salt use in coming years, estimated at up to 25%.
- 9.4** This is backed by comprehensive information and modelling about weather events and patterns of use, across the different contract areas. The HA also commissions research; all of this information feeds in to the specification matrix used by the contractors.
- 9.5** There is no central purchasing of salt. This is left to the contractors, who are free to organise purchasing to secure the best deal, which allows them to link the requirements of different contractors. It should be noted that because of the events of last winter, the HA did place central orders, which their contractors were required to purchase, including an import of more than 125,000 tonnes of salt, so making more domestically-produced salt available to local highway authorities. It is also worth noting that the contract arrangements, which cover around five years, simply require the contractors to meet the specification, which is priced on an average winter. In simple terms this can mean that if, as last winter, the contractor was required to use more salt and manpower, the additional cost is borne by the contractor. On the other hand, the contractor can benefit in a relatively mild winter.
- 9.6** The HA acquires the equipment for its winter service and owns/pays for the depots. Some of these are operated jointly with local highway authorities. The HA also, through its contractors, provides salt on a mutual aid basis to local highway authorities, but this was not constrained to those authorities where depots were shared. Some have suggested this should be part of the back-up for future years, together with some sort of 'regional stock', possibly managed by the HA.

Figure 9.1: Road gritting



Image courtesy of Salt Union Ltd

- 9.7** Despite this positive picture, the Panel were struck by the number of those giving evidence, particularly orally, who raised some concerns that the current regime used more salt than was necessary. This related not only to spread rates, but decisions about sending out the gritters. Several local authority representatives highlighted that contractors, who they considered tended to play safe, were making decisions to treat, when the local authority officers, with the same weather forecast, chose not to treat. Clearly, this is mostly about precautionary treatment, rather than dealing with a snow event or its immediate aftermath.
- 9.8** In respect of last winter and the period of salt restrictions, the point was made strongly by a number of witnesses that since all journeys start and finish off the strategic network, perhaps the balance of salt use between HA contractors and local highway authorities was not correct.
- 9.9** Looking forward, the new pre-wet regime will clearly reduce the total amount of salt used by the HA. The Panel also heard from the Agency that following the reduced spread rates used in the latter part of last winter, it plans to continue this practice and will therefore be amending the matrix used by its contractors, but that it will return to treating the hard shoulder. The Panel commends the Agency for these changes to spread rates, but was left with the question for the future as to whether further reductions might be achieved in the use of salt, subject to appropriate research, with both environmental and cost benefits.

Recommendation 12: The Highways Agency should be commended for the research-based measures it has put in place to improve its salt utilisation. It should:

- continue to research and monitor the efficiency of its practices and strive to improve the cost-effectiveness of its winter service operation;
- share best practice, research and knowledge with other highway authorities.

10. Salt utilisation and technical standards

- 10.1** The acute pressure on salt supply during the winter of 2009/10 led to 'strong guidance' from the Department for Transport on 8 of January that highway authorities should find appropriate ways of cutting salt utilisation by 25% for a period in order to conserve dwindling salt stocks. This was followed up on 12 January by further guidance to the effect that authorities should reduce salt use by 40 to 50%. Available actions included reducing the extent of the network being gritted and reducing the 'spread rate' of salt. Most authorities adopted a mix of measures, but it was significant that, as they looked back on the experience of last winter, local authorities felt that the efficiency measures taken did not appear to significantly impair the effectiveness of the salting regime.
- 10.2** This experience has caused many authorities to ask themselves whether they need to use as much salt in the future. It seems from the evidence and discussions we have had that the level of understanding among local highway authorities about the effect of alternatives to the 'standard' spread rates, and about the efficacy of alternative materials or treatments (such as coated salt or pre-wet) is not as extensive as we might have expected. The updated Well-Maintained Highways document issued in December 2009 contains an Appendix²³ with useful guidance and sample 'matrices' with specific recommendations about salt treatment methods and spread rates; we are not sure how widely this is used or known; Subsequent experience and advice we have received during the Review suggests that there is a need for further co-ordinated research and dissemination on this subject.
- 10.3** We understand that the Highways Agency have already made a decision to reduce the spread rates in the winter service specification to which their MAC and DBFO contractors operate; together with the near universal adoption of the pre-wet method (which requires specific vehicle equipment and storage), the HA expects that salt use for their network will for next winter be significantly reduced for the same level of effectiveness. This decision on reduced spread rates was based on research carried out by TRL for the HA. This research was one of a number of factors considered by DfT in giving guidance last winter that, given the likely weather and road conditions, a reduction in spread rate should that 'considered' by local highway authorities. .
- 10.4** We also learned of the considerable research and investigation into methods of salt utilisation and treatments of salt carried out on behalf of the National Winter Service Research Group (then known as National Salt Spreading Research Group). This is a free-standing subscription organisation which came into being in 2001, to which about one third of the UK's highway authorities (including the Highways Agency and Transport Scotland) together with a handful of contractors belong and pay a modest subscription. It has been closely linked with TRL who carry out much of the research, which is of high quality and authoritative. However, the nature of the organisation means that the fruits of their research are available only to their subscribing member authorities. The research priorities are set by the group, and while we have no reason to question their programme of work, there is no formal link with any other organisation representing wide highways and winter service interests who could take a strategic overview of research and development needs. Their current work programme is focussed on developing a very practical guide

23 UK Roads Liaison Group 'Well-Maintained Highways' Complementary Guidance – Appendix H Winter Service Issues (Appendix amended 15 December 2009)

for practitioners in winter service, sitting alongside the Well-Maintained Highways guidance which is thought not to be sufficiently operational.

- 10.5** It has been argued that, with salt only costing £30–£40 per tonne, the priority to improve technical standards and salt utilisation can never be very high. We would argue differently. Adopting standards and methods which reduce the utilisation of salt without compromising effectiveness will both reduce vulnerability to salt supply problems and reduce cost to the local highway authority. The cost of salt delivered to a highway authority's salt barn is typically around 20%–30% of the total cost of winter service; however, the true cost per tonne of salt loaded into the back of the gritter will be significantly more, when the fixed costs of storage and the costs of equipment, administration and loading are counted in.

Figure 10.1: Icy Roads



- 10.6** Nearly all those witnesses involved in the delivery of winter services told the Panel they felt that research and the development of technical standards was fragmented and uncoordinated, that there was a need after the last winter to take stock of what is now known about salt treatments and spread rates, and to bring it all together to provide authoritative and up to date advice, in a simple, accessible and comprehensive form.

- 10.7** Drawing together the following points:

- The experience of cutting spread rates as an emergency measure last winter (with apparently little impairment to effectiveness) has brought forward the urgency to revisit current technical standards, using research and evidence to substantiate proposed changes.
- The Highways Agency's own change of policy towards lower spread rates, based on research they have commissioned (and shared with the NWSRG), suggests a prima facie case for reviewing practice for local highway authorities, though account would need to be taken of its applicability to local roads.

- Even though salt is only a part of the cost of winter service, there is an opportunity to save money, to reduce reliance on the salt supply chain, or to extend network coverage.
- The Well-Maintained Highways documents are extremely valuable, particularly at a policy and managerial level, but do not seem to provide sufficient operational guidance for practitioners.
- The research and reports of the NWSRG over the past nine years seem to have been valuable and authoritative, but it is not in the public interest that the fruits of this are confined to the members – accounting for some one-third of UK highway authorities – nor that the setting of priorities and programme is not formally connected to other bodies with a wider remit in Winter Service as part of road network maintenance and management.

Recommendation 13: There should be a comprehensive, authoritative review of technical standards and guidance relating to both the treatment and the spread rates of salt, based on research and evidence as necessary, leading to the production of practical guidance for practitioners as well as at a policy and planning level. This should be led by the UK Roads Liaison Group (see next recommendation).

Recommendation 14: The valuable initiative and work of the National Winter Service Research Group should be brought under the wing of the UK Roads Liaison Group, who should take responsibility for and set the strategy for its work programme, including its contribution to the comprehensive review of technical standards and methods.

11. Footways

- 11.1** Local authorities and many other witnesses spoke of public concern over the condition of footways (often called pavements) in the recent severe winter. There is clearly a wide gap between public expectation and local government resources on this issue. The reality is that very few local authorities prioritise the treatment of, or the clearance of snow and from, footways – and in severe winters local resources are prioritised on keeping the designated road network open and safeguarding the access to hospitals, stations and schools.

Figure 11.1: Urban snow scene



Image courtesy of Salt Union Ltd

- 11.2** A recent opinion poll by the Local Government Group (LGA Group) on 16 January 2010, just after the snow, revealed that 59% of interviewees would support a law to require people to clear snow outside their home. A further 73% would also support a separate law to protect people from any subsequent litigation from people who slip over in these circumstances. It would seem that the public are willing to take their part in the local clearance of snow and ice, but are looking for this role to be formalised to ensure that the burden is shared fairly.
- 11.3** However, in giving evidence, many witnesses raised the confusion in winter 2009/10 over what steps individuals could take to help themselves and others in tackling snow and ice. There were many unhelpful media pieces relating to potential liability of individuals clearing snow and ice from the footways outside their homes.

- 11.4** A person taking any action which can be proved to be negligent and which injures a third party, could be sued under common law. However, in practice the injured party would have to show in any claim for negligence that:
- the person/business had assumed liability by clearing the footway;
 - if they had assumed responsibility, that the standard of care exercised by the person/business fell below that which could be expected of a reasonable person/business.
- 11.5** In fact, it is very unlikely that any individual would be sued in such circumstances, but there is a practical problem in deciding what the relevant standard of care of the typical individual should be. Should members of the general public be taken to know, for example, that using boiling water may increase the risk of ice forming? Should they be expected to obtain and lay down salt or grit? Unlike highway authorities who will be aware of industry standards and codes of practice, there appears to be no obvious guide for the house-owner. So each case would be decided on its facts.
- 11.6** We were impressed to find that some local authorities were proactive in encouraging individuals to take action and even offered reassurance to the public that reasonable action would not leave them liable. For example, Westminster City Council issued a press notice encouraging action and providing a four-point guide for the public on tackling snow on ice (see case study box below).
- 11.7** Government could develop national guidelines on a similar basis to help the public clear footways in a safe and efficient manner. The scale and immediacy of pavement clearance means that the only realistic national solution is for the public to support local authorities in clearing the footways of any snow and ice outside their property.
- 11.8** We are also aware that some European countries have taken footway clearance to a further stage and made it mandatory for the public to become involved. In Germany, local laws require householders and businesses to keep the footway – and their side of a local street – free of snow and ice. This arrangement is felt to work reasonably well, but property owners have the protection of an insurance policy (Haftpflichtversicherung = 'Public Liability Insurance') aimed at protecting owners if they are subsequently sued for damages. The cost for the insurance is not very high. In practice, many householder and businesses pay a fee to a street clearance operator to take on the responsibility of clearance. We understand that similar arrangements are in place in Austria, Switzerland and the Netherlands.
- 11.9** In Germany, local governments require the owners of properties to keep the footway – and their side of a local street – free of snow and ice. This arrangement is felt to work reasonably well, but property owners have the protection of an insurance policy (Haftpflichtversicherung = 'Public Liability Insurance') aimed at protecting owners if they are subsequently sued for damages. The cost for the insurance is not very high.

Case study: Self-help footway clearance – Westminster City Council

At the height of the severe weather in 2010, Westminster City Council issued a press notice encouraging members of the public to help clear snow and ice outside their properties. It provided four tips for doing this:

Tips for clearing ice and snow

1. *DO NOT USE HOT WATER. This will melt the snow, but will replace it with black ice, increasing the risk of injury.*
2. *If shovelling snow:*
 - *Use a shovel with the widest blade available*
 - *Make a line down the middle of your path first, so you have a safe surface to walk on. Then you can simply shovel the snow from the centre to the sides.*
3. *Spread some ordinary table salt on the area you have cleared to prevent any ice forming. Ordinary salt will work and can be purchased cheaply from any local shop, but avoid spreading on plants or grass.*
4. *Use the sun to your advantage. Simply removing the top layer of snow will allow the sun to melt any ice beneath, however you will need to cover any ice with salt to stop refreezing overnight.*

The full text of the press notice is provided at Appendix I

11.10 We conclude that there the public expectation for footways to be cleared of snow and ice is reasonable, but that it will never be possible to resource local authorities to perform this task other than in selected pedestrianised areas and the accesses to hospitals, stations and shopping centres.

11.11 We also conclude that the scale of the task requires citizens to be mobilised into clearing the footways outside their properties as quickly as possible. We believe that this can be done without the prescriptive legislation of Germany and we see a solution in which the public are encouraged to undertake this role in a voluntary way, but guided by clear Government instructions on how the work can be done in a safe and efficient way.

Recommendation 15: The Department for Transport should develop, in collaboration with local government representatives and appropriate experts, a code setting out good practice for members of the public, including business owners, in clearing snow and ice from footways. This should:

- be produced by the end of October 2010 in time for the coming winter;
- be short, along the lines of Westminster’s advice to its residents;
- set a standard which, if observed, should guard the public against negligence claims;
- be made available to households by local authorities.

12. Weather forecasting and climate change

- 12.1** The role of weather forecasting services to inform and guide operational decisions about winter service by highway authorities, and decisions by salt producers, is set out in Chapter 2 (Background) above. This focuses on the 'within day' and up to five-day forecasts provided by the Met Office and private sector providers (predominately MeteoGroup), often at a highly detailed geographical level, and with considerable attention by the providers to the precise information and forecasting needs of the client. These enable highway authorities or their contractors to make good decisions about the deployment of gritting vehicles, and to inform the public and stakeholders about action being taken and what they can expect over the subsequent few days.
- 12.2** Highway authorities and salt producers are generally well-satisfied with these services from their weather forecast providers, citing them as accurate enough for their purpose and well-tailored to their needs. Both accuracy and levels of disaggregation have improved considerably in recent years, due both to technology and IT enhancements and to the spur of competition as alternatives to the Met Office as service providers have emerged.
- 12.3** In addition to the short-term 0–5 day forecast, the ideal requirement for winter service planning is also for:
- 15–30 days forecast for resource planning, including salt restocking, labour scheduling and the possible deployment of other local authority staff to support winter resilience; and production planning for salt producers;
 - seasonal (i.e. up to 6 months ahead) and longer term forecasts to inform policy and strategic planning.
- 12.4** Forecasting weather beyond 5 days is more problematical, due to the chaotic nature of the atmosphere and its weather systems and the particular location of the UK and Ireland off the north-west coast of continental Europe and subject to the Atlantic and other weather systems. Forecasts become less skilful and the uncertainty increases the further into the future we go
- 12.5** The Met Office Public Weather Service (PWS) provides regional forecasts for 5 days and UK outlook forecasts to 30 days that describe the main weather type and trends for the general public. The Met Office also offers a tailored rolling 30 day and seasonal forecast to organisations with operational and planning needs. However, this is the period for which the word 'forecast' starts to mean something different: in common parlance, a forecast is a prediction that X or Y will happen – that the temperature will be -2°C , or that there will be up to 15cms of snowfall.
- 12.6** Beyond 5 days, we have to recognise that the techniques forecast risk rather than definitive events and are therefore expressed as probabilities – for example, that there is a 30% chance of snowfall, or a 60% chance of freezing temperatures²⁴. We know that the general public – and the media they consume – can find the concept of probabilities difficult to handle or comprehend. But probabilistic predictions can be valuable to business and public organisations, as a basis for resourcing and planning decisions.

24 "Ensemble" forecasting is the term used by weather forecasters for a technique which generates a large number of (say 50) predictions of future weather, using a carefully modelled set of slightly different starting points – reflecting that one of the uncertainties is an exact knowledge of weather detail at the current moment.

- 12.7** The science of forecasting up to 30 days ahead and beyond has made great progress in recent years and will continue to develop; comparison of outturns against probabilistic predictions out to 30 days suggests that the information is of increasing value for winter service resourcing and planning.
- 12.8** The Met Office has ceased publishing seasonal forecasts through the PWS, because – again – the nature of the weather and climate means that at these timescales it only makes sense to give probabilistic predictions rather than definitive forecasts, and this has proved difficult to communicate.
- 12.9** Yet, as this Review makes clear, critical policy and strategic decisions would be enormously enhanced by even a probabilistic prediction about next winter’s weather. Forecasting over this timescale and beyond takes us into the area of climate forecasting and the impact of climate change.
- 12.10** We have explored these issues in some depth with the climate research team at the Met Office Hadley Centre. The starting point is the slow but steady rise in average global temperatures. The consensus on the UK is that on average summers will become warmer, and winters will become warmer and wetter, though the next 10–15 years may be dominated by natural variability. When severe weather events happen they may be more extreme in terms of heat and rainfall.
- 12.11** Although the probability of severely cold winters in the UK is gradually declining, there is currently no evidence to suggest similar changes in extremes of snow, winds and storms in the UK.
- 12.12** We have also explored whether or not the occurrence of two successive severe winters influences the probability of a third in succession – in other words, is there any evidence of clustering? There is some small influence from year to year but these matters are still very uncertain and it would be safer to assume that there is statistical independence between one winter and the next.
- 12.13** In other words, we are advised to assume that the chance of a severe winter in 2010–11 is no greater (or less) than the current general probability of 1 in 20.
- 12.14** For the purpose of this report, the following summarises what we understand:
- The probability of the next winter being severe is virtually unrelated to the fact of just having experienced two severe winters, and is still about 1 in 20.
 - The effect of climate change is to gradually but steadily reduce the probability of severe winters in the UK.
 - However, when severe winters come, they could still be extreme – in terms of snowfall, wind and storms, though not necessarily in relation to temperature.
- 12.15** An important consequence of the declining occurrence of severe winters is the loss of knowledge and experience among planning and technical staff in local highway authorities and their contractors, especially if the severe winters which do occur have more extreme snow events.
- 12.16** All this, in our view, reinforces the need for comprehensive resilience planning, and for ensuring that the salt supply chain is resilient.
- 12.17** But we need to understand and accept that the chance of a severe winter is still relatively small and that there will be many years when some will question the degree of resources committed to winter resilience.

Recommendation 16: We note and commend the generally high quality and accuracy of short term (0–5 days) weather forecasting now available to support the operational decisions of highway authorities and their contractors, and recommend that the weather forecasters continue to develop their capabilities both for 15–30 day forecasting to meet the resource planning needs of highway authorities, and for longer term seasonal forecasting.

Recommendation 17: Given that the probability of next winter being severe continues to be relatively small but that severe winters are still possible despite the warming trend, we recommend that winter resilience planning – and the securing of greater resilience in the supply of salt – should continue on the basis of dealing with winters of a severity similar to that of 2009–2010.

13. The economics of winter resilience

- 13.1** It is a characteristic self-deprecating cliché of the British that 'snow brings Britain to a dead halt while other countries manage it better than we do'. The truth is that unusually severe winter weather – especially snow – (as we had last winter in the UK, Europe and North America) can cause substantial disruption for a few days, but it does have the same effect in other countries. And Britain has become better in recent years at managing 'normal' and moderately cold winters.
- 13.2** Nevertheless, there is a general understanding among the public – as illustrated by the social research carried out by the LGA and reported earlier – that the occurrence of particularly severe winters is believed to be sufficiently rare that investing in capital equipment and resources to provide a higher level of resilience in those circumstances is unlikely to be worthwhile.
- 13.3** However, we have thought it worthwhile in this Review to address the issue – does England spend enough (or too much) on winter resilience? To tackle this we have set out to answer two questions:
- What is the cost of providing winter resilience to current standards and policies, and how does that compare with the social and economic cost of winter disruption when it occurs?
 - Would increasing the resources spent on winter resilience give rise to a disproportionate benefit in reducing the cost of winter disruption when it occurs (allowing for the frequency/probability of occurrence)? Or if resources were decreased at the margin, what would be the relative impact on the social and economic costs of disruption?
- 13.4** We recognise the challenges in estimating these elements, and are only seeking an 'order of magnitude' assessment of the issue. We also recognise that even if the assessment suggested that further investment in winter resilience would be highly beneficial to the country, there would remain major issues of affordability at this time of considerable stringency in public expenditure.
- 13.5** This work is in progress, and will be reported in the Final Report in the autumn.

Appendix A: Terms of Reference

Background

The winter of 2009-10 has been the coldest in the UK for 30 years, creating extremely challenging conditions for the travelling public across the whole of the country. For the most part, our transport networks have coped well in the circumstances. However it is important that lessons are learned in order to improve our resilience for future winters.

Following a decade of relatively mild conditions, the winter of 2008-09 was severe and the worst for almost 20 years. A number of reviews followed, including by the House of Common Transport Select Committee, the London Assembly, the Local Government Association and the UK Roads Liaison Group (UKRLG). The July 2009 report by UKRLG made 19 recommendations to highway authorities, producers and suppliers of salt and other stakeholders to improve preparedness.

The winter of 2009–10 has seen an even more sustained period of sub-zero temperatures. The biggest issue was the availability of road salt, but additionally the severity of the weather conditions caused disruption across most modes of transport including rail, air and sea. The response of central and local government to severe winter weather must aim to maintain public access to key services such as health, education and employment. However, the scale of the response must provide value for money to the public purse.

Purpose of the Study

The aim of this study is to identify practical measures to improve the response of England’s transport systems – road, rail and air – to severe winter weather. The study will build upon the recommendations of the UK Roads Liaison Group “Lessons from the Severe Weather February 2009”, and will take account of reviews of experience and lessons learned by public authorities, network operators and transport providers. The study will consider the views of transport users and stakeholders, the effectiveness of communications about travel conditions, and the contribution of weather forecasters.

There will be an immediate focus on measures that should be adopted to improve preparation for and management of winter 2010-11; the study will also consider and make recommendations about longer term measures.

Timetable and reporting

The Review will report in two phases, reflecting the need to:

- a) identify measures that can be implemented relatively quickly in preparation for next winter 2010/11, and
- b) to take a longer term view of our preparedness for severe winter weather in future years.

Phase one

The phase one report will aim to identify quick wins aimed at improving resilience in preparation for next winter 2010/11. This will largely focus on the planning, production, deployment and distribution of salt stock for the road network, including possible enhancements to the supply chain. It may include recommendations across other modes if opportunities are identified. The phase one report will be published in July, before the summer parliamentary recess.

Phase two

The phase two report will consider wider aspects of resilience of transport services across various modes through the winter season. It will review communications, economic impacts, public expectations and issues around weather forecasting. Publication will be targeted for autumn 2010.

Governance

The Review will be steered by a panel of three independent experts:

- David Quarmby CBE (Chair)
- Brian Smith
- Chris Green

A Review team, comprising DfT officials, will provide administrative, project management and analytical support.

The Review outcomes formally recommended to the Secretary of State for Transport will only apply to English authorities, but will take account of the wider UK context. The Scottish and Welsh administrations will be fully involved in the work of the Review. It will be for Scottish and Welsh Ministers respectively to decide what action is required in those countries.

Methodology

An initial review of previous winter service reports will be undertaken in order to avoid unnecessary duplication and to ensure any recommendations complement actions already being taken by network operators and transport providers to improve their winter service. The Review will build on the recommendations of the UKRLG report "Lessons from the Severe Weather February 2009". This initial review will inform the development of a more detailed schedule of questions and issues for investigation.

The Review will be seeking evidence and views from a range of key stakeholders, including transport network operators and transport providers, salt suppliers and distributors, transport users, businesses, the general public, weather forecasters, and the media. Evidence will be gathered through stakeholder workshops and calls for written evidence covering the full scope of the Review. This evidence will be used to identify practical measures to improve the national response to severe winter weather, presenting case studies of best practice and culminating in a package of recommendations.

The rail industry is already reviewing performance during the severe winter 2009/10. Similarly, the salt industry is currently identifying immediate action for re-stocking during the summer period.

Draft scope of the Review

(FOR CONSIDERATION AND ADOPTION BY THE PANEL AT ITS FIRST MEETING)

Phase One – Winter resilience and salt stock management

1.1 Weather forecasting

Review of the availability and accuracy of weather forecasts, their communication and interpretation for highway authorities.

1.2 The complete salt supply chain and treatment strategies by highway authorities

A critical review of the complete salt supply chain, in the context of the lessons learned and actions implemented from the 2008-09 winter season, and how it might be most effectively planned and managed. Review the actions already under way by authorities following experience of the 2009-10 winter season.

Consider and evaluate the different treatment regimes adopted by different authorities. Review the monitoring and reporting processes for levels of readiness including salt re-stocking.

Critically examine a range of options covering resilience levels, diversification of supply, collaborative storage and procurement, mutual aid between authorities, and the contribution of innovations and technology in winter servicing.

Critically examine the case for national regulations, and powers of ministerial intervention, to ensure that adequate supplies are maintained at local level and by the Highways Agency.

Make recommendations designed to make better preparation for next winter season and achieve improved winter resilience on the roads.

Phase Two – maintaining cross-modal winter transport service provision

2.1 Coordinating an immediate response to severe winter weather

Review how well existing approaches work in achieving a co-ordinated and efficient response to severe winter weather in the UK, including:

- Clearance of snow from transport infrastructure
- Maintaining access to and resilience of critical infrastructure e.g. emergency services, motorways and other strategic highways, railway depots and stations, airports, ports, freight routes, power stations, hospitals
- Effective communication to travellers and transport users, communities, and providers of critical services

Identifying examples of best practice in providing a fast and efficient response (e.g. service delivery, communications, resilience networks), including practices of other European countries who experience similar winter patterns to the UK.

Advice on the most appropriate central government role in facilitating co-operation between key delivery agencies.

2.2 Resilience of rail services in severe winter weather

Review the overall approach taken by Network Rail and the Train Operating Companies in preparing the network and its infrastructure for severe winter weather. Review experience and lessons learned by NR and TOCs in service planning and delivery, and in sustaining network availability. Review the effectiveness of communications to passengers and freight users, and lessons learned in handling the consequences for operations and for passengers of service disruption.

Make recommendations as appropriate.

2.3 Resilience of airports and air services in severe winter weather

Review the approach taken by airport operators and airlines in planning and managing the consequences for airports and air services of severe winter weather in the UK. Review their experience and lessons learned; review the effectiveness of communications to passengers within the UK and overseas, and lessons learned in the handling the consequences for operations and for passengers of service disruption.

2.4 Weather and long term trends

Review and analyse current thinking on likely trends in weather and winter temperatures and conditions for the UK, the accuracy of forecasts and possible developments, and their relevance for winter resilience strategy in England.

2.5 Economic analysis

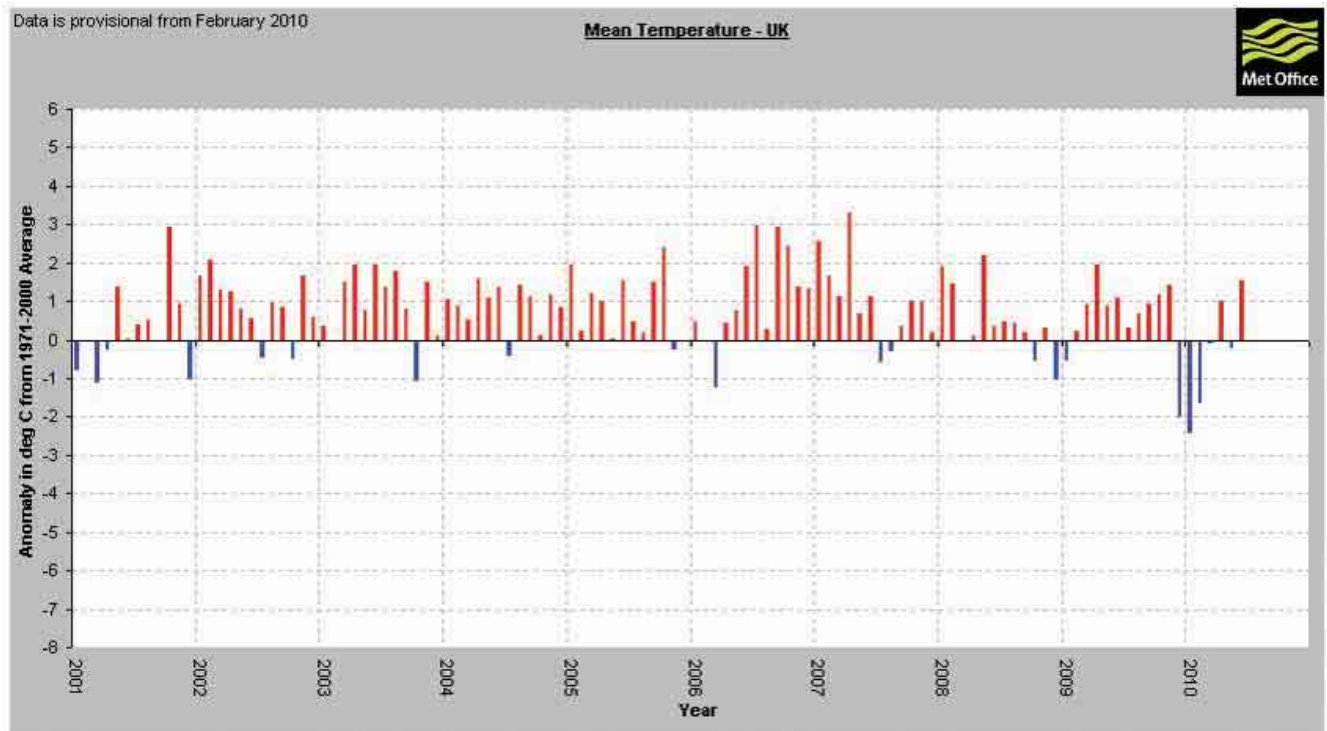
Analysis of the likely costs and benefits of different approaches to winter resilience, bringing together costs of alternative levels of preparation and intervention with the benefits of greater resilience to business, travellers and the community at large. Account will be taken of approaches taken in other countries with similar weather patterns to the UK. This will include a review of the policies and standards relating to treatment of footways, costs of accidents and public liability

2.6 Communications and public expectations

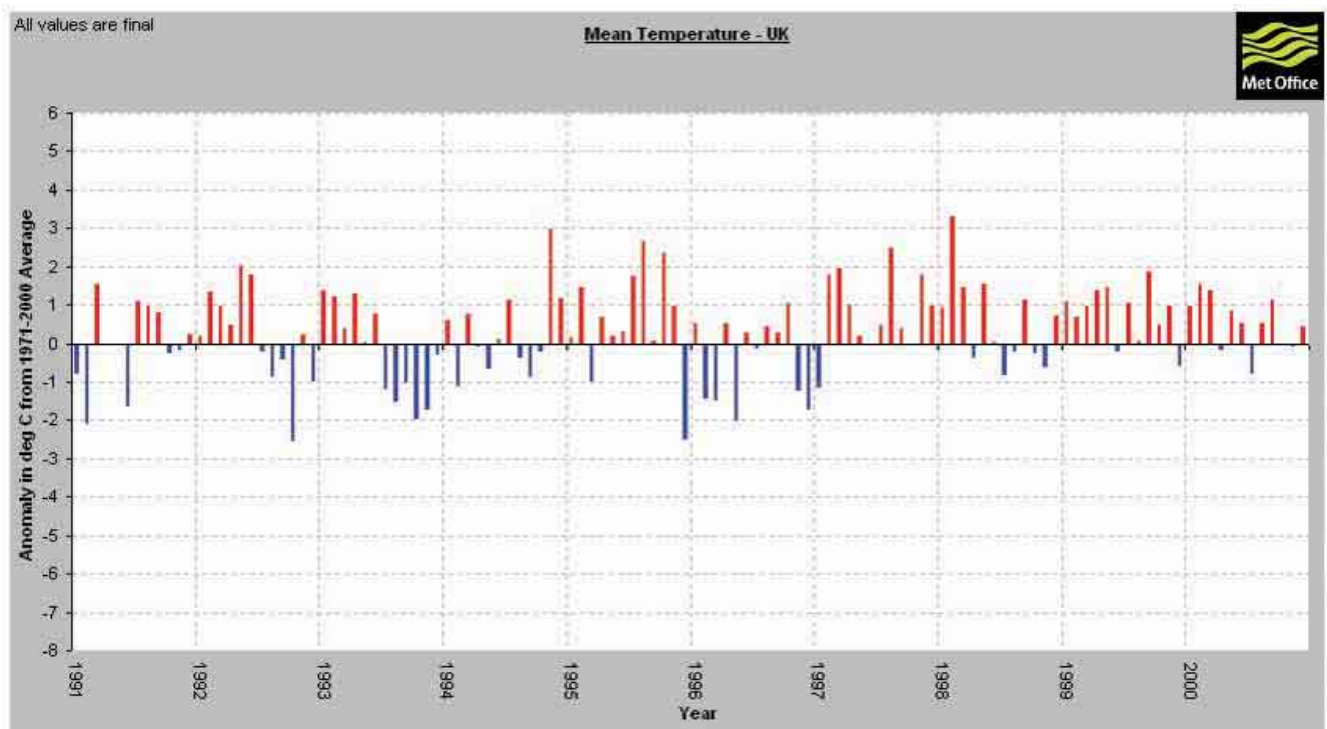
Consider public attitudes and expectations of winter resilience and whether these can be met. How well communications work between public authorities, service providers and their users, the role of media and how communications can be improved. Enabling end users to help themselves (use of grit bins, snow clearance, etc)

Appendix B: Historical Temperature Trends

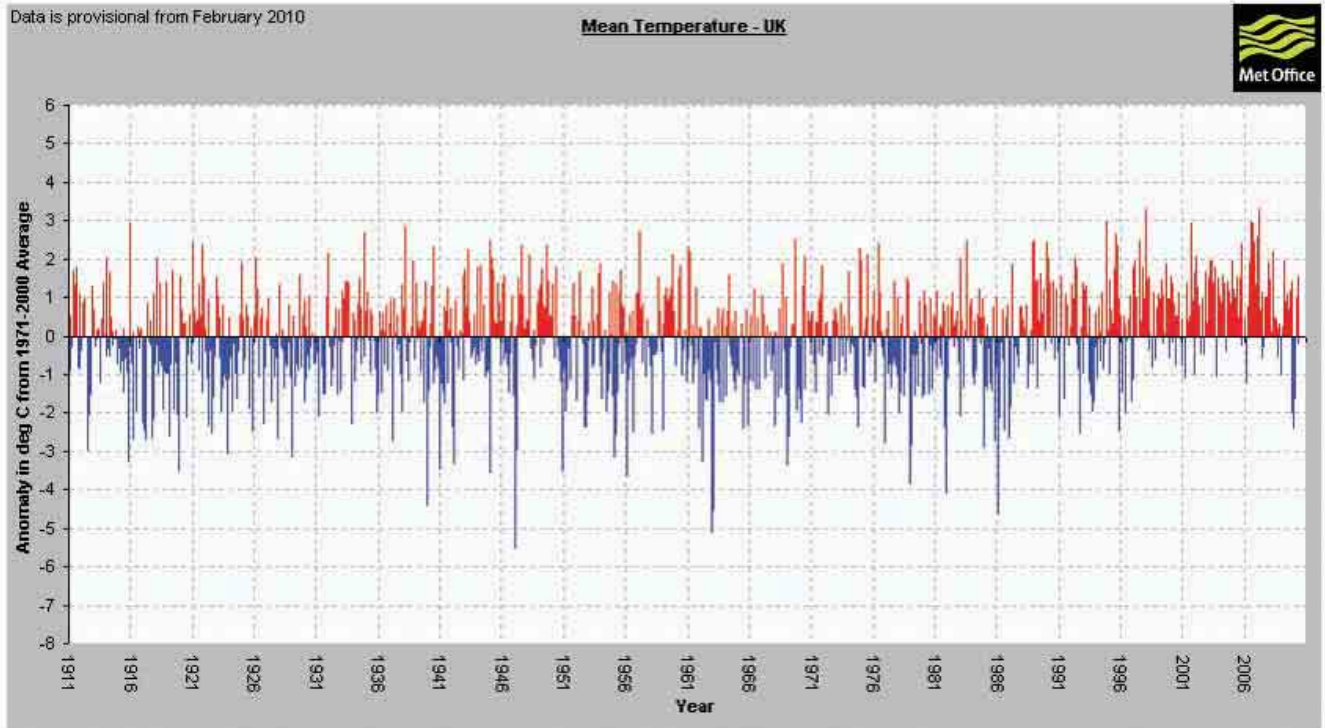
UK Mean Temperature Anomalies from 1971 -2000 Average, 2001 – 2010



UK Mean Temperature Anomalies from 1971 -2000 Average, 1991 – 2000



UK Mean Temperature Anomalies from 1971 – 2000 Average, 1911 – 2010



Appendix C: Department for Transport: Are You Ready for Winter?

Department for
Transport

Are You Ready for Winter?



Important Information for Councillors
and Senior Local Authority Officers

December 2009

The Highway Network

Highways are one of the country's largest public assets and essential to the social and economic wellbeing of local communities. Safe and reliable highways are fundamental and are the starting and finishing point of almost all journeys, whether on foot or by other means. The public highway provides access to public transport, our hospitals and emergency services, and directly carries the bulk of passenger and commercial traffic.

Winter Conditions

Winter snow is an event to which some people, especially young children, look forward, but others are concerned about disruption or fear for their personal safety. Over recent



years the impact of climate change has become noticeable, with a decreasing number of snow events. Climate change, however, is not only likely to mean milder and wetter winters in general, but also more frequent occurrences of severe weather events.

In 2009 we experienced severe winter weather with the heaviest snow fall in recent memory, resulting in widespread disruption to travel across much of the UK. Public transport was interrupted or unable to operate in several parts of the country and many roads became impassable, affecting access to essential services. These events provided a reminder that it is critical for the economy and for society that local authorities prepare for winter conditions. Good preparation will help ensure disruption is minimised and conditions are as safe as possible.

What is Winter Service?

A local authority's winter service facilitates safe and free movement around key parts of the highway network in winter conditions. It deals with regular, frequent and reasonably predictable occurrences like low temperatures, ice and snow, as well as with exceptional events. It is a key aspect of highway maintenance and is specifically designed to:



- enable economic and community activity to function as normally as possible through the winter;
- keep important parts of the highway network free from the dangers of ice and snow, so far as reasonably practicable.

Winter service involves:

- weather forecasting and prediction of local conditions;
- preventative treatment of selected roads, footways and cycle ways to inhibit ice forming;
- treatment of ice and snow.

Whilst the effects of climate change are likely to result in an increased frequency and intensity of severe winter events, these can be taken into account in winter service planning.

Why is it Important to be Ready for Winter?

There are high public expectations that it should be possible to undertake many journeys in road conditions close to normal; and there is a high impact on the economy if they cannot.



Winter service is not an emergency service. Winter comes every year and should be planned for. There are many expectations of, and requirements for, winter service:

- the ability of people to access places of work, learning, health care, shopping and community activities;
- continuity of regular haulage and the distribution of goods for industry and commerce;
- the safety of pedestrians, cyclists, drivers and vulnerable highway users;
- the legal obligations of the highway authority.

There are a significant number of risks and uncertainties which highway authorities need to take into account when planning for winter:

- a high public and economic impact if winter service cannot cope or fails;
- short-term unpredictability of winter conditions;
- lack of network resilience in severe conditions, with consequent disruption and impact, similar to early 2009;
- the ability of essential services to respond;
- the risk of litigation for failure to perform a basic highway service;
- the reputation of the local authority.



What Should Local Authorities do?

Local highway authorities should:

- approve a winter service policy, setting out what is to be treated and when, which includes a local resilience standard in terms of the number of days capability in severe conditions;

- coordinate and collaborate with other highway authorities and public services (such as the emergency services, hospitals and public transport) to ensure critical services can be delivered;
- prepare a Winter Service Operational Plan with details of how the service is to be delivered;
- prepare a contingency plan for exceptional conditions;
- provide information for the public in preparation for the winter, explaining routes to be treated and information on driving in winter conditions;
- establish liaison arrangements with the media.

What Resources are Needed?

Preparing for winter requires investment in people, technology, vehicles, salt, and depots. As part of their preparation for delivering winter service, local authorities will need to provide resources either directly or through their service contracts for:

- an adequate budget, with flexibility to respond to conditions;
- service management and decision-making arrangements;
- training and exercises to test plans;
- technology, including communications capability, ice detection and vehicle tracking;
- depot infrastructure and storage;
- people;
- vehicles;
- salt, and other de-icing materials.



Further Advice

General and technical advice is contained in the UK Roads Liaison Group's Code of Practice Well-maintained Highways, see www.ukroadsliaisongroup.org. The Code of Practice has been updated following the Secretary of State's full acceptance of the recommendations of the UKRLG report *Lessons from the Severe Weather February 2009*.

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Appendix D: Secretary of State announcements to Parliament of 8 and 12 January 2010

Statement by: Rt Hon Lord Andrew Adonis, Secretary of State for Transport

Date delivered: 8 January 2010

Statement type: Oral

The overall position is that we are into the fourth day of the second bout of extremely cold weather and forecasts suggest it is likely that there will be a further week or more at sub zero temperatures.

The train companies and Highways Agency this afternoon briefed the media on the current situation.

The distribution of salt is of particular concern given that there are only three principal suppliers in the UK. We are working with them to maximise production. The Highways Agency will take delivery of substantial additional imports of salt starting later this month, which is the earliest they can arrive.

In addition the Government has taken the lead, through the Salt Cell, in ensuring that the delivery of salt goes to where it is needed most. The Salt Cell met this morning to agree the latest distribution. Mutual aid arrangements have also been in operation between local authorities and with the Highways Agency. These will need to continue.

Highways Authorities across the country have a shared interest in making salt supplies go as far as possible. Given the prolonged intensity of the severe weather, I have today directed the HA to manage their use of salt in order to keep its network open while reducing their daily use by 25%. This for example, means no longer spreading salt on the hard shoulder.

Similarly I have also asked the LGA, on behalf of local authorities across England, and the Mayor of London, to reduce their daily use by 25%. They have agreed to do so, recognising the importance of mutual support to keep Britain moving safely. To achieve this they will need to consider what prioritisation is appropriate for their network, reflecting local needs, including strategic routes and key public services.

COBR met this afternoon under the Prime Minister and Ministers remain in constant contact with local authority leaders and those responsible for key public services.

I pay tribute to local authority leaders for acting in this responsible way for the common good, and I would like to thank the hundreds of thousands of people who are working flat out to keep our transport networks operating in these difficult circumstances.

Statement by: Rt Hon Lord Andrew Adonis, Secretary of State for Transport

Date delivered: 12 January 2010

Statement type: Oral

The current cold weather is the most prolonged spell of freezing conditions across the UK for 29 years. The Met Office do not forecast any significant improvement in the current conditions for some time.

Central and local government have already taken prudent measures to conserve salt supplies in order to keep Britain moving.

However, further measures are required to keep networks open throughout the forecast period of cold weather ahead.

I am therefore putting in place arrangements to give a firm assurance that the essential national and local road network will receive necessary salt supplies to remain open during the freezing weather which is forecast for the next 10 days, and for the remainder of the winter. It is essential that a sustainable salt allocation regime, to keep these essential roads open, is put in place now. If we did not act decisively reserves would run down fast, and essential roads would be at risk of closure if the freeze continues.

I have discussed with local authority leaders and the Mayor of London the need for further salt conservation in order to ensure continuity of salt supply to keep open the essential road network. They understand the need for further action.

I have therefore directed the Highways Agency to conserve the maximum possible salt usage each day, consistent with maintaining the continued safe operation of the national motorway and trunk road network. Following a fundamental review of salt spreading, the Agency advise me that they can conserve significantly more salt usage each day, in addition to the 25 per cent agreed on Friday. We will strive to keep the strategic road network open as we have done throughout the snow and freezing conditions since late December.

In order to avoid individual councils running out and to retain the ability to help any who get into difficulty, Local Authorities will also need to conserve significantly more than the 25 per cent agreed last week, by similarly reviewing their salt spreading strategy and prioritising local networks as necessary. I know that this will be challenging for some. But by so doing, the Salt Cell distribution arrangements will enable new salt supplies to sustain all Local Authorities through the period ahead, and the Highways Agency will also be in a position to provide assistance on a sustainable basis. As and when the weather begins to improve we will give priority to relieving the pressure on Local Authorities.

In aggregate, these measures will need to conserve between 40 and 50 per cent compared to the levels of usage before Friday's announcement. On this basis we expect salt supplies to be sustainable throughout the period of snow and extreme cold weather. Salt will continue to be targeted to the areas where there is most need.

We continue to take all possible steps to maximise the production of salt from our principal suppliers for the benefit of both Local Authorities and the Highways Agency. Significant additional imports, ordered by the Highways Agency, are expected to commence later this month in order to increase overall reserves. These measures will allow us to alleviate specific shortages on parts of the network or in particular regions or authorities.

It is essential that we all work together to keep Britain moving through the worst period of cold weather we have experienced for 29 years. This is a time for subsuming individual interest in our overall national interest in keeping open the essential road network in all parts of the country.

Appendix E: Call for Evidence



26th April 2010

Dear Colleague,

INDEPENDENT WINTER RESILIENCE REVIEW: CALL FOR EVIDENCE

The Secretary of State for Transport has asked me to carry out an independent Review of the transport industry's response to severe winter weather. I am delighted that Brian Smith and Chris Green have agreed to join me to create a Panel to conduct the Review.

Brian has just retired as Executive Director, Environment Services of Cambridgeshire County Council, and was recently President of what is now ADEPT (Association of Directors of Environment, Economy, Planning and Transport). Chris is a career railwayman whose last executive appointment was as CEO of Virgin Trains; he is co-author of the recent *Better Rail Stations* Independent Review. I am currently chairman of the RAC Foundation, a former director of consultants Colin Buchanan and former chairman of the Strategic Rail Authority.

The aim of the Review will be to identify practical measures to improve the response of the transport sector – road, rail and air – to severe winter weather. The study will build upon the recommendations of the UK Roads Liaison Group "Lessons from the Severe Weather February 2009"; it will take account of the experience and lessons learned by public authorities, network operators and transport providers, and those involved in supporting and supplying them. We know that many of these are conducting their own reviews. The study will also consider the views of transport users and stakeholders, the effectiveness of the communications about weather and travel conditions, and the contribution of weather forecasters.

The Review will be reporting in two phases:

- a) by July 2010, identifying and reporting on measures that can be implemented relatively quickly in preparation for winter 2010/11; and
- b) reporting in the autumn 2010 with a longer term view of our preparedness for severe winter weather in future years and measures that can improve future resilience.

The Review's conclusions will be in respect of the issues as they apply to England. But it will take account of the wider UK context, and I intend to consult Scottish and Welsh interests and hope that the findings of the Review will be of use in Scotland and Wales.

The full terms of reference for the Review are at:

<http://www.dft.gov.uk/pgr/regional/reviewofwinter0910/>

Submitting your views

Chris, Brian and I wish to consider a broad suite of evidence on the transport industry's ability to withstand harsh winter conditions and to meet as many interest groups as the timetable for the Review allows. I would also welcome written submissions from interested organisations and members of the public in response to what I see as the Review's key questions. These questions are attached, but broadly I am seeking views in particular from:

- local highway authorities;
- other network operators, the salt supply chain and others who support and supply them;
- transport operators – passenger transport companies and freight and logistics companies in road, rail and airline operations;
- transport users – individuals, businesses, communities and major customers, such as hospitals, schools, business parks and others who were adversely impacted by the severe winter weather

We will appreciate receiving views of organisations presented through their trade associations or the equivalent, and submissions from individual organisations will also be welcome. Should you wish to submit your views on any or all of the questions, please do so by **25th May 2010**. You can submit your views:

- by e-mail to: winterresiliencereview@dft.gsi.gov.uk
- by post to: Winter Resilience Review Team, Zone 3/21, Great Minster House, 76 Marsham Street, London SW1P 4DR (and marked for the attention of Lloyd Miles).

We will be conducting Hearings in London between 1st June and 11th June, and we may ask you to attend to discuss your submission.

Unless you ask otherwise, it will be assumed that any response you make is capable of being made public. A standard confidentiality statement in an email message will not be regarded as a request for non-disclosure. We will not edit personal information (such as telephone numbers or email addresses) from responses, therefore only information that you wish to be published should be submitted.

To help us take account of all the responses received, please will you:

- keep any response to 3,000 words or less;
- number your paragraphs to match the numbers of the questions to which you are responding.

If you would like to make more general comments related to the terms of reference, please do so by way of a short summary.

Yours faithfully,



David Quarmby CBE

On behalf of the Panel

Winter Resilience Review

An independent review of the resilience of England's transport systems

Key Questions

We are seeking evidence from people and a wide range of organisations, covering highways and other modes of transport. Please respond to those questions which are relevant to you.

Phase One – Winter Resilience and salt stock management

The UK Roads Liaison Group published its review *Lessons from the Severe Weather February 2009* in July 2009, and reflected many of its recommendations in an updated guidance section on Winter Service (published December 2009) in *Well Maintained Highways*, the UKRLG Code of Practice for Highway Maintenance Management. Other guidance also exists for highway authorities on planning for and managing winter conditions.

Some of these questions are framed for individual organisations and authorities; we will be pleased to hear from trade associations and equivalent where there is a collective sector or industry view.

1. *UKRLG Review and its recommendations*

- 1.1 In the light of your experience of the 2009–2010 winter, do you think the Review and its recommendations appropriately and sufficiently address the winter resilience issues?
- 1.2 To what extent has your authority or organisation acted upon – as appropriate – the Recommendations of the Review and the updated guidance on Winter Service in *Well Maintained Highways*?

2. *The approach to winter resilience – highways*

- 2.1 What has been the experience of your authority, organisation of the winter 2009–10, and what are the lessons you have learned? If you have conducted a formal review we would be pleased to see a copy.
- 2.2 What has been your own practice about salt stocks, and your experience of the salt supply chain? What views do you have about the operation of the Salt Cell?
- 2.3 What action is now under way as a result of the challenges you faced? How well prepared are you for future winters of similar severity?
- 2.4 What has been your experience as a passenger or freight transport operator, and what lessons have been learned?
- 2.5 What action would you like to see taken by others – whether in relation to salt supply and use or to other matters?
- 2.6 Should further action or powers be taken by central government or its agencies to assure salt supplies or winter resilience generally?

3. *Weather forecasting and communications – highways*

- 3.1 How accurate have you found the available short, medium and long term weather forecasting in predicting extreme winter weather, and how have you acted on the forecasts?
- 3.2 How could the system be improved?

Phase Two – maintaining winter transport service (all modes) and longer term issues

4. *Resilience of rail services in severe winter weather*

- 4.1 How was the service provided to customers modified and how well was it communicated in response to winter conditions, and what were the consequences of this?
- 4.2 What lessons were learned by Network Rail and the Train Operating Companies and Freight Operating Companies from the 2008–09 severe winter – to maintain service, to protect and sustain the infrastructure and to communicate with customers?
- 4.3 What was the experience of the 2009–10 winter? To what extent were the lessons learned from 2008–09 applied, and what has been learned since from that? Where formal reviews have been carried out we would be pleased to see them.
- 4.4 How well equipped and prepared is the rail industry to handle future winters of similar severity?
- 4.5 What action would you like to see taken by others to support the resilience of your organisation or the rail industry?

5. *Resilience of airports and air services in severe winter weather*

- 5.1 How was the service provided to customers modified and how well was it communicated in response to winter conditions, and what were the consequences of this?
- 5.2 What lessons were learned by airport operators, passenger and freight carriers and support organisations from the experience of the 2008–09 severe winter?
- 5.3 What was the experience of the 2009–10 winter? To what extent were the lessons learned from 2008–09 applied, and what has been learned since from that? Where formal reviews have been carried out we would be pleased to see them.
- 5.4 How well equipped and prepared is the aviation industry to handle future winters of similar severity?
- 5.5 What action would you like to see taken by others to support the resilience of your organisation or the aviation industry?

6. *The consequences and economic impacts of severe winter weather*

- 6.1 How does severe winter weather impact on critical aspects of people's daily travel needs, and on the mobility of goods and services? What lessons have been learned in business, public service and other organisations about forecasting and mitigating the transport effects of severe winter weather? How effective have winter resilience measures been, and what other measures should be taken?

- 6.2 What major areas of economic cost and benefit arise from the transport and travel aspects of:
- a) being prepared for, and dealing with, severe winter weather?
 - b) failure to deal adequately with such weather?
- 6.3 During the recent winter weather large parts of the country experienced icy footpaths and icy conditions on minor roads for longer periods than usual. What were the consequences of this, in terms of traffic accidents, higher-than-expected injuries due to slips and trips? Should the public and local communities be able to take a more pro-active role (eg in clearing public and private paths and minor roads) and what issues are raised by this?
- 6.4 What can we learn from the experience of and approach taken by other nations who have similar weather to the UK, in terms of planning and managing winter resilience?

7. *Communications and public expectations*

- 7.1 What can the public reasonably expect in terms of the winter resilience of roads and transport services, and communication about this in severe weather?
- 7.2 Are there ways of enabling the public to be better prepared for future severe winters?

8. *Long term weather trends*

- 8.1 Recognising the uncertainties and probabilistic nature of weather forecasting, what further information or assessment is available about the likely trends in UK winters – their nature, duration and severity – over the next 10–15 years. And how might these most effectively be communicated to those who may need to act on them?

Appendix F: Distribution List and responses to the Call for Evidence

Responses to the call for evidence are marked with a ✓

4NW ✓
Abellio
ADEPT ✓
Advantage (West Midlands RDA)
Air Transport Users Council
Airport Operators Association
Arco Ltd ✓
Arriva plc
Arriva Trains Wales
Asphalt Industry Alliance + others ✓
Associated British Ports ✓
Association for Public Service Excellence ✓
Association of British Insurers ✓
Association of Chief Police Officers
Association of International Couriers and Express Services
Association of Train Operating Companies
Association of Transport Co-ordinating Officers
Automobile Association ✓
Automotive Fellowship International
BAA ✓
Birmingham City Council ✓
BMI
Board of Airline Representatives (BAR-UK)
BRAKE
Brighton & Hove City Council ✓
British Air Transport Association
British Airways
British Chambers of Commerce
British Cycling
British Insurance Brokers' Association
British Medical Association
British Motorcyclists Federation
British Parking Association
British Ports Association
British Retail Consortium
British Salt Ltd
British School of Motoring Ltd (BSM)
British School of Shopping Centres
British Transport Police
British Vehicle Rental and Leasing Association

Broste
Buckinghamshire County Council ✓
c2c Rail Ltd
Cabinet Office (Civil Contingencies Secretariat) ✓
Calderdale Metropolitan Borough Council ✓
Canterbury City Council ✓
Campaign for Better Transport
Central Motorway Police Group
Centro ITA/PTE
Commission for Integrated Transport
Charlton, Colin ✓
Chartered Institution of Highways and Transportation ✓
Chartered Institute of Logistics and Transport
Cheshire Constabulary
Child Accident Prevention Trust
Chiltern Railways
Civil Aviation Authority ✓
Cleveland Potash Ltd
Confederation for Passenger Transport
Confederation of British Industry
Confederation of Passenger Transport UK
Convention of Scottish Local Authorities
Communities & Local Government ✓
Confederation of Passenger Transport ✓
Core Cities
CPRE
Cross Country Trains ✓
CTC
DB Schenker Rail (UK) Ltd ✓
Department for Business, Innovation and Skills
Department for Education ✓
Department for Energy and Climate Change
Department for Environment, Food and Rural Affairs
Department for Health
Department for Transport (Aviation) ✓
Department for Transport (Ports)
Department for Transport (Rail)
Department for Transport (Roads) ✓
Department for Transport (Transec)
Despatch Association
Devon County Council ✓
Directly Operated Railways
Dome UK ✓
Doncaster Metropolitan Borough Council ✓
Doverport ✓
Driving Instructors Association
Driving Standards Agency
East Anglian Weather Consortium (EAWC) ✓
East Coast
East Midlands Development Agency

East Midlands Trains
East of England Development Agency
Easyjet
East Sussex County Council ✓
Ecothaw
English Regions Network
Equality and Human Rights Commission
Essex County Council (part of EAWC) ✓
EURO NCAP
Eurostar International Ltd and Eurostar Group ✓
Exactrak Ltd ✓
Federation of Small Businesses ✓
Fernwood Ltd ✓
FIA Foundation
Fieldhouse, Martin ✓
First Capital Connect
First GBRf
First Great Western
First ScotRail Railways Ltd
First TransPennine Express
FirstGroup plc
Flintshire County Council ✓
Freight Transport Association ✓
Freightliner
Gatwick Airport
Go-Ahead Group plc ✓
Go-Ahead North East ✓
Government Office for the East ✓
Government Office for the East Midlands ✓
Government Office for the North East ✓
Government Office for the North West ✓
Government Office for the South East ✓
Government Office for the South West ✓
Government Office for Yorkshire and the Humber ✓
Govia/Keolis UK Ltd
Greater London Authority
Greater Manchester ITA/PTE
Gregory Distribution ✓
Halcrow ✓
Halton Borough Council ✓
Hampshire County Council ✓
Health and Safety Executive
Heatherwood and Wexham Park Hospitals NHS Foundation Trust ✓
Heathrow Airport ✓
Heathrow Express
Herefordshire Council (part of EAWC) ✓
Highways Agency ✓
Highways Term Maintenance Association ✓
Independent Transport Commission
Innovative Global Products Ltd ✓

Institute of Advanced Motorists
Institute of Civil Engineers
Institute of Directors
Institute of Engineering and Technology
Institute of Highway Engineers ✓
Irish Salt Mining & Exploration Company Ltd
Island Line trains
ITS UK (Intelligent Transport Systems)
J C Peacock & Company Ltd ✓
Kent County Council ✓
Kirklees Council ✓
Leeds City Council ✓
Leicestershire County Council ✓
Lincolnshire County Council ✓
Living Streets ✓
Local Government Association ✓
Local Government Technical Advisers Group ✓
London Assembly Transport Committee ✓
London Councils (joint response with TfL) ✓
London Development Agency
London Gatwick Airport ✓
London Midland ✓
London Overground Rail Operations Ltd
London Travelwatch ✓
London Underground
Luton Airport
Luton Borough Council (part of EAWC) ✓
Magistrate Association ✓
Manchester Airports Group ✓
Mayor of London
Medway Council ✓
Merseyrail
Merseytravel ITA/PTE
Met Office ✓
MeteoGroup ✓
Metro (West Yorkshire PTE)
Metrolink
Milton Keynes Council ✓
Mobilise Organisation
Motor Schools Association (MSA)
Motorcycle Industry Association
Motorcycle Retailers Association
Motorists' Forum
Mouchel/HTMA
National Assembly for Wales
National Association of Local Government
National Express (Bus) ✓
National Express East Anglia
National Express Group
National Farmers Union ✓

National Motorcycling Council
National Task Force (Rail) ✓
National Traffic Managers Forum ✓
National Winter Service Research Group
Nelsons Independent Bus Service ✓
Network Rail
Nexus PTE
NHS confederation
Norfolk County Council (part of EAWC) ✓
North Lincolnshire County Council ✓
North West Development Agency
Nottinghamshire County Council ✓
Office of Rail Regulation ✓
One NorthEast (Development Agency)
Oxford NHS Trust ✓
Parliamentary Advisory Council for Transport Safety
Passenger Focus
Passenger Transport Executive Group ✓
Plymouth Citybus ✓
Police Federation of England and Wales
Police Service of Northern Ireland
RAC ✓
RAC Foundation ✓
Rail Freight Group
Rail Industry Association
Rail Safety Standards Board ✓
Reading Borough Council ✓
Retail Motor Industry Federation
Road Haulage Association ✓
Road Peace
Road Policing Unit Headquarters
Roads Service Northern Ireland ✓
Road Users' Alliance
Roads Service Northern Ireland
RoadSafe
Rotherham Metropolitan Borough Council ✓
Royal Society for the Prevention of Accidents
Safecote Ltd ✓
Safety Grit Ltd ✓
Salinity UK Ltd ✓
Salt Union Ltd ✓
Scotland Office
Scotrail ✓
Scottish Executive (Aviation Policy)
Serco
Sheffield City Council ✓
Shropshire Council ✓
Society of Chief Officers of Transportation in Scotland ✓
Society of Motor Manufacturers and Traders
Scottish Executive

South Bucks District Council ✓
South East England Development Agency
SouthEastern Trains ✓
South West of England RDA
South West Trains (Stagecoach) ✓
South Yorkshire ITA/PTE
Southern Railway (& Gatwick Express) ✓
Staffordshire County Council ✓
Stagecoach Group plc
Stagecoach Megabus
Strathclyde ITA
Superintendents Association
Supertram
Surrey County Council ✓
Sustrans
Swindon Borough Council ✓
Telford & Wrekin Primary Care Trust ✓
Thatcham (Motor car crash repair research)
The British Horse Society
The Institute of Advanced Motorists
Transport for London (joint response with London Councils) ✓
Transport Scotland ✓
Transport Times
TUC
Tyne & Wear ITA/PTE
UK Footway Group (UK Roads Board)
UK Major Ports Group
Vaisala Ltd
Virgin Trains ✓
Wakefield Council ✓
Wales Office
Walsall Council ✓
Warwickshire County Council ✓
Weatherquest
Welsh Assembly Government ✓
Welsh Local Government Association ✓
West Sussex County Council ✓
West Yorkshire ITA
Which
Wiltshire Council ✓
Wiltshire Police
Worcestershire Primary Care Trust ✓
Yorkshire Forward (RDA)

Appendix G: Attendees at Review Hearings and meetings

ADEPT

Association of Chief Police Officers

Automobile Association

Cabinet Office (Civil Contingencies Secretariat)

Chartered Institution of Highways & Transportation

Communities and Local Government

Cleveland Potash Ltd

Confederation for Passenger Transport

Department for Transport (Regional and Local Transport)

Federation of Small Businesses

Freight Transport Association

Highways Agency

Highways Term Maintenance Association

Institute of Advanced Motorists

Irish Salt Mining and Exploration Company Ltd

Local Government Association

London Councils

London TravelWatch

Met Office

MeteoGroup

National Traffic Managers Forum

National Winter Service Research Group

Passenger Focus

RAC

RAC Foundation

Regional Resilience Teams from the Government Offices for the East, South East and North East

Road Haulage Association

Salt Union Ltd

Transport for London

Transport Scotland

Warwickshire County Council

Welsh Assembly Government

Welsh Local Government Association

Appendix H: Local Government Association Report, *Weathering the Storm II*, July 2010 (Recommendations)

Recommendations taken from the Executive Summary

1. Councils, local transport operators, service providers and businesses should work together to review winter resilience plans to ensure they reflect priority needs locally. This should include coordination of policies and plans across administrative borders to ensure consistency in the way that road networks are treated and services are delivered.
2. Councils should provide clear information to the public and local partners on the levels of service they can expect in the event of severe winter weather both in advance of the winter and during periods of exceptionally cold weather.
3. Service providers and businesses should also review their contingency plans to ensure they can respond effectively in the event of reduced road networks and suspension of services.
4. The government should issue clear and unequivocal advice to individuals and organisations that they will not be at risk of litigation should they clear footways themselves. If, as we saw last winter, government lawyers feel unable to advise Ministers to give such guidance, the government should bring forward legislation to clarify the position.
5. The government should recognise that salt supply is a strategic resilience issue; make it clear to the firms involved that that is the government's view; and liaise with suppliers during the spring and summer to ensure that the suppliers have business continuity plans in place for the prospect of a winter of high demand.
6. Salt suppliers should improve communications with their customer base to ensure that even in times of high demand or when Salt Cell is in operation, they can provide accurate information about the size and timing of deliveries to councils. This is essential in assisting councils in making mutual aid arrangements and improving the possibility of joining up orders and deliveries to groups of councils in an area.
7. The government should secure an agreed way of working with the salt suppliers in emergency situations which clearly defines how they will use the information provided by Salt Cell and how they will communicate with customer. Government should reserve the right to intervene and provide logistical and communications support to the suppliers if they fail to keep to these commitments; and should hold a contingency plan for how it will do so.

8. Before next winter, DfT should review the Salt Cell process and publish a clear terms of reference, framework for operation and trigger conditions in case Salt Cell process should be required in future.
9. Groups of councils, supported by the government as appropriate should 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. The geographical coverage and size of these reserves should be decided by the councils within the constituent area and arrangements for its use made locally.
10. Where they have not already done so, councils should let DfT know of their salt re-stocking requirements as soon as possible to ensure we enter next winter as well prepared as possible.

Appendix I: Westminster City Council Press Release, 'Call for Common Sense', 11th January 2010

LONDON ECONOMY MUST NOT BE JEOPARDISED BY SALT RATIONING

Monday, 11th January 2010

Westminster Council has today warned that London's economy faces being frozen out unless national salt emergency supplies to London are increased.

The warning comes after a national salt rationing system was imposed by the Government restricting supplies to individual councils. The activation of the emergency national system of salt allocation means that normal gritting will not be possible due to dwindling stocks of salt. In Westminster that means gritters will only be able to spread around a quarter of the normal levels of salt they use, leaving all roads which are not major routes or near key public services untreated.

However, the council has insisted it will still aim to grit pavements in key business and tourist areas to ensure the combined £6billion+ retail and theatre entertainment industries are not jeopardised and the 1.1 million daily visitors into the area are not deterred. And it has called on Londoners to pitch in to help clear snow and ice outside their properties.

Cllr Colin Barrow, the leader of Westminster City Council, said: "The West End is the economic powerhouse of London and more than 300,000 jobs are dependent on it. Given the huge number of tourists and visitors who are more vital than ever to our economy it is essential central London does not grind to a standstill. That means as much attention needs to be paid to pavements in key business areas as well as the road network. Businesses have had a hard enough time as it is in the recession so their recovery must not be put in further jeopardy through the national rationing of salt stocks.

"Despite the restrictions on supplies we will aim to carry on gritting pavements in major business and visitor areas of central London as our stocks allow, but we do urge the Government to take into account central London's unique and vitally important position when allocating grit. It is essential that Westminster and the heart of our capital city is able to function regardless of the weather."

While the council recognises that the national emergency means that the sharing of supplies is inevitable, it warns that a downgraded service in the heart of London will hit the perception of the capital for tourists and business visitors alike, and also called on local people and businesses to pitch in to help vulnerable people and clear potentially dangerous paths.

Cllr Barrow added: "We always aim to grit all our roads and pavements, but we do need the supplies of salt to enable this and currently our hands are tied. I therefore call on everyone to pull together with the council and other agencies to help people who are vulnerable in the cold weather. This includes checking in on an elderly or disabled neighbour and if appropriate, breaking up any compacted ice and snow which may make an area hazardous. This is simple common sense advice and we have to try and recreate the community spirit which has seen our country through much more challenging situations."

Westminster City Council is encouraging Londoners to clear ice and snow from the footways outside their homes and businesses if they are not already cleared, and in a bid to counteract scare stories over homeowners being left open to legal action, has also posted guidance on the best way to do this.

This is especially important with current dwindling salt levels meaning that there is not enough salt available to continue treating all roads and footways and the current problems could get worse over the next week.

Clearing ice and snow

Tips for clearing ice and snow

1. **DO NOT USE HOT WATER.** *This will melt the snow, but will replace it with black ice, increasing the risk of injury.*
2. *If shovelling snow:*
 - *Use a shovel with the widest blade available*
 - *Make a line down the middle of your path first, so you have a safe surface to walk on. Then you can simply shovel the snow from the centre to the sides.*
3. *Spread some ordinary table salt on the area you have cleared to prevent any ice forming. Ordinary salt will work and can be purchased cheaply from any local shop, but avoid spreading on plants or grass.*
4. *Use the sun to your advantage. Simply removing the top layer of snow will allow the sun to melt any ice beneath, however you will need to cover any ice with salt to stop refreezing overnight.*

Notes to editors

We have taken legal advice before putting this proposal forward, Westminster City Council's director of legal services, Peter Large, says:

"There is plenty of case law about the responsibility of the highway authority with respect to snow, ice and gritting, but we can find none which deals with ordinary members of the public.

"The position of an ordinary person who clears snow from outside their own or someone else's property is that they would only be liable for an accident if (a) their efforts actually made the pavement less safe than it was with the snow and ice undisturbed (b) they should have foreseen the likelihood of someone being injured as a result (c) someone actually gets injured (d) the injury is the result of their efforts and (e) the person injured decides to sue them.

“In most cases people will be improving the situation we would have thought, in which case no liability could arise. While there is a theoretical possibility of liability arising if a person cleared an area by moving a lot of snow somewhere else, which caused an accident, or if they cleared snow which wasn’t slippery, and left a wet area which iced up and became slippery, I don’t think that means we should be discouraging it.”

The council has posted tips on its website on how best to go about that, as well as regularly updated information on school closures and lists of parks and other open spaces affected, as well as details on recycling and waste collections which may be disrupted as a result of the weather at www.westminster.gov.uk.

ENDS

Appendix J: Acronyms

APSE	Association for Public Service Excellence
CCS	Civil Contingency Secretariat (part of Cabinet Office)
CLG	Communities and Local Government
CP	Cleveland Potash Limited
DBFO	Design Build Finance Operate
DfT	Department for Transport
DfE	Department for Education
EAWC	East Anglian Weather Consortium
FSB	Federation of Small Businesses
HA	Highways Agency
ISM	Irish Salt Mining & Exploration Company Limited
ITA	Integrated Transport Authority
LA	Local authority
LAP	Local Authority Panel (London)
LGA	Local Government Association
LHA	Local highway authority
MAC	Managing Agent Contract/Contractors (Highways Agency)
NWSRG	National Winter Service Research Group (previously the National Salt Spreading Research Group (NSSRG))
PCT	Primary Care Trust
PFI	Private Finance Initiative
PTE	Passenger Transport Executive
PTEG	Passenger Transport Executive Group
PWS	Public Weather Service
RDA	Regional Development Agency
SU	Salt Union Limited
TAG	Technical Advisers Group (Local Government)
TfL	Transport for London
TRL	Transport Research Laboratory
UKRLG	United Kingdom Roads Liaison Group
RRTs	Regional Resilience Teams (part of the Government Offices)