

# Winter Service Guidance for Local Authority Practitioners

## 1 INTRODUCTION

### 1.1 Winter Service

1.1.1 Winter Service deals with regular, frequent and reasonably predictable occurrences like low temperatures, ice and snow, as well as with exceptional events. Responsibility for the delivery of Winter Service rests with highway authorities, including local authorities and trunk road agencies. Winter Service is a year-round process linked with an authority's wider resilience planning strategy. Winter Service can, and should, be subject to the same regime of plan, deliver, review and improve as other aspects of the highway maintenance regime.

### 1.2 Winter Guidance

1.2.1 Comprehensive guidance to highway authorities on the planning and delivery of the Winter Service is included in Section 13 and Appendix H of the Complementary Guidance to *Well-maintained Highways*.

1.2.2 This supplementary guidance note is aimed at local authority Winter Service practitioners and provides advice on actions that they could effectively take before and during the winter season. The aim of this guidance is therefore to assist in the planning, preparation and effective use of salt stocks and other resources.

### 1.3 Timescales

1.3.1 Significant changes to service provision which would involve substantial investment are not practicable early in the winter season. Hence, this guidance focuses upon actions and preparations which are appropriate to implement during the 2010/11 winter. However, it also guides practitioners to other documents which provide information more relevant to the medium and longer term.

1.3.2 Many authorities will have already applied some or all of the advice in this guidance note. It is evident from the response to the last two winters, however, that there are those who would benefit from making improvements to their Winter Service. Many authorities who have already implemented efficiency measures will be ideally placed to assist other authorities in putting such measures in place. By working collaboratively it may be quicker to achieve step changes in service provision rather than trialling and evaluating changes in isolation.

1.3.3 Many authorities are involved in good practice groups, user groups or similar. There is a wealth of information and advice available by contacting the Association of Directors of Environment, Economy, Planning and Transport (ADEPT), Technical Advisers Group (TAG) or similar organisations.

## 1.4 Scope of this Guidance

1.4.1 This guidance aims to assist Winter Service practitioners in devising and implementing their Winter Service Plans in 2010/11. It should be read in conjunction with Section 13 and Appendix H of the Complementary Guidance to *Well-maintained Highways*. This guidance note comprises the following sections:

- Section 1 includes an introduction, explaining the scope and aim of this note;
- Section 2 covers pre and early season activities;
- Section 3 covers the use of de-icing materials;
- Section 4 covers the issue of contingency planning;
- Section 5 covers winter training and exercising; and
- Section 6 summarises key points of this guidance; and
- Section 7 gives a list of relevant reference documents.

1.4.2 Key points are summarised in Section 6, to assist authorities in implementing this guidance note.

1.4.3 In normal winter weather, authorities are responsible for the delivery of the Winter Service in accordance with their Winter Service policies and plans. This guidance note gives advice on how authorities can better prepare to manage their salt stocks and other resources during normal and severe winter conditions.

1.4.4 Where conditions require, authorities should activate their contingency plan, as described in their Winter Service Plan. This guidance note includes advice on how this plan should be triggered. Success of the contingency plan is also dependent on advance planning and coordination.

## 1.5 Delivery of a More Resilient Winter Service

1.5.1 Better planning will result in a more resilient Winter Service and reduce the risk in the delivery of the service during normal and severe winter conditions. It also has the potential to deliver the service in a more efficient way. In doing so, authorities will improve the overall resilience of their Winter Service operation. This includes not only the management of salt stocks, but other resources such as fuel, plant and labour. Ultimately, authorities should consider ways of reducing overall salt consumption while maintaining agreed levels of service on their network.

## 2 PRE AND EARLY SEASON PREPARATION

### 2.1 Planning and Management

2.1.1 Planning and preparation is fundamental to delivering a successful Winter Service. Careful planning in advance of the winter season will greatly assist in

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adequate resources and contingency arrangements being put in place by authorities to improve their overall resilience.

### ***Policy and Plans***

- 2.1.2 *Well-maintained Highways* contains guidance including good practice for the compilation of Winter Service policies and plans. It is important that these policies and plans are designed and drafted to be used by staff at all levels and that they are readily available to them. Authorities should utilise the time outside the winter season to put these policies and plans in place.
- 2.1.3 In preparing the Winter Service Plan, priorities for carriageway, footway and cycleway treatment should be considered to ensure that the most appropriate parts of the network are treated. For carriageways, priorities should be based on, amongst other things, the strategic importance of the route and traffic volumes. For footways, priorities should reflect hierarchy, strategic and economic importance and risk.
- 2.1.4 Once the policy and plan documents are complete, it is important that those involved in delivering the Winter Service are aware of the current approach. Ideally, a briefing should take place at the start or early in the season to disseminate this information to staff involved in the delivery of the Winter Service. The briefing should also remind staff of the critical role they play in mitigating the impact of winter weather on the road network.
- 2.1.5 It is good practice to monitor compliance with the Winter Service Plan throughout the season. Simple audits on decisions made and short debriefs of snow events will achieve this. These audits should be regular and clearly documented to ensure maximum benefit can be achieved.
- 2.1.6 *Well-maintained Highways* recommends that at the end of each season an annual review is carried out, covering service delivery arrangements, including key stakeholders and taking account of changing circumstances.
- 2.1.7 Following any significant winter weather event, a formal review involving representatives from all levels of the management and delivery of Winter Service should be carried out. The review should specifically identify the successful elements of the service as well as potential improvements and actions to be taken. Where applicable, other stakeholders should be involved. The review process should be documented to ensure all learning is captured, considered and actioned. This should feed into the annual review.

### ***Service Resilience***

- 2.1.8 It is widely accepted that resilience requires good planning. Winter service should be regarded as part of the authority's wider resilience planning. The same disciplines, systems and processes apply, bringing a degree of rigour and challenge to the preparation of plans for winter weather.
- 2.1.9 Resources such as salt, fuel, spreaders, depots and labour are finite. Plans therefore need to demonstrate how the service will be delivered if one or more of these resources is in short supply.

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- 2.1.10 When weather is sufficiently severe, a contingency plan should be activated. The success of this plan is dependent on advance planning and co-ordination, including treatment routes, resource needs, mutual aid and communications.
- 2.1.11 Section 4 provides further guidance on the development of contingency planning.

### **2.2 Collaboration**

- 2.2.1 Members of the public may travel across boundaries of several different authorities. It is therefore important that treatment regimes align across boundaries to provide a seamless service. Simple measures such as comparing treatment routes and decision making criteria between authorities will assist with this, especially within urban areas.
- 2.2.2 Liaison between highway authorities should be routine throughout the winter season. Communication of treatment decisions provides useful information that may inform future decision making, promotes seamless service and can potentially generate efficiency savings.
- 2.2.3 Collaboration with other authorities can be as simple as arranging an informal meeting to discuss the respective Winter Service policies and plans on an annual basis. Other topics could include resource availability, mutual aid or joint training and exercising.
- 2.2.4 It is good practice to liaise with the relevant trunk road and motorway operator (where appropriate) to confirm current route planning. This will minimise duplication of treatments where the two networks cross and avoid sections being missed at complex intersections.
- 2.2.5 There are many examples of good practice where authorities have worked together in preparation for the winter season. In London, for example, all highway authorities and other stakeholders have collaborated to produce a contingency plan, agree a resilience network, and put in place a strategic stockpile of salt.

### **2.3 Resources**

- 2.3.1 Winter Service requires numerous staff, a significant amount of plant and large volumes of consumables such as salt for de-icing and fuel. It is important that supplies and suppliers are managed to ensure these resources are available when required.

#### ***People***

- 2.3.2 Sufficient, adequately trained and experienced staff are required for the delivery of an effective Winter Service. This includes winter managers, decision makers, supervisors, spreader drivers and other equipment operators.
- 2.3.3 Minimum numbers of staff should be established for each of the roles identified for delivery of the service. *Well-maintained Highways* advises that all resources should be subject to a minimum resilience standard. When establishing shift patterns for all staff it is important to consider building in resilience for staff absence in addition to the requirements of the working time directive and drivers' hours regulations.

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- 2.3.4 The drivers' hours regulations are in place to contribute to road safety. Pushing drivers to the limit, in difficult driving conditions, should be avoided wherever possible. VOSA has produced guidance on drivers' hours which can be found at the below weblink:

<http://www.transportoffice.gov.uk/crt/repository/Rules on Drivers Hours and Tachographs - Goods vehicles in the UK and Europe.pdf>

- 2.3.5 Winter decision makers, supervisors and managers have specific tasks to complete during both normal and severe conditions. As with spreader drivers, it is important to ensure that when combined with other daily duties, the hours worked by individuals remain acceptable.
- 2.3.6 Throughout the delivery of service it is important that all the staff involved are suitably trained to fulfil their role. Further details of role specific training requirements are provided in Section 5.

### **Vehicles**

- 2.3.7 A range of vehicles, plant and equipment is used to deliver Winter Service. It is important that this equipment is well maintained, calibrated and reliable.
- 2.3.8 Every spreader should be calibrated before each winter. However, undertaking an additional mid winter calibration is also good practice. Additional calibration should be carried out whenever required throughout the season, for example following a change of type of salt or when monitoring highlights a potential issue. The aim of calibration is to ensure that the intended spread rates are achieved. Further details of spreader calibration methods are provided in Section 3.5.

### **Salt**

- 2.3.9 *Well-maintained Highways* recommends that authorities should seek a broad approach to salt supply, for example establishing framework contracts with more than one supplier.
- 2.3.10 Salt is the resource that is most associated with Winter Service and the supply has been strained over recent years. *Well-maintained Highways* recommends salt stocks should be maintained to meet the minimum resilience standard. As a way of meeting the resilience standard, many authorities have made arrangements for access to additional salt stockpiles. Authorities should put these arrangements in place before the start of the winter season.
- 2.3.11 Considerable savings can be made in the amount of salt used to treat carriageways if the salt is maintained in good condition and spreaders are correctly calibrated.
- 2.3.12 As part of pre-season preparation, authorities should review how their salt is stored in order to identify how greater efficiency may be attained in its use. This may include developing the business case for salt barns or covering open storage facilities. Moisture content of salt is a critical factor in determining spreading rates and distribution. This and other factors such as salt degradation are discussed in greater detail in Section 3.4.

### ***Fuel***

- 2.3.13 Authorities should ensure that they have sufficient fuel to meet the resilience standard. This should be either bunkered in the depot or guaranteed from other easily accessible sources.
- 2.3.14 Fuel supply has not historically been a widespread threat to the delivery of the Winter Service. However, lessons must be learnt from the recent shortages of salt. At a local level, there have been cases of localised fuel contamination and even a simple pump failure at a depot is sufficient to put strain on the service. Meeting the resilience standard for fuel stocks locally will lessen the impact of fuel supply interruptions at a national or regional level.

## **2.4 Communications**

- 2.4.1 *Well-maintained Highways* recommends effective communication of information with the public, key public services, stakeholders and other highway authorities. However, communication within the authority is also critical. Preparation and planning of communication in advance will assist in the effective delivery of the service. Details of communication needs during a severe weather event can be found in Section 4.4.

### ***Setting Expectations***

- 2.4.2 It is important to ensure that the public, elected members and senior management are engaged in the Winter Service. The Department for Transport (DfT) has produced a leaflet titled *Are You Ready for Winter?* with important information for councillors and senior officers about preparation for winter. Public leaflets, websites and briefing notes all contribute to setting expectations with a low associated cost and time requirement.
- 2.4.3 Clearly setting out what will and will not be done as part of the delivery of Winter Service can reduce the number of complaints and questions raised by the public and stakeholders. Improved communication and understanding may therefore improve time available for the Winter Service delivery team to focus on delivery of the service.

### ***Contact Information***

- 2.4.4 Staff contact details and other stakeholders involved in the Winter Service need to be updated before the start of the winter season. A contact check is a simple and effective means of ensuring that staff can be contacted when required. The contact check also facilitates a refresh of communications with other authorities and stakeholders.

### ***Media Information***

- 2.4.5 Authorities should establish effective working arrangements with local press and broadcast media. This should enable the presentation of timely and accurate information and advice on network condition and use. Information could include travel information, network availability and risk of severe conditions such as snow and black ice. These arrangements should include in-season proactive media output to engage the public with the Winter Service.

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- 2.4.6 Whilst every severe weather event poses its own unique issues, the baseline media information required remains relatively constant. Statistics such as the number of spreaders, ploughs and salt stored are popular requests. The structure of messages to be relayed is generally similar.
- 2.4.7 Where possible authorities should use their media relations staff to prepare generic statements and press releases for rapid issue at the onset of winter conditions. These can be pre-approved for use during periods of severe conditions, when both Winter Service delivery teams and the press team will be busy. Consequently authorities may identify the need to provide media training to winter staff. This will help to ensure that the right message is put across in the correct manner at all times.

### ***Public Self Help***

- 2.4.8 Guidance to the public has been published by DfT on how they can assist their communities in clearing snow and ice without fear of litigation.
- 2.4.9 Many authorities have provided salt bins and shovels to parish councils and other stakeholders in order to help them keep local areas free of ice and snow. Ensuring suitable risk assessments and method statements are in existence will minimise the risk of accidents occurring.
- 2.4.10 Local volunteer groups may provide support to local communities and the vulnerable for clearing footways. This needs careful management to ensure the safety and welfare of all involved. This is an area that emergency planning departments are likely to have experience of, either directly or through involvement with Local Resilience Forums.

### ***Liaison with Stakeholders***

- 2.4.11 Authorities should ensure that there is appropriate consultation and communication with other highway authorities and other stakeholders. Information should be shared on a timely basis and should include:
- Winter Service Plans;
  - A non-technical summary of the Winter Service Plan;
  - Maps of treatment routes;
  - Operational decisions (on a real-time basis as appropriate), and
  - Resources and locations.

## **3 EFFECTIVE MANAGEMENT OF SALT FOR WINTER SERVICE**

### **3.1 Introduction**

- 3.1.1 Salt is a finite resource and UK suppliers are constrained by mining operations amongst other factors as to how much may be produced and supplied. Supply can therefore be outstripped by demand during severe weather, as has been shown in the winters of 08/09 and 09/10. It is therefore important to make optimum use of salt for de-icing and make every effort to store and use it

efficiently, regardless of the weather conditions, in order to minimise consumption. In addition there can be significant financial benefits to be gained adopting such an approach.

- 3.1.2 The National Winter Service Research Group (NWSRG) has been considering the effective use of de-icing materials for a number of years. This work has informed the contents of the following paragraphs.

### **3.2 Selection of Salt and Other Materials for De-icing**

- 3.2.1 All highway authorities should have placed their orders for summer restocking, and made their arrangements for in-season restocking. However, where contractual arrangements allow, it may be beneficial to consider the option of changing de-icing material to minimise consumption and improve resilience.
- 3.2.2 Domestic producers can provide both 6mm and 10mm graded rock salt to BS 3247:1991. The larger particle size requires less processing and can therefore be produced faster. Thus significantly more 10mm salt than 6mm salt can be produced in the same period of time. If more orders are placed for 10mm than 6mm then the pressure on UK production has the potential to be lessened. However, smaller particles go into solution much more rapidly than larger particles; particularly in situations of low humidity. A 6mm particle size is suggested for precautionary salting, giving a faster reaction time and better opportunities for salt rate reduction, whereas 10mm is more effective for ice and hard-packed snow.
- 3.2.3 It is important for authorities to note that a move from 6mm salt to 10mm salt will require different spreader calibration settings to deliver satisfactory spread coverage. Due to increased bounce of the larger particles, 10mm salt tends to spread less evenly and can result in more salt being put on the carriageway to achieve the minimum spread rate across the spread width. Use of 10mm salt has also been linked to claims for damage to vehicles, especially vehicle windscreens.
- 3.2.4 Authorities using treated salt (coated, treated with agricultural by-products – ABPs) have reported finding significant savings in salt usage, with experienced users claiming greater savings. This anecdotal evidence suggests benefits include prolonged retention of residual salt on the carriageway in many weather conditions. All major domestic suppliers can supply treated salt and a choice of treatment is available. The treatment process does not add any significant delay to the production and distribution process. Conventional spreading machinery needs no modification save for calibration for the new stock. Authorities should draw on the experience of current users if considering a change of de-icing material. The Environment Agency has asked potential users to notify them before using treated salt.
- 3.2.5 Some authorities have changed from dry salting to pre-wetted salting. This uses less dry salt but involves investment in the additional plant required. Consequently, this option does not present itself as one which can be considered for quick and low-cost implementation.
- 3.2.6 Salt mixed with an appropriate grade of grit / sand can be as an alternative to salt for filling grit bins. Whilst grit bins are often provided for footways, such mixes can, in some cases, also be applied on minor roads. Grit/salt mixes can help

provide traction and to break up the frozen surfaces where packed snow and ice already lies. There are, however, issues such as costs of clearing the grit / sand from surfaces and drainage infrastructure.

### 3.3 Supplier Selection

- 3.3.1 *Well-maintained Highways* makes a number of recommendations with regard to the procurement of salt. Authorities need to adopt these recommendations to ensure efficient and effective supply of salt in order to deliver the Winter Service.

### 3.4 Storage of Salt

- 3.4.1 There are two principle reasons to ensure that salt is stored carefully and in accordance with the good practice described below, namely ensure a consistent product for spreading and to reduce losses due to leaching.
- 3.4.2 Moisture content can have a significant impact on spreader calibration with over or under spreading possible. Authorities may therefore achieve more consistent spreading of salt through maintaining a constant moisture content in the salt throughout the entire season.

#### ***Moisture Content for Salt***

- 3.4.3 The target range for the moisture content of salt is dependent on the type of salt used, such as UK rock salt, imported rock salt, marine salt and whether salt is pre-treated or modified.
- 3.4.4 For dry salting, the optimum moisture content for fine and coarse rock salt graded to be compliant with BS 3247:1991 is in the range 2 to 3.5%. The risk of the salt 'tunnelling' within the spreader hopper and affecting spreading increases significantly when the moisture content exceeds 4.5%. Losses during and after spreading become higher when the salt moisture content is lower, particularly when the moisture content is less than 1% and especially when treating a dry road.
- 3.4.5 For pre-wetted salting with rock salt graded to be compliant with BS 3247:1991, the upper limits for dry salting apply. However, the moisture content can be less than 2% because the pre-wetting agent helps to prevent the loss of the finer particles during and after spreading.
- 3.4.6 For treated rock salt, the upper limits for dry salt apply. The minimum moisture content of coated rock salt is typically 2% or greater; the additive helps to prevent loss of the finer particles during and after spreading.
- 3.4.7 Marine salt tends to have lower fines content than UK rock salt. For dry salting, the optimum moisture content for 6 to 8mm marine salt or 6 to 10mm rock salt with a low fines content is in the range 1.5 to 4.0%.
- 3.4.8 Moisture content can be tested by a UKAS accredited laboratory in accordance with BS3427:1991. However a simple test can be undertaken using a standard oven and a suitable set of weighing scales. A 500g sample placed in an oven at no more than 65°C until completely dry should lose between 7.5g and 20g in weight.

### ***Storage Options***

- 3.4.9 There are a number of storage options available for salt. More detailed guidance is given on these approaches to storage below:

#### ***Salt Barn***

- 3.4.10 The condition of salt in a salt barn should remain fairly constant, although the parts of a stockpile near an open door may increase in moisture content if there is ingress of precipitation or decrease in sun and wind.
- 3.4.11 It should not be necessary to turn or agitate the stockpile however the stock may harden if left untouched for multiple seasons. The mixing of materials with different moisture contents to achieve the target range may be beneficial. Excessive turning should be avoided because this can change the grading of the salt and make it finer. Marine salt tends to be softer than rock salt, which is beneficial for dissolution and reduces bounce on the carriageway, but excessive handling will produce finer particles.

#### ***Outside Protected***

- 3.4.12 Sheeting systems are available to protect stockpiles from the weather. Salt stored outside should be on a suitable hard standing to prevent ingress of water from the ground, contamination and facilitate loading. The hard standing should have a slight cross-fall and drainage to disperse precipitation quickly and prevent water accumulation at the base of the stockpile. Drainage provision must consider the potential of damage to the environment and comply with relevant legislation and Environment Agency requirements.
- 3.4.13 Whenever possible, outdoor stockpiles should be protected by waterproof sheeting or suitable alternatives. This should prevent or limit the ingress of water and prevent erosion due to the wind. Covers should be positioned to prevent precipitation from reaching any part of the stockpile, including the base.
- 3.4.14 Outside stockpiles should take the form of an extended pyramid with the working face at one end. It is likely to be impractical to cover the working face of a stockpile during frequent use, hence the need to reduce the size of the working face which is exposed to the elements.
- 3.4.15 UK rock salt has been stored outside under waterproof covers and remained in good condition without turning or agitation for periods up to three years. However, it should not be assumed that salt stored outside but protected will remain in good condition indefinitely.
- 3.4.16 Covers should be handled carefully and inspected on a regular basis for damage, especially after high winds, heavy rainfall and heavy snow. Covers may be prone to deterioration by ultra-violet radiation and this should be considered at the point of purchase. Damage should be repaired promptly to prevent the ingress of water. Water ingress may be significant and 'swallow holes' may form.
- 3.4.17 Walking on covers should never be allowed for safety reasons. Apart from the potential for slips and falls, a 'swallow-hole' in the stockpile may entrap anyone walking on the cover.

- 3.4.18 The turning and agitation of protected stockpiles is not recommended when this may damage the protection and allow the ingress of water. However, the opportunity should be taken to check the condition of the salt in different parts of the stockpile when this can be done safely. If necessary, salt should be used immediately to prevent its moisture content falling outside the target range. Alternatively, mixing with salt, with that of different moisture content should be considered.

### ***Outside Unprotected***

- 3.4.19 *Well-maintained Highways* provides guidance that pre-treatment spread rates should be from 50 to 100% higher for salt stored outside and unprotected compared to salt stored under cover. Unprotected stockpiles should also be avoided because salt and anti-caking agents are lost through leaching, and the moisture content of the salt cannot be maintained at optimum levels. Results from a test programme in the 1960s suggest that losses of salt of the order of 0.01%/mm of rainfall can be expected from an undisturbed stockpile of UK rock salt that is not treated, i.e. 60 tonnes from a 1,000 tonne stockpile with annual rainfall of 600mm.
- 3.4.20 UK rock salt contains insolubles that range from about 2.5 to 5.5% by weight. The insolubles are mostly marl. When stored outside a thatch or crust is formed on the surface of the stockpile from the marl and recrystallised salt as the sodium chloride at the surface is dissolved by precipitation. The thatch helps to prevent large amounts of water from entering the stockpile.
- 3.4.21 Other rock salts and marine salts can have a very low insoluble content. When stored outside, thatch is formed as the salt on the surface of the stockpile dissolves and recrystallises. The potential for water ingress is greater with purer salts because the thatch can take longer to form.
- 3.4.22 The advantages of using some types of treated salt may be compromised if it is stored in unprotected stockpiles and exposed to the elements. It is suggested that before storing treated salt unprotected, authorities should satisfy themselves as to the suitability for future use as part of delivering the Winter Service.
- 3.4.23 As mentioned above, outside stockpiles should take the form of an extended pyramid with the working face at one end in order to limit the ingress of water to the stockpile. The opportunity should be taken to check the condition of the salt at different parts of the stockpile when this can be done safely.
- 3.4.24 Once thatch has formed, the stockpile should be disturbed as little as possible. If the thatch is broken up, the ingress of water will increase until new thatch has formed.
- 3.4.25 The thatch on UK rock salt should be not used because it has a very low sodium chloride content. The thatch on a stockpile of salt with high purity can be used if it is thoroughly broken up. If large particles from the thatch are spread, the discharge rate of the salt from spreader may be affected, wastage may increase, and target spread rates may not be achieved. Also, there is an increased risk of damage to car windscreens.

### ***Stockpile Rotation***

- 3.4.26 A stockpile rotation plan should be developed by authorities to ensure that the salt being used is in good condition, the salt in storage is not deteriorating and no salt deteriorates so much that it cannot be used. For each type of storage, there should be a principle of first in first out. Stocking to meet the resilience standard may leave surplus salt in store at the end of a mild winter. Reserve stockpiles, once established, should be part of the rotation plan.
- 3.4.27 As a general rule, salt should not be stored outside unprotected for more than one season. Where salt is protected it should not be stored for more than three years unless it can be confirmed that the salt is in good condition. Based on current information, it may be necessary for authorities to consider replacing strategic stocks on a rotating basis every three years.
- 3.4.28 Old salt stocks left in a barn should remain in good condition for a number of seasons. However, they should be moved forward and used before they can deteriorate beyond the required condition.

### **3.5 Effective Use of Salt**

- 3.5.1 Salt is consumed in significant quantities during the winter season, so even small percentage savings in salt use through accurate calibration of spreaders, considered decision making and appropriate treatments is important. These measures will help to minimise the overall consumption of salt on a national basis.

#### ***Calibration of Spreaders***

- 3.5.2 The purpose of calibration is to ensure that each spreader in a fleet is spreading the salt uniformly over the target area, at the correct rate of application and with as little wastage as possible.
- 3.5.3 Salt spreaders require calibration and set-up for the specific salt type, grading and moisture content being used. Even though salts may be compliant with BS 3247: 1991, the spreader settings for salt from one source are unlikely to be the optimum settings for salt from another source. The amount of salt discharged could vary from the expected amount by as much as  $\pm 50\%$ .
- 3.5.4 Calibration should always involve a direct measurement of the salt being discharged and where it is being spread. An indirect check of the spreader settings, such as the belt speed, gate height and spinner speed is not sufficient. Before any calibration is carried out, the salts, spread widths and spread rates for which calibration is required must be clearly identified.
- 3.5.5 Every spreader should be calibrated before each winter, however undertaking and additional mid-winter calibration is also good practice. Calibration should be carried out whenever required throughout the season, for example following a change of salt or monitoring highlighting a potential issue. The objective is to ensure that the intended spread rates are achieved.
- 3.5.6 It cannot be relied upon that the spreader performance will remain unchanged after calibration. There are numerous variables that impact on calibration. Performance needs to be monitored and recorded so that recalibration of

spreaders can be carried out where necessary. Monitoring of the salt tonnage used provides a quick and easy method of checking the spreader performance in terms of discharge rate.

3.5.7 Driver training is important in monitoring the performance, as any non-routine actions (such as operating the spreader in burst mode) should be recorded and allowed for. Driver training is discussed in Section 5.2.

3.5.8 An effective calibration procedure will involve carrying out checks in the following order:

### **A. Pre-calibration Checks**

- Check and record the salt moisture content ensuring that it is in an acceptable range.
- Check the condition of the spreader, particularly the hopper, chute and salt distribution mechanism and controls.

### **B. Discharge Tests**

- The discharge test should check that the spreader is discharging salt (and brine for pre-wetted salting) at the correct rate. The target amount (g) = spread width (m) x spread rate (g/m<sup>2</sup>) x spread length (m).
- The salt discharge rate can be measured most accurately by completing a trial spreading run. This will require the use of a weighbridge, an accurate on-board weighing system or weigh pads to measure the amount of salt and brine discharged during the run.
- Weighbridges and weigh pads should be calibrated and the resolution (the smallest increment in weight) should be considered. For example, if the weighbridge measures to the nearest 10kg, and the amount of salt discharged is 100kg, there would be a potential error of 10%. For accuracy, sufficient salt should be discharged such that the resolution does not result in a measurement error greater than 3%.
- If using weighbridges or weigh pads and the spreader has completed a full treatment run then it is important to ensure the fuel tank is full during weighing both before and after treatment.
- The discharge rate may vary with the hopper load, with experience indicating that a full hopper is more likely to result in a reduced rate of spread. This is considered more of an issue for older spreaders, with more modern equipment able to continuously adjust the output once calibrated through closed loop control.
- Alternatively, for some spreaders it is possible to carry out a discharge test with the spreader stationary, simulating spreading at the normal spreading speed. The salt (and brine when spreading pre-wetted salt), can be collected in a bag or bucket and weighed using scales. This method will be less accurate than a trial spreading run because less salt is discharged.

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- Checks should be made that the calibration is valid at two significantly different spread rates using a typical spread width on the routes treated by that spreader.
- The amount of salt (and brine where applicable) discharged should be adjusted in accordance with the spreader manufacturer's recommendations so they are within  $\pm 10\%$  of the target.
- For more modern spreaders, with closed loop control of the amount discharged, more stringent limits of  $\pm 6\%$  should apply.
- The dry salt to brine mix proportions for pre-wetted salting should be within the range 64:36% to 76:24%.

### **C. *Distribution Check***

- A visual check of the salt distribution should be made to check the salt is being spread to the target area. This should be carried out by an experienced person who has the competence to relate the visual check to actual performance.
- For some spreaders the check can be carried out with the spreader stationary and operated for a few seconds to simulate spreading at normal speed. The bounce of salt across the road surface will be affected by accumulations of salt, so the salt should be cleared as necessary. Cones can be placed as markers to define the correct spread width.
- Alternatively, the salt distribution may be observed from a vehicle following the spreader while performing a trial spreading run. While this will demonstrate the distribution at speed, with the extra bouncing of the salt particles due to their forward momentum and the snaking caused by turbulence generated by the spreader, it is harder to assess the uniformity of the distribution and the wastage than from a static assessment.
- The spread pattern should be observed and, if necessary, the spinner speed and symmetry should be adjusted to optimise the salt distribution profile and reduce wastage.

### **D. *Certification***

Following successful completion of the discharge tests and distribution check, a calibration certificate should be issued by an appropriately experienced person. The calibration certificate should give details of the:

- spreader being tested;
- type and moisture content of the salt;
- amount of de-icer discharged at each spread setting;
- spread settings at which the salt distribution profile was assessed;
- approximate hopper load.

### ***Considered Decision Making***

- 3.5.9 Some authorities operate over a network that covers more than one climatic domain. By using domain-based forecasting, consideration can be given to partial network treatment. Route-based forecasting can also help assist in the route design and decision making for such an approach. Such an approach may assist in reducing the amount of salt used by the authority.
- 3.5.10 In circumstances where roads may be dry in places, but have areas of moisture through snow melting or seepage on the carriageway, spot salting could be considered rather than full precautionary runs. Route assessment with drivers can identify areas where the carriageway suffers from run-off from beyond the highway boundary. Such causes can include changes in agricultural practice. Problem locations can be identified and further actions such as mitigation or enforcement considered.
- 3.5.11 Use should be made of all available sensor / camera information. Sensor information can assist with the evaluation of residual salt on the network, although appropriate care should be taken to verify the accuracy.
- 3.5.12 Patrols to direct treatment decisions could be introduced. These can allow focused treatments and the best use of salt stocks, by avoiding the possibility of unnecessary treatments on “marginal” forecasts. Such patrols can also check that the spreaders are functioning correctly. Through training, patrols or scouts can be competent at on-site decision making as to when not to treat. In addition, they can allow last minute ratification of the need to treat and when.
- 3.5.13 In conducting the annual review recommended in *Well-maintained Highways* it can be useful to focus on “marginal” forecasts experienced during previous seasons and to consider whether decision making and the data provided for that decision making could be improved in future.

### ***Treatments***

- 3.5.14 *Well-maintained Highways* provides information regarding spread rates in Table H3. However it also states that different rates may be appropriate for pre-wetted or treated salt. Any alternative spread rates should be established based on documented evidence (such as NWSRG work). The adoption of such an approach has the potential to reduce the overall salt used by an authority.
- 3.5.15 It may help to emphasise to spreader drivers and loader operators, how to minimise salt wastage when loading, off-loading, washing spreaders and when carrying out treatments.
- 3.5.16 Some authorities have found on-board weighing or vehicle tracking systems useful tools to secure salt savings by ensuring that excess salt is not spun off inappropriately. Authorities should determine whether these systems offer benefits to their own service. The practice of ‘spinning-off’ surplus salt on the way back to the depot should be eliminated as this is a wasteful practice. It also makes proving full network treatment difficult.
- 3.5.17 Ploughing down to a minimum snow depth of 10mm before applying salt should be considered as an element of good practice. Consideration should also be given to not continuously salting when ploughing. After a full route ploughing

treatment, consider instructing drivers to salt only as and when required (spot salting).

- 3.5.18 In conditions where snow has already settled and compacted on the carriageway and cannot be ploughed off easily, then consideration can be given to mixing salt and grit (single size abrasive aggregate not exceeding 6mm or 5mm sharp sand) in a ratio of not more than 50% grit.
- 3.5.19 Extremely low temperatures pose the issue that salt becomes less effective and would be required in uneconomical doses. Alternative de-icers can be used, although the practicalities of sourcing, calibrating for and using these would need careful consideration. Use of grit-salt mixes as above can assist with traction. During periods of extreme cold it is likely that the humidity would also be very low which also impacts on the effectiveness of salt.
- 3.5.20 For times of exceptionally severe weather the treated network may have to be prioritised. The routes to be cleared are likely to differ compared to the precautionary treatment network. Further details of resilience networks can be found in Section 4.2.

## **4 CONTINGENCY PLANNING**

### **4.1 Introduction**

- 4.1.1 The severe weather events of 2008/09 and 2009/10 have provided far greater focus on providing a resilient Winter Service. A more resilient Winter Service should enable local communities, business, public transport and emergency services to function in exceptionally severe weather and meet the public expectation that they should do. Effective contingency planning is therefore a key element of delivering a more resilient service.

### **4.2 Planning and Management**

- 4.2.1 *Well-maintained Highways* recommends that authorities should prepare contingency Winter Service Plans and that these should be agreed with other authorities, key public services such as hospitals and public transport providers.

#### ***Developing Contingency Plans***

- 4.2.2 Winter Service procedures should be designed to provide a planned response during even exceptionally severe weather. Through careful planning it is possible to reduce the need for reactive response. It is important to ensure that the Winter Service Plan contains details of the escalation procedures, alternative resources and minimum winter (resilience) networks.
- 4.2.3 With improved resilience of Winter Service the normal response is likely to cope with more severe conditions before the need for escalation. Once escalated, the response will then be likely to mitigate the effects of more extreme conditions. Providing winter decision makers with well designed contingency arrangements allows them to escalate an issue before it becomes a significant threat to continuity of service and to have the tools available to best manage the situation.

## Winter Service Guidance for Local Authority Practitioners

- 4.2.4 Local authorities, as Category 1 responders under the Civil Contingencies Act 2004, will already have emergency plans in place. Authorities should benefit from these plans in developing a more resilient approach to Winter Service.
- 4.2.5 The first step towards providing a more resilient service is consideration of the threats and vulnerabilities of the service. This can be achieved through a detailed appraisal of the current situation based on plausible but stretching 'what-if' scenarios.
- 4.2.6 By considering these scenarios, potential areas for improvement in service resilience can be identified. These should be assessed, prioritised and mitigation measures considered. It is important when considering potential mitigation to think laterally, as this may identify more cost effective solutions.
- 4.2.7 An important part of resilience planning is to include a planned escalation procedure. Engagement with the authority's emergency planning department should be considered. The Winter Service Plan should be made available to the authority's emergency planning departments such that it can be integrated with other plans such as Business Continuity Plans, Evacuation Plans and Rest Centre Establishment Plans.
- 4.2.8 When resilience measures and processes have been developed and incorporated into the Winter Service Plan, relevant staff and stakeholders will need to be trained. Resilience planning should be tested through exercises. This will resolve any potential problems in the approach prior to it being used operationally.

### ***Resilience Networks***

- 4.2.9 *Well-maintained Highways* recommends that, as part of their contingency planning, authorities should define a minimum winter network. This resilience network may be a subset of their normal treatment network and should provide a minimum essential service to the public, including links to the strategic network, access to key facilities and other transport needs. It is important that there is continuity across boundaries. It is recognised that authorities will have difficulty in treating all bus routes. However, arrangements should be made to enable bus operators to run minimum services.
- 4.2.10 Details of the resilience network should be communicated to key stakeholders in advance of the winter season. Preparations should be made to communicate the resilience network to the public immediately prior to its activation.
- 4.2.11 Issues to consider when defining a resilience network are:
- What is the key infrastructure access which should be maintained? To this end, the authority's emergency planning department should be consulted. Consideration should be given to a wide range of services, including consideration for private infrastructure. For example, water treatment works may require chemical deliveries to ensure continuity of water supply but are unlikely to be on the primary treated road network.
  - How will carriageways, cycle ways and footways be prioritised across the authority's network? Issues to be considered include treatment methods,

resource requirements, type of network as a whole and alternative routes or modes of transport.

- How will the resilience network interface with other authorities? There is little point expending effort to keep a route open if it is snowbound in a neighbouring authority.

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

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

### 4.3 Resources

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

#### ***Contingency Arrangements***

4.3.2 Where practicable, authorities should make arrangements for obtaining reserve supplies of key resources to support their minimum resilience standard. This should include salt, fuel, power and labour.

4.3.3 Mutual aid is a pre-agreement between one or more organisations to assist each other, as far as practicable, to overcome disruptive challenges. *Well-maintained Highways* provides guidance on how authorities may utilise mutual aid to support their contingency arrangements. Many authorities are working towards formal mutual aid arrangements. Some authorities have informal arrangements in place. The Cabinet Office has published some useful guidance on the principles of mutual aid although it is aimed at emergency response as opposed to Winter Service.

4.3.4 Trained decision makers should be available to support contingency arrangements. Training additional reserve staff should be considered. It is important that these reserve staff are routinely exposed to operational decision making to ensure their knowledge is current and they have sufficient experience to meet the requirements of the winter plan.

4.3.5 Reserve drivers can be sourced from any pool of HGV qualified drivers, although they should be trained to the relevant Winter Service modules. Some authorities have written the requirement to supply reserve spreader drivers into other, non-winter contracts. For example, domestic refuse collection drivers would be suitable candidates for training as reserve spreader drivers.

4.3.6 Through multi-skilling other operators, it is possible to provide sufficient resilience for activities such as loading. Reserve driver's mates for snow ploughing, where used, can be sourced through similar multi-skilling of other operatives.

- 4.3.7 A relatively low cost way of increasing the number of vehicles available for snow clearance is to consider fitting snow plough mounts to non-winter vehicles and procuring additional ploughs to suit. This allows, in authorities where ploughing is appropriate, for two way ploughing whilst maintaining salting in a single pass.
- 4.3.8 Additional reserve stocks of fuel and salt can be obtained to give surety of supply. Recent winters have shown that supply guarantees need to be well defined and enforceable within contracts, if they are to be effective.
- 4.3.9 Depots can be unavailable for a range of reasons but the most common is closure of the access road or loss of power. Both can be mitigated at minimal cost. If feasible a depot should have two gates onto different routes. The secondary access would only be used in times of crisis but would enable access and egress from the depot. Power outages should not stop the operation as backup generation is a one option. However, it is important to assess the need for power. Lighting in the yard can be achieved with temporary lighting towers and heating for the depot staff can be achieved with portable gas appliances. Not having full IT systems for operational and decision making purposes may or may not be an issue for a short term outage. A business impact analysis would determine this. Communication links are a bigger issue although mobile phones, as long as they are charged, are a good backup to landlines.

### ***Reserve Stockpiles***

- 4.3.10 *Well-maintained Highways* recommends a minimum resilience standard. In addition to operational stock, local authorities and strategic road operators have created reserve stockpiles. These stockpiles can be categorised into three different types:
- Local reserves – held by a single authority for its own use during times of limited operational salt stocks;
  - Regional reserves – held on a regional / consortium basis whereby reserve stocks have been made available for use by more than one authority;
  - National reserves – stockpiles held across the UK for use by any authority during times of shortage. In England this is currently being delivered via the Highways Agency and is likely to have certain conditions of use. Transport Scotland and Transport for London have their own arrangements.
- 4.3.11 These stockpiles are not used during normal Winter Service but will be available if salt suppliers are unable to maintain operational stocks at an acceptable level. Release of salt should be subject to agreed protocols with the relevant operators.
- 4.3.12 Identifying the size, location and storage type of these stockpiles is important. Salt is a bulk commodity, but a reserve stockpile is still a significant investment. It should be stored in a location to allow convenient access to the area it serves and of course remain accessible during times of severe weather. The site should be secure to avoid trespass and theft of salt. Provision should be made in planning for loading facilities although there is unlikely to be a need for permanent on site plant.
- 4.3.13 Reserve stocks are unlikely to be barn stored. However they should be well covered to prevent leaching and deterioration of the salt. To avoid any gaps in

planning any jointly held reserve stocks should have a salt stock management plan specific to that stockholding. Further salt storage considerations can be found in section 3.4.

### ***Reducing Salt Usage During a Shortage***

- 4.3.14 During a salt shortage there may be various potential mechanisms to reduce salt consumption bearing in mind the issues discussed in Section 3.5. Each has its own implications which the authority must carefully consider prior to implementation.
- 4.3.15 Salt is not the only commodity that can be in short supply so consideration of ways to use fuel, spreaders and operators more efficiently is also important. Shortages of fuel, spreaders or operators may not coincide with severe weather.

## **4.4 Communication**

- 4.4.1 During a severe weather event increased levels of communication are likely to be required. Communication during a 'crisis' is not simply about media output, proactive internal communication and keeping the numerous stakeholders informed is also a significant challenge.

### ***Pre-prepared Media Information***

- 4.4.2 When severe weather is forecast the media rapidly start requesting information and it is important that correct and accurate information is available to them. If information is not provided by an authority the media will attempt to source it from elsewhere, which may not be accurate.
- 4.4.3 Robust processes should be in place to ensure a rapid and accurate issue of media information is possible. It is suggested that pre-prepared media briefs are developed in advance of the winter season for use during times of severe weather. More detailed information can be found in Section 2.4.
- 4.4.4 Recent experience has shown that some individuals will take heed of advice issued to the public for or avoiding travelling during severe conditions. If sufficient advanced warning is provided, drivers will be able to change their plans.

### ***Crisis Communications***

- 4.4.5 During a severe weather event it is important to ensure that good communication is achieved both with internal staff and external stakeholders. Media liaison is relatively straightforward task once suitable contacts are made. The use of authority websites is a good way to get accurate information to the public without reliance on the media. In November 2009, when Cumbria was hit by severe flooding, the local authority used mapping on its website to great effect to inform the public which routes were available to traffic. This could be replicated for a snow event to direct traffic to the treated and passable sections of the network.
- 4.4.6 Other departments within an authority may benefit from accurate updates on the condition of the network and likely future conditions. If decision makers realise that safe access to a school, for example, cannot be maintained then those

responsible for the school need to be made aware as early as possible. This will allow the school to be closed in a planned manner.

- 4.4.7 All staff attempting to get into work may benefit from advance information and reminders to allow longer for their journeys to work. Text messages to staff phones or telephone trees are effective ways to deliver the message. These types of arrangements may already exist in the authority's Business Continuity Plan.
- 4.4.8 Providing information to staff is particularly important for Winter Service staff. It will reduce the risk of drivers / operators arriving late and disrupting the treatment effort. However, many drivers / operators will sleep in the depots to eliminate the risk entirely.

## 5 TRAINING AND EXERCISE

### 5.1 Introduction

- 5.1.1 Ensuring adequately trained and experienced staff is key to successful delivery of Winter Service. This section describes how an authority could ensure that the staff are well trained and suitably experienced.

### 5.2 Training

- 5.2.1 Delivery of a successful Winter Service is dependent on the individual decisions made and actions taken by all those involved. These actions and individual decisions must be supported by adequate training of the staff and operatives involved.
- 5.2.2 *Well-maintained Highways* recommends that to ensure appropriate level of competence, the training and development needs of all personnel should be established and reviewed annually, including health and safety and appropriate vocational qualifications. Training should then be provided where appropriate before the Winter Service season.

#### ***Training Requirements***

- 5.2.3 There are several groups of individuals that comprise an authority's resources to deliver the Winter Service. These individuals require training to fulfil their duties within an authority's Winter Service. These are listed below:

#### ***Winter Decision Maker and Manager***

- 5.2.4 Currently there is no formal winter decision maker or winter manager qualification, however most authorities follow a similar approach. Road weather forecasting and systems training (such as for Road Weather Information Systems) are commonly used indicators of a decision maker's competence, combined with proven experience. However, the appropriate experience required to deliver the service can only be gained 'on the job' over a number of years. Good practice suggests that novice decision makers should undergo an internal training programme. This should include briefings on the Winter Service Plan, meteorological training, experience of operational delivery and mentoring by more experienced staff. This should continue until their experience and competence is proven. It is essential that such training should be well

documented to ensure that competence can be demonstrated. Weather forecast providers are able to provide training on meteorology and providers of weather sensors often provide training on how the weather affects the road surface. Exercises delivered via independent organisations can provide decision makers with experience of the management of severe conditions.

### ***Drivers and Operators***

- 5.2.5 Those operating spreading equipment are well served with vocational qualifications such as the City & Guild's 6159 modules. It is essential that any operative involved in the use or operation of any plant or machinery has received relevant formal training to do so. Where reserve drivers are available as part of an authority's contingency plans it is essential that they are trained to an equal standard of competence.

### ***Winter Supervisors***

- 5.2.6 Under City & Guilds 6159, there is a specific module for winter maintenance supervisors which ensures that the first tier of management is aware of their duties and sufficiently competent to fulfil them. It is essential that appropriate staff within an authority's organisation undergo this training.

### ***Senior Management and other Key Stakeholders***

- 5.2.7 Authorities may benefit in providing basic training to senior management and certain key stakeholders in delivery of Winter Service. This can be valuable in managing the expectations in delivering the service during both normal and severe winter conditions. A short training programme will provide a basic understanding of the Winter Service, its limitations and pressures. This may be delivered efficiently as an electronic package or briefing note to minimise staff time in the delivery of it to the multitude of stakeholders.

### ***Training Plan and Records***

- 5.2.8 Authorities are encouraged to ensure they have a system of formal training records. The purpose of the system is to record and monitor the training and competence of each individual involved in Winter Service. The system should use the data within it to help identify those people whose training requires refreshing and renewing. Where authorities contract out Winter Service they should require their suppliers to maintain similar records.
- 5.2.9 The system should comprise a development action plan for each individual and record progress in meeting that plan. This will enable training sessions to be targeted, planned and executed in a cost efficient manner.
- 5.2.10 Before commencement of the winter season training records should be checked to identify whether out of season training has occurred and individual training records have been updated. Additionally any mentoring schemes or similar experience-based learning should also be consulted to avoid any issues later in the season.

### ***Route and Equipment Familiarisation***

- 5.2.11 Relevant staff and operatives should undertake familiarisation training with winter arrangements, treatment routes and equipment. This is especially important for operational staff that may be new to the authority's Winter Service. Tool box talks and dry runs of treatment routes are useful approaches to deliver this training. Records of this training should be recorded on the training management system as described above.

### **5.3 Exercising**

- 5.3.1 Planning and preparing for a winter season are essential activities, but often the measures implemented are only tested in a live situation. Exercising and testing aims to confirm that the plans and procedures are suitably robust to cope with conditions in a safe and non-consequence environment. *Well-maintained Highways* recommends that authorities and relevant organisations should provide training and conduct periodic exercising to test plans for responding to severe weather events.

### ***Purpose and Types of Exercise***

- 5.3.2 Exercises should be carried out in advance of the winter season. Exercises vary in scale and complexity but fundamentally serve to test arrangements in an environment where lessons can be safely identified and subsequent improvements made. Simple examples of exercises include fire drills, which ensure that the equipment and process work and give those involved experience of evacuation from a building. A Winter Service exercise aims to achieve similar outcomes.
- 5.3.3 The Civil Contingencies Act 2004 requires that Category 1 responders, including local authorities, make provision to exercise their emergency plans. Although winter planning does not fall into this category, it is clear from recent winters that the delivery of Winter Service can impact on emergency planning, local and regional resilience forums.
- 5.3.4 When developing an exercise programme authorities should aim to target at all levels of the Winter Service from senior management and decision makers through to operatives delivering the service. It is vitally important to regularly test the decision making and escalation approach, particularly given that this is a subjective matter and that there is no formal qualification for decision makers. It is good practice to carry out some form of exercise in advance of each winter season. The structure of these exercises can vary significantly and the delivery of these need not be costly. The Cabinet Office's Exercise Planners Guide provides further information regarding the types of exercises and their respective merits.  
<http://www.cabinetoffice.gov.uk/ukresilience/preparedness/exercises/plannersguide.aspx>

The guidance identifies four types of exercise and these can be applied to Winter Service as follows:

- **Table-top Exercise**

- This is generally the most cost effective method of delivering an exercise and can be delivered to a small number of staff (5-10) in the authority's own premises. These can be run to a larger number of participants, particularly where multiple authorities are participating.
- The approach is generally to lead participants through a developing scenario over a period of time with added complications developing throughout the event.

- **Seminar**

- A seminar exercise tends to be less realistic than other types of exercise. However, it promotes liaison with a range of stakeholders and organisations. The costs of running a seminar exercise will depend heavily on the number of people attending and the venue used. Significant planning can be required as the number of attendees at events like this can be in excess of 100 with wider stakeholders such as Police and Emergency Planning Teams included.
- The scenario for an event like this will generally be delivered in a smaller number of elements and is aimed to promote discussion rather than detailed operational planning. An event like this can be particularly useful in the development of a multi-agency response to severe weather conditions.

- **Control Post**

- A control post exercise is much the same as a table-top exercise, but with staff undertaking the role in their normal place of work. In Winter Service delivery this approach may not offer any significant benefit over a table-top exercise, however it will require a significant amount of prior planning, can be disruptive to other operations and will often cost significantly more to run.

- **Live**

- A live exercise in Winter Service terms would generally be much the same as a control post, but extended to include operations on the road network. This would be an expensive event to undertake in its entirety with little benefit, however two cost effective live tests can be employed:

5.3.5 A phone contact check is a good and cost effective approach to ensure that contact can be made with staff on duty out of hours and is a very basic form of live exercise. This approach could be expanded to involve a multitude of stakeholders and test relationships, communication and technical knowledge.

5.3.6 A more comprehensive operational, live exercise is to undertake a dry treatment run during the early part of the season. This can be used to check the

communication, routes undertaken, information recorded and actions undertaken in the event of a failure such as a spreader breakdown.

### ***Delivery of Exercises***

- 5.3.7 Delivering exercises need not necessarily be a costly task. The Cabinet Office guidance provides useful information regarding the development and delivery of exercises. It is designed to allow exercises of any scale to be delivered, so it would not be wholly applicable for a small scale operational test.
- 5.3.8 The Cabinet Office guidance advises that those involved in planning the exercise should not participate directly. Some smaller organisations may seek help from external organisations in running the exercise. In addition, advice on the delivery of the exercise can be sought from organisations such as forecast suppliers, contractors, neighbouring authorities and the emergency services.
- 5.3.9 Exercise development should always start with the agreement of the aim and objectives. These will shape the scenario and delivery method to be employed. An example could be to satisfy the aim of “confirming communication links are functional”. The exercise could be developed to make check calls to various staff / stakeholders to confirm the arrangements in place are adequate.
- 5.3.10 A structured approach to any exercise should be adopted to lead staff through a realistic, but challenging, scenario that tests as many elements of the Winter Service as possible. This should include decision making, communication and delivery of the service during difficult conditions. Factors to consider should extend beyond the weather itself to include scenarios that impact on operation of the road network such as congestion and traffic incidents.
- 5.3.11 To develop a complete test of arrangements, the planning process is more involved. It is important to consider scenarios to test specific elements of the plan whilst attempting to keep the situation plausible and realistic. Keeping the scenario aligned to events that have happened in the past will assist in retaining realism.
- 5.3.12 Recent experience suggests that delivery of a simple table-top exercise based around discussion will deliver a holistic test of a plan. If a specific element requires testing, then a concentrated test to mimic a live event will push staff members to perform as they would in a real situation.
- 5.3.13 To minimise costs and also to increase the opportunity for learning, authorities could consider collaborating to deliver joint exercises. The scenario should then be written to test cross boundary issues in addition to the standard response within each respective authority’s boundary.
- 5.3.14 Collaborative approaches will also increase the credibility of the exercise through increased independence. If planning an exercise “in house” it is important that the participants do not have sight of the scenario before the event. This will ensure that the test is realistic and delivers accurate learning points. Two authorities could write scenarios for each other to show independence or a third party organisation could be employed.

## Winter Service Guidance for Local Authority Practitioners

- 5.3.15 It is essential that the resulting learning and good practice is recorded, acted upon and disseminated. Following an exercise it is important that a report is written and is circulated to attendees.
- 5.3.16 Staff training should also be considered by authorities for testing through exercising. Once staff training has been delivered, this should be tested to ensure it is adequate and that any shortcomings or good practice influences future winter and training plans.

### 6 Key Points

- Authorities should prepare for delivery of the Winter Service in advance of the winter season.
- Briefings should be used to communicate preparation arrangements to all relevant staff at the start of the season.
- Compliance with Winter Service policies and plans should be monitored throughout the winter season.
- Resilience planning should be integral to planning for Winter Service.
- Collaboration with other authorities can yield operational and efficiency benefits.
- Authorities should put in place arrangements for mutual aid should be put in place before the start of the winter season.
- Careful management of resources may provide efficiency savings and improve resilience.
- Guidance should be reviewed to determine ways to select and effectively use the most appropriate salt for local needs.
- The moisture content of salt should be effectively controlled in stockpiles to ensure consistent salting operations.
- Spreaders should be calibrated at least pre and mid season and then monitored throughout.
- The use of improved weather forecast service should be considered to help minimise salt use.
- The salting strategy during snow clearance should be considered.
- Contingency arrangements should be made for key resources in order to meet the minimum resilience standard for Winter Service.
- Formal mutual aid agreements should be put in place as considered necessary.
- Links between Winter Service and an authority's emergency planning department should be strengthened.
- Protocols for release of strategic stockpiles should be agreed with key stakeholders and authorities to ensure immediate access to them if and when required.
- Resilience networks should be pre-prepared for communication to key stakeholders and the public.
- Authorities should prepare for the increased level of communications that is likely to be required during a severe weather event.

## Winter Service Guidance for Local Authority Practitioners

- Authorities should have formal training records in place and training needs identified and delivered.
- Authorities should develop a programme and conduct an exercise either before or early in the season to identify shortfalls in current approach.

### 7 Useful References

#### ***Are you Ready for Winter?***

Important information for councillors and senior local authority officers about preparation for winter conditions on their highway network is available from the Department for Transport website

[www.dft.gov.uk/adobepdf/165237/areyoureadyforwinter.pdf](http://www.dft.gov.uk/adobepdf/165237/areyoureadyforwinter.pdf)

#### ***Well-maintained Highways: The Code of Practice for Highway Maintenance Management***

The Code of Practice was produced by the UK Roads Liaison Group and includes a chapter on Winter Service. The Code is regularly updated (in particular, Section 13 on Winter Service and Appendix H were updated in Autumn 2009). Both the original edition of the Code and the Complementary Guidance are available from

[www.ukroadsliaisongroup.org/roads/code\\_of\\_practice.htm](http://www.ukroadsliaisongroup.org/roads/code_of_practice.htm).

#### ***The UK Roads Liaison Group Report, Lessons from the Severe Weather, February 2009***

Sets out the Group's recommendations following the 2008-09 severe winter.

[www.ukroadsliaisongroup.org/liaison/winter.htm](http://www.ukroadsliaisongroup.org/liaison/winter.htm)

#### ***Winter Resilience Review Interim and Final Reports: The Resilience of England's Transport Systems in Winter, July 2010***

Recommendations following the 2009-10 severe winter

<http://transportwinterresilience.independent.gov.uk/docs/interim-report/wrr-interim-report-2010-07-26.pdf>

#### ***The NWSRG Best Practice Guidance for Spreading Salt - 2005***

This guidance is available free for non-members together with the summary report on the Phase 2 research. Although the 2005 guidance has been overtaken by new research, changing requirements and other events, it still contains valuable and detailed information. The guidance can be obtained from at [www.trl.co.uk/nwsrg](http://www.trl.co.uk/nwsrg)