

## Practical Winter Service Guidance, Best Practice and Applied Research October 2012

### Introduction

The National Winter Service Group (NWSRG) has produced best practice guidance for UK highway authorities covering subject areas such as Salt Storage, Spreader Calibration, Treatments for Snow and Ice, and Salt Spread Rates. This guidance forms part of an overall *Practical Guide for Winter Service* that is currently being developed to cover all key requirements for successful delivery of the winter service. The new guidance is based on sound scientific research, as well as the wealth of experience held by NWSRG Members and Industry Associates. It provides practitioners with a “what you need to do and how to do it safely, sustainably and cost effectively” approach, rather than simply listing high level legislation, policy requirements and aspirations.

Recent work by the NWSRG and member organisations, such as the Highways Agency and Transport Scotland, have resulted in new recommended treatment rates for UK motorways, trunk roads and local roads which offer significant savings in salt used and increased resilience for winter service.

### The NWSRG

The NWSRG is funded by annual subscriptions from local authorities and UK national governments, as well as by submitting bids for the financing of specific projects to a wide range of different organisations. It is the successor to the NSSRG (the National Salt Spreading Research Group) and its Members come from across the whole of the UK, representing both large and small highway and road authorities, as well as the organisations that assist in the delivery of the winter service. One of the great strengths of the NWSRG is the wide range of Industry Associates involved with the group who possess in-depth and extensive experience of winter service matters in all regions of the UK, Europe and elsewhere across the globe.

Following the recommendations set out in the independent review *The Resilience of England’s Transport Systems in Winter* (DfT, 2010), the NWSRG is now also a Technical Sub-Group of the UK Roads Board responsible for coordinating and managing winter service research in the UK.



## Vision and Scope

The NWSRG is committed to its overall aims of:

- Undertaking applied research to further the prevention, and aid the removal, of ice and snow from the highway network,
- Providing research findings and best practice advice to those responsible for delivering the winter service and to maintain, on a national basis,
- Forging a long-standing research group to further advance the understanding and delivery of effective highway winter service.

New advice has recently been produced by the NWSRG in the form of the Practical Guide covering salt stocks, storage requirements, de-icer types, treatments for extreme cold and safe salting levels for a range of weather conditions across different network hierarchies and in different regions. As the programme continues, this will be supplemented by advice covering the other important and related areas.

The current programme of NWSRG research will produce a comprehensive Practical Guide to provide practitioners with real-world solutions and guidance in all aspects of setting up and delivering their winter service activities.

The full scope of this Practical Guide will eventually cover a wide range of topics from risk and developing business cases for the provision of plant and equipment, through to determining the best type of de-icers and most economical treatments to use in typical and extreme weather events.

## Guidance Currently Available

As work in each subject area is completed, a section of the Guide is produced and made available for use by NWSRG Members. It will later become available to others after approval for general publication by the UK Roads Board. All sections are independently reviewed by the NWSRG Technical Consultant, as well as the Working Groups set up to oversee the work.

Consultation with service providers and industry has formed a major part of the development process for the Guide, which ensures that the content is always relevant, practical and meets the needs of highway and roads authorities across the UK.

Sections of the Guide have already been issued relating to the following topics:

- Salt storage and moisture content
- Spreader calibration and performance monitoring
- Precautionary spread rates
- Treatments for Snow and Ice
- Treatments for Extreme Cold

The guidance is based around the most recent research undertaken on behalf of the NWSRG and other organisations including the Highways Agency and Transport Scotland by highly experienced contractors such as TRL and others. It also incorporates information obtained by reviews of innovation and best practice in other countries that are applicable to the UK environment, as well as the great wealth of knowledge and experience possessed by Members and Industry Associates of the NWSRG.

The guidance is a live document and there is a process of continual review of each section to ensure the guide is up to date and remains valid.



## Salt storage and moisture content

This section of the Guide informs practitioners on optimum salt moisture contents and storage methods. Advice on calibration, adjustment and spread rates for non-optimal conditions is also provided. This assists practitioners to:

- Improve salt spreading performance
- Reduce under-spreading and over-spreading parts of the carriageways
- Reduce wastage
- Enable spread rates to be reduced, thus reducing the total amount of salt used

## Spreader calibration and performance monitoring of spreaders

Guidance, with a full specification and methodology, has been produced covering the requirements and methods for calibrating spreaders to maintain optimum safe and economical salting. This is a crucial component in ensuring that spreading performance is optimised and salt wastage is minimised

## Precautionary spread rates

Guidance has been produced regarding precautionary spread rates to enable economical and sustainable salting with the advantage of also minimising environmental impacts.

The guidance explains why salt condition, calibration and spreader performance are important and provides a decision making process for determining spread rates based on:

- Weather and road surface conditions
- Residual salt levels
- Traffic levels
- Types of surfacing

## Treatments for snow and ice

The guidance explains when and how to treat snow and ice effectively, including:

- Using snow ploughs effectively
- Where to plough snow
- Treatments before snow and freezing rain and during snow
- Treatments for slush, thin layers of ice, compacted snow and ice

## Treatments for extreme cold

Guidance has been produced on the use of alternative de-icers to sodium chloride in extreme cold conditions, including:

- Types of de-icer available
- Storage requirements
- Spreading equipment requirements
- Spread rates and treatment strategies
- Environmental and corrosion consideration

## Current and future NWSRG business plan

The NWSRG has prepared a three year business plan outlining a proposed future work programme that will result in the production of a fully comprehensive best practice Guide and other important areas of work. This work programme is agreed by the UK Roads Board. Currently, work is progressing towards producing sections of the Guide covering:

- De-icer types and salting methods
- Winter treatment decision maker training
- Route selection
- Treatment of footways and cycleways
- Calibration of spreaders, verification and checking
- 

An outline of each of these future sections follows.

## De-icer types and salting methods

This section of the Guide will include discussion and advice regarding the various de-icers available to winter service providers across the UK, as well as different spreading methods and equipment. Decision making processes for using the most appropriate materials and methods under different conditions and circumstances will be given, as well as considerations regarding the economics of the various available choices.

Guidance will be developed on the advantages and disadvantages of the different technologies, so that service providers are better able to determine the best solutions for their networks.

## Winter treatment decision maker training

A winter treatment decision maker (WTDM) competency framework is being developed for all highway authorities.

This will include the identification of training needs and the development of the elements of training for different stages of CPD.

An accreditation or audit system for WTDMs will be developed to assess performance, identify training needs and needs and ultimately facilitate consistent decision making.

## Route selection

Guidance will be developed relating to effective risk-based strategies for determining the extent of treated networks and treatment routes.

This will include practical guidance regarding how each risk should be evaluated and will be targeted at assisting service providers to adopt well-founded and consistent approaches to route selection and treatment.



## Treatment of footways and cycleways

A review of winter service on footways and cycleways will be undertaken, building on the NWSRG review completed in 2008. The Route Selection topic (as above) will cover what factors should be considered for treatment. The review will consider the types of de-icer (and abrasives), spreading equipment, forecasting, treatment rates, treatment times and clear-up operations.

Guidance will be developed regarding the most effective de-icing types and methods for footways and cycleways. It will also cover the role that members of the public and local businesses can play in helping to clear footways and cycleways, including practical advice for deciding when to make treatments and what they should be.

## Calibration of spreaders, verification and checking

The provision of guidance to highway authorities on the calibration of salt spreaders, their verification and monitoring at depots, to enable service providers to facilitate the introduction of reduced spread rates.

## Further Information

More details are available on the website at [www.nwsrg.org](http://www.nwsrg.org) with regard to the scope and extent of the work carried out by NWSRG. The NWSRG 2005 Guidance document is available for free download to non-members along with other useful documents and links to other information for winter service. Details of current subscription rates and how to join are also available.

If you wish to discuss the benefits of membership in more detail, or have particular interest areas in which you wish to take part, or you are interested in funding further research please contact:

**NWSRG Enquiries email** [nwsrg@trl.co.uk](mailto:nwsrg@trl.co.uk)

**Or**  
Matthew Evans  
NWSRG Liaison, TRL Ltd.  
**Telephone** 01344 770657

**Or**  
Adrian Runacres  
NWSRG Secretary & Technical Advisor  
**Telephone** 07711 967665

**Website** [www.nwsrg.org](http://www.nwsrg.org)