

## NWSRG – A New Guide to Provide Best Practice and Address Practical Issue for Winter Service

### Introduction

The Best Practice Guide for Spreading Salt was produced for NSSRG in 2005 and included guidance on spreaders, de-icing techniques and de-icers. Since then this guidance has been overtaken by new research, changing requirements and other events. It is proposed that a new “Practical Guide for Winter Service” is developed for the NWSRG which covers the key drivers for winter service. The new Guide will provide practitioners with a “what you need to do and how to do it safely, sustainably and cost effectively” approach rather than just list high level legislation, policy requirements and aspirations.



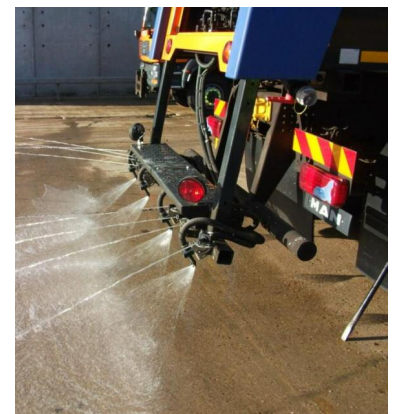
### The NWSRG

The National Winter Service Research Group is funded by subscriptions from local authorities and UK national governments. It is the successor to the NSSRG (the National Salt Spreading Research Group), covering a wider range of issues in delivering Winter Service for the UK road network.



### Vision

The NWSRG has asked TRL to produce a document that will provide practitioners with **practical** guidance in all aspects of setting up and delivering their winter service. This guidance will address issues ranging from risk and developing business cases in the provision of plant and equipment, through to determining the type of treatments to use. Advice will be given on salt stock levels, storage requirements and safe salting levels for a range of weather conditions across different network hierarchies and in different regions.



### A Three Stage Approach:

The development of the guidance document is being undertaken in three stages with breakpoints at the end of each stage. This will allow a reappraisal of the future direction if required and ensure that a finished document is available at each stage.

## Stage 1 – Build on existing knowledge and guidance

Guidance on the following topics will be developed:

- Performance requirements for spreaders
- Calibration and performance monitoring of spreaders
- Moisture content of salt
- Salting technology and salt grading, including brine spreading

This will be based around the most recent research by TRL and others for the NWSRG and Highways Agency and a review of innovation and best practice in other countries that are applicable to the UK requirement. Consultation with service providers and the industry will also form a major part of the development process to make sure the guidance is relevant, practical and meets the business needs of roads authorities.



## Performance requirements for spreaders

This section will identify and set out appropriate performance requirements for spreaders to be used on the UK local road network.

The establishment of performance requirements will:

- Ensure the performance of new local authority salt spreaders is adequate for safe salting at reduced spread rates
- Reduce risk and wastage due to under-spreading

or over-spreading of parts of carriageways

- Enable spread rates to be safely reduced and hence reduce the total amount of salt used
- Inform decisions on the purchase of new spreaders that meet the minimum requirements for a modern fleet

## Calibration and performance monitoring of spreaders

Guidance and a specification will be produced for the requirements and methods for calibrating spreaders to maintain optimum safe and economical salting. This will contribute to the same first three benefits listed above.

## Moisture content of salt

This section will inform practitioners on optimum moisture contents and storage methods. Calibration adjustment and spread rates for non-optimum conditions will also be given.

This will help:

- 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

## Salting technology and salt grading

The guidance given in this area will relate to different methods of spreading salt, the equipment required and the de-icers used. Decision making issues on appropriate methods dependant on circumstances and the economics of the available choices will be considered.

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

## Adding new knowledge

Guidance on new topics will be developed that, as well as drawing on recent research, will require some new research and consultation with service providers and the industry to broaden its scope. The review of innovation and best practice in other countries will also be used where appropriate. Guidance topics will include:

- Reducing spread rates
- Road weather information systems
- Route selection

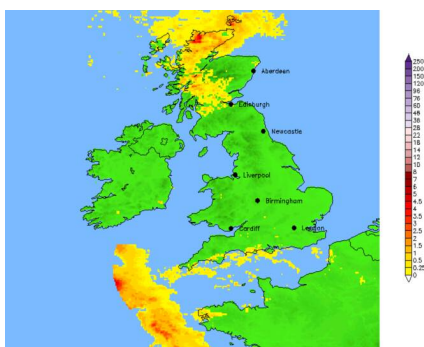
## Reducing spreading rates

Guidance on a risk based approach to safe, economical and sustainable salting with the advantage of also minimising environmental impacts will be developed.

The feasibility of reducing spread rates, and assessment of the risks involved will be investigated with a view to recommending reduced rates for general usage. Reference to similar investigations on the Highways Agency's road network will be made and it is proposed that a similar methodology is applied to local roads.

## Road weather information systems

A review of the accuracy and practicality of available forecasting and sensor systems will be undertaken. Using this information guidance on how they can be used in practice to deliver the required service levels will be developed.



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## Route selection

This will take a risk based approach to determining routes based on “what, where and when”.

Guidance will be developed on how each risk should be evaluated to enable service providers to adopt a consistent approach to route selection and the treatment of other areas.



## Stage 2 – New topics including decision making and improving efficiency

In order to identify the scope of further topics that should be covered by the Guide, the information needs and key costs of winter service will be determined.

## Decision making – an overview of information needs

Guidance on the information required to make the decisions necessary to carry out winter service efficiently and cost effectively will be developed.

Decision making in providing safe, economical and reliable winter service operations is based on a wide variety of information which is required in differing levels of detail and complexity and at different times. These decisions may have short, medium and long-term impacts on the service.

In the short-term, information is required on a day-to-day basis to decide whether to salt the highway, the best time to carry out any treatment, and the treatment levels along each route. The levels of salt stock to hold and the timing of salt purchase are also important.

In the medium-term, information is required to decide which type of de-icer to use (i.e. untreated, treated, purity, maximum grain size), which weather forecast provider to use, and how to prioritise and select routes for salting (for both carriageways and footways).



Long-term decisions include the type of spreader to purchase (for instance is a pre-wetted salting and/or brine capability required?), the number of spreaders required (frontline and reserves), and the number and locations of depot facilities with associated plant and salt barns. Other long-term considerations include the likely impact of climate change and how to deal with it (i.e. number of days with snowfall, rainfall, number of marginal nights, and number of turnouts per season, will these increase or decrease, what are the risks of more extreme events and how should they be catered for?).

## Improving efficiency – overview of costs and analysis

The cost elements of winter service will be determined, and the areas where there is the greatest potential to make cost savings will be identified. Any cost saving measures that can be implemented with immediate effect will be highlighted, but the study will also identify measures that can be taken to reduce costs in the medium and longer terms. When considering costs the likely impact on the environment including sustainability issues, the use of energy and carbon footprint will be taken into account.

The findings of a review of best practice and innovation in winter service will be included along with further consultation with service providers, other researchers, consultants and industry to identify techniques and methods used in the UK and internationally.

The guidance developed will include the following

within the relevant topics:

- Service levels
- Performance monitoring
- Customer expectations
- Public information
- Treatment frequencies and the impact of the treatment time
- Treatments in extreme weather – alternative de-icers and practices
- Snow clearance and treatment
- GPS spreading
- Route based forecasting
- Economical winter service
- Climate change
- Energy reduction/carbon footprint

## Stage 3 – New research

Where the development of the Guide identifies the need for further research before guidance can be completed, proposals for the work will be prepared. Dependent on the availability of funds, the research may be carried out and guidance developed as part of Phase 3.

## Outputs

The completion of each topic will result in a section of the Guide being published for use by the members of the NWSRG. All sections will be independently reviewed by the NWSRG Technical Consultant and the working groups set up to oversee the work. Stage 1 will be completed by December 2010 and Stage 2 will be completed by September 2011. The Practical Guide for Winter Service and a Final Report with evidence to support the guidance will be completed by December 2011.

## Further Information

**Barry Cleave**

Head of Asset Management

**Telephone** 01344 770164

**Mobile** 07771 604891

**Email** [bcleave@trl.co.uk](mailto:bcleave@trl.co.uk)

**Website** [www.trl.co.uk/nwsrg](http://www.trl.co.uk/nwsrg)