Highway Winter Service Plan 2014
## Record Of Amendments

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</tr>
</tbody>
</table>
Contents

FOREWORD ........................................................................................................................................ 7

PART A
1. EXECUTIVE SUMMARY

1.1 Structure of Highway Winter Service Plan ........................................................................... 11
1.2 Objectives of the Highway Winter Service Plan .................................................................... 11
1.3 Status of the Highway Winter Service Plan ........................................................................... 11

2. INTRODUCTION

2.1 The Revised Plan ..................................................................................................................... 13
2.2 Purpose, Objectives and Statutory Basis .................................................................................. 13

PART B
3. POLICY STATEMENT

3.1 Policy Statement ..................................................................................................................... 17

PART C
4. OPERATIONAL PLAN

4.1 Introduction ............................................................................................................................. 22
4.2 Operational Plan .................................................................................................................... 23
4.3 Contingency Arrangements During Severe Weather ............................................................. 24
4.4 The Emergency Plan .............................................................................................................. 25
4.5 When to Treat ........................................................................................................................ 25
4.6 The Service Provider(s) ......................................................................................................... 26
4.7 The Winter Season ................................................................................................................ 26

5. STATEMENT OF POLICIES AND RESPONSIBILITIES

5.1 Policies and Objectives .......................................................................................................... 28
5.2 Risks and Responsibilities .................................................................................................... 30
5.3 Shared risks and responsibilities .......................................................................................... 32
5.4 Decision making process and responsibilities ...................................................................... 32
5.5 Liaison & communication arrangements with other authorities ........................................ 33
5.6 Other Public Services (The Enhanced Winter Service) ....................................................... 34
5.7 Winter Risk Period .............................................................................................................. 35
5.8 Resilience Standards ............................................................................................................ 35

6. QUALITY MANAGEMENT

6.1 Quality management regime including regular service audits .............................................. 39
6.2 Document control procedures .............................................................................................. 39
<table>
<thead>
<tr>
<th>Contents</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.3 Information recording and analysis</td>
<td>39</td>
</tr>
<tr>
<td>6.4 Arrangements for performance monitoring, audit and updating</td>
<td>40</td>
</tr>
<tr>
<td>7. ROUTE PLANNING FOR CARRIAGEWAYS, FOOTWAYS AND CYCLE ROUTES</td>
<td></td>
</tr>
<tr>
<td>7.1 Carriageway routes for pre-treatment</td>
<td>42</td>
</tr>
<tr>
<td>7.2 Carriageway routes for post-treatment by risk level</td>
<td>45</td>
</tr>
<tr>
<td>7.3 Carriageway routes for snow clearing by risk level</td>
<td>46</td>
</tr>
<tr>
<td>7.4 Routes for footbridges, subways and other high risk pedestrian areas</td>
<td>47</td>
</tr>
<tr>
<td>7.5 Routes for other footway treatment by risk level</td>
<td>48</td>
</tr>
<tr>
<td>7.6 Routes for cycle route treatment by risk level</td>
<td>49</td>
</tr>
<tr>
<td>7.7 Special sites or features (e.g. near railways or traffic calming)</td>
<td>49</td>
</tr>
<tr>
<td>7.8 Response and treatment times for all carriageway treatments</td>
<td>50</td>
</tr>
<tr>
<td>7.9 Response and treatment times for footway and cycle route treatments</td>
<td>52</td>
</tr>
<tr>
<td>7.10 Allocation of plant, vehicles, equipment and materials to routes</td>
<td>53</td>
</tr>
<tr>
<td>7.11 Location and maintenance of salt bins and grit heaps</td>
<td>53</td>
</tr>
<tr>
<td>8. WEATHER PREDICTION AND INFORMATION</td>
<td></td>
</tr>
<tr>
<td>8.1 Road weather stations</td>
<td>55</td>
</tr>
<tr>
<td>8.2 Road weather information bureau service</td>
<td>55</td>
</tr>
<tr>
<td>8.3 Road weather forecast</td>
<td>55</td>
</tr>
<tr>
<td>8.4 Thermal mapping</td>
<td>55</td>
</tr>
<tr>
<td>8.5 Information to be provided</td>
<td>56</td>
</tr>
<tr>
<td>8.6 Timing and circulation of information</td>
<td>56</td>
</tr>
<tr>
<td>8.7 Reporting procedure</td>
<td>56</td>
</tr>
<tr>
<td>8.8 Maintenance of ice detection equipment</td>
<td>56</td>
</tr>
<tr>
<td>9. ORGANISATIONAL ARRANGEMENTS AND PERSONNEL</td>
<td></td>
</tr>
<tr>
<td>9.1 Command, control and operational organisation</td>
<td>57</td>
</tr>
<tr>
<td>9.2 Employee roles and responsibilities</td>
<td>59</td>
</tr>
<tr>
<td>9.3 Employee duty schedules, rotas and standby arrangements</td>
<td>60</td>
</tr>
<tr>
<td>9.4 Standard operating procedures</td>
<td>60</td>
</tr>
<tr>
<td>9.5 The Decision Making Process</td>
<td>61</td>
</tr>
<tr>
<td>9.6 Operational monitoring</td>
<td>56</td>
</tr>
<tr>
<td>9.7 Operational record keeping and reporting</td>
<td>71</td>
</tr>
<tr>
<td>9.8 Plant and vehicle manning arrangements, including management of drivers hours regulations</td>
<td>71</td>
</tr>
<tr>
<td>9.9 Materials management</td>
<td>72</td>
</tr>
<tr>
<td>9.10 Schedules of Contract and Voluntary Personnel (CVP)</td>
<td>72</td>
</tr>
</tbody>
</table>
### Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.11 Contact and commissioning arrangements for CVP</td>
<td>72</td>
</tr>
<tr>
<td>9.12 Training and development arrangements</td>
<td>72</td>
</tr>
<tr>
<td>9.13 Health and safety procedures</td>
<td>73</td>
</tr>
<tr>
<td>10. FACILITIES, PLANT, VEHICLES AND EQUIPMENT</td>
<td></td>
</tr>
<tr>
<td>10.1 Winter Service compounds and facilities</td>
<td>75</td>
</tr>
<tr>
<td>10.2 Fleet inventory including licence requirements and capacity</td>
<td>75</td>
</tr>
<tr>
<td>10.3 Location of plant, vehicles, snow-blowers and other equipment</td>
<td>76</td>
</tr>
<tr>
<td>10.4 Garaging, servicing and maintenance arrangements</td>
<td>76</td>
</tr>
<tr>
<td>10.5 Contact and hire arrangements for contract plant</td>
<td>77</td>
</tr>
<tr>
<td>10.6 Calibration procedures</td>
<td>77</td>
</tr>
<tr>
<td>10.7 Fuel stocks and locations</td>
<td>78</td>
</tr>
<tr>
<td>11. SALT AND OTHER DE-ICING MATERIALS</td>
<td></td>
</tr>
<tr>
<td>11.0 Location and capacity of stocks for salt and other materials</td>
<td>81</td>
</tr>
<tr>
<td>11.1 Testing arrangements</td>
<td>82</td>
</tr>
<tr>
<td>11.2 Loading arrangements</td>
<td>82</td>
</tr>
<tr>
<td>11.3 Treatment requirements including spread rates</td>
<td>82</td>
</tr>
<tr>
<td>12. OPERATIONAL COMMUNICATIONS</td>
<td></td>
</tr>
<tr>
<td>12.0 Technical systems information</td>
<td>84</td>
</tr>
<tr>
<td>12.1 Inventory and allocation, including back up</td>
<td>84</td>
</tr>
<tr>
<td>12.2 Reporting arrangements and protocols</td>
<td>84</td>
</tr>
<tr>
<td>13. INFORMATION AND PUBLICITY</td>
<td></td>
</tr>
<tr>
<td>13.1 Local press and broadcast contact information</td>
<td>87</td>
</tr>
<tr>
<td>13.2 Other key local and national contact information</td>
<td>87</td>
</tr>
<tr>
<td>13.3 Responsibilities and guidance for providing information</td>
<td>87</td>
</tr>
<tr>
<td>13.4 Road weather stations</td>
<td>87</td>
</tr>
<tr>
<td>13.5 Road weather information bureau service</td>
<td>87</td>
</tr>
<tr>
<td>13.6 Road weather forecast</td>
<td>87</td>
</tr>
<tr>
<td>13.7 Thermal mapping</td>
<td>87</td>
</tr>
<tr>
<td>13.8 The decision making process</td>
<td>88</td>
</tr>
<tr>
<td>13.9 Information to be provided</td>
<td>88</td>
</tr>
<tr>
<td>13.10 Timing and circulation of information</td>
<td>88</td>
</tr>
<tr>
<td>13.11 Reporting procedure</td>
<td>88</td>
</tr>
</tbody>
</table>
Extracts from the Code of Practice Tables (Modified to suit Derby City)

Decision Making Process

Table H8 – Effect of Trafficking
Table H9 – Precautionary Treatment Decision Matrix Guide (To suit Derby)
Table H10 – Road Surface Wetness
Table H12 – Determining Spread rates
Treatment Matrix C – Spread rates using Treated Salt

H10  Treatments for snow and ice

Matrix D – Treatment for snow conditions, compacted ice, freezing rain and slush

Copy of Appendix C3 Footway Treatment decision matrix

PART D

Procedure C5.1: Snow Clearance – Carriageways
Procedure C5.2: Snow Clearance – Footways

APPENDIX D4: Glossary of Terms
Foreword

In the United Kingdom the organisations responsible for maintaining the public roads (or highways) are known as Highway Authorities.

Within the boundary of the City of Derby, the Council is the highway authority responsible for the provision of the maintenance service for all of the public highways, except those roads designated as trunk roads. The Department for Transport (DfT) is the highway authority responsible for the trunk road network throughout Derby. This responsibility is managed by the Highways Agency (HA) which is an executive department of the DfT.

Outside the City Boundary the highways are maintained by Derbyshire County Council, again except for those highways which are maintained as trunk roads by the DfT.

Throughout this document the term “Highway” shall be deemed to include all carriageways, footways, cycle routes and verges between the highway boundaries which have been adopted by the highway authority and for which they are the maintenance authority. Un-adopted highways and Private Streets are roads which are not maintainable at public expense. Therefore un-adopted highways and Private Streets are not included in the Highway Maintenance Management Plan or in this Highway Winter Service Plan.

Additionally, all references to salt shall be deemed to include other de-icing materials unless the context indicates otherwise.

This document is a major revision of Derby City Council’s existing Winter Maintenance Policy to take account of changes in legislation and updated good practice guides.

It has been produced in accordance with the recommendations of the following publications:-


UK Road Liaison Group: Winter Service Guidance for Local Authority Practitioners, published in 2010: Recommended Precautionary Treatments and Post Treatments including Revised Salt Spread Rates

UK Road Liaison Group: Lessons from the Severe Weather February 2009

NWSRG Practical Guide for Winter Service 2010

Code of Practice for Highway Maintenance Management

The following extract from the Code of Practice describes the main purpose of highway maintenance.

“The main purpose of highway maintenance is to maintain the highway network for the safe and convenient movement of people and goods. The core objectives of highway maintenance are to deliver a safe, serviceable and sustainable network, taking into account the need to contribute to the wider objectives of asset management, integrated transport, corporate policy and continuous improvement.”

Winter Service plays an important role in highway maintenance. Therefore, the Code’s core objectives of Network Safety, Network Serviceability and Network Sustainability will apply to the Winter Service.
Legal Framework

The maintenance responsibility of the highway authorities in the United Kingdom is a statutory duty, that is, a legal requirement.

The Highways Act 1980 is the primary legislative instrument covering this maintenance responsibility, including the Winter Service obligations of the highway authority.

In England and Wales Section 41 (1A) of the Highways Act 1980 was inserted on 31st October 2003 by Section 111 of the Railways and Transport Act 2003. The first part of Section 41 now reads:

1) “The authority who are for the time being the highway authority for a highway maintainable at the public expense are under a duty, subject to subsections (2) and (3) below, to maintain the highway.”

1A) “In particular, a highway authority are under a duty to ensure, so far as is reasonably practicable, that safe passage along a highway is not endangered by snow and ice.”

This is not an absolute duty given the qualification of ‘reasonably practicable’. In terms of the scale of financial and other resources required to deliver the Winter Service it is not considered practically possible to either:

- Provide the service on all parts of the network; or
- Ensure running surfaces are kept free of ice or snow at all times, even on the treated parts of the network.

A robust system of risk assessment is needed to establish which parts of the network will be treated as part of the Winter Service.

Weather and Economic Factors

Winter Service is, by its nature, an inexact activity. There can be no truly accurate assessment on the level of demand placed on the service from one year to the next. However, experience of the weather in previous years can be used to predict the average requirements in terms of resources, including finance, for future years.

Therefore the provision of an effective Winter Service must balance economy against the provision of sufficient resources to treat an average winter’s conditions. However any effective Winter Service Plan must also be capable of being adapted or extended to react to severe weather conditions.

The importance of the Winter Service should not be underestimated, not only in terms of safety to users of the highway, but also in terms of customer satisfaction.
Part A
Section 1

1.0 Executive Summary

1.1 STRUCTURE OF THE HIGHWAY WINTER SERVICE PLAN

This Service Plan is set out in five Parts, each of which is divided into sections:

Part A: Executive summary, introduction to the Service Plan, and its scope and purpose
Part B: Policy statement and explanation of the policy
Part C: Operational plan
Part D: Operational manual
Part E: The Appendices with more detailed information, including References and procedures (This is a separate controlled document. Some references and contact details within the Appendices should remain confidential. Therefore its circulation is strictly controlled for security reasons).

1.2 OBJECTIVES OF THE HIGHWAY WINTER SERVICE PLAN

- To minimise delays, accidents and damage resulting from frost, ice or snow;
- To undertake the Winter Service effectively and efficiently;
- To prevent the formation of ice on the defined priority routes by precautionary treatment with salt;
- To melt snow and ice already formed by post treatment with salt;
- To remove snow causing an obstruction on the highway.
- To plan and prepare for severe cold weather events

1.3 STATUS OF THE HIGHWAY WINTER SERVICE PLAN

1. Derby City Council has legal obligations with which they must comply, and which may, on occasion, be the subject of claims or legal action by those seeking to establish non-compliance by the Council. The Highway Winter Service Plan defines how Derby City Council will comply with its legal obligations.

2. The Highway Winter Service Plan has been developed from the recommendations contained in “Well-maintained Highways – Code of Practice for Highway Maintenance Management”, (the “Code”), and in particular the recommendations contained in Section 13: Winter Service and Appendix H and any subsequent revisions.

3. The recommendations contained in the Code are not mandatory for authorities. However, the Code is generally recognised as good practice and the contents may be considered in any claim or legal action against an authority.

4. Derby City Council accepts the recommendations of the Code as good practice and formally adopts these recommendations.
5. Any variation from the Code is identified as such along with the reasoning for such differences. Other recommendations have been considered such as the independent review (“the Quarmby Review”), research carried out by the Transport Research Laboratory on behalf of the Highways Agency, and the National Winter Service Research Groups (NWSRG) guidance on the possibility of reducing salt spreading rates.

6. The Highway Winter Service Plan is a controlled document within the City Council’s Quality Management Regime.
Section 2

2.0 Introduction

2.1 THE REVISED PLAN

1. This edition of the Highway Winter Service Plan is a complete revision of the current Winter Maintenance Policy published in 1997 to take account of significant changes in legislation, policy and practice.

2. The Winter Service has been called various names in the past including Winter Maintenance, but the particular management requirements during this period are not ‘maintenance’ in the traditional sense but specialist operational services. The term ‘Winter Service’ has been used in Northern Ireland and provides a more apt description and has been adopted by the Code of Practice for Highway Maintenance Management. This highway winter service plan is based on that Code of Practice and therefore has adopted the same terminology.

3. Winter Service is not an emergency service in the traditional sense in that low temperatures, ice and snow are regular, frequent and reasonably predictable occurrences, even given the effects of climatic change. In these circumstances the Winter Service is subject to the same regime of planning and review as the other aspects of the highway maintenance regime.

4. The policies and operational plans developed for the Winter Service have relevance in emergency planning for dealing with other extreme weather conditions including flooding, high winds and high temperature, the incidence of which may be affected by climatic change. They will also have some relevance to the wide range of non-weather related emergencies that could affect the highway network.

5. Although a much specialised area, the Winter Service is a significant aspect of network management both financially and in terms of its perceived importance to users. It can also have significant environmental effects. The organisation of the service will have considerable implications for the overall procurement and operational management of other highway maintenance services. According to the Institution of Civil Engineers Design and Practice Guide 2000 “A survey concluded that for every £1 spent on winter maintenance, £2 is saved on accident reduction, £5 is saved on a reduction in traffic delays and £1 is saved by not creating the need to engage emergency services.”

2.2 PURPOSE, OBJECTIVES AND STATUTORY BASIS

1. The Winter Service can contribute significantly to each of the core objectives stated in the Code of Practice. It also can be a major influence on customer satisfaction through demonstrating an efficient, effective and proportionate response to winter conditions.

Safety

- Detailed statutory obligations and users’ needs vary in different parts of the UK, but safety is a prime consideration for the Winter Service.

Serviceability

- Maintaining availability and reliability of the highway network is a key objective of the Winter Service, and one where user judgements of performance will be immediate rather than longer term.
Sustainability

- Low temperatures and the formation of ice can cause serious damage to the fabric of the road surfaces and the Winter Service can therefore make an important contribution to whole life costs.

2. The statutory basis for Winter Service varies in different parts of the UK. In England and Wales Section 41 (1A) of the Highways Act 1980 was inserted on 31st October 2003 by Section 111 of the Railways and Transport Act 2003. The first part of Section 41 now reads:

(1) The authority who are for the time being the highway authority for a highway maintainable at the public expense are under a duty, subject to subsections (2) and (3) below, to maintain the highway.

(1A) In particular, a highway authority are under a duty to ensure, so far as is reasonably practicable, that safe passage along a highway is not endangered by snow or ice.

3. This is not an absolute duty, given the qualification of ‘reasonably practicable’, but it does effectively overturn previous legal precedence, albeit not with retrospect effect. Section 150 of the Act still imposes a duty upon authorities to remove any obstruction of the highway resulting from ‘accumulation of snow or from falling down of banks on the side of the highway, or from any other cause’.

4. Given the scale of financial and other resources involved in delivering the Winter Service and the obvious difficulties in maintaining high levels of plant utilisation for specialist equipment, it is not practically possible either to:

- Provide the service on all parts of the network;
- Ensure running surfaces are kept free of ice or snow at all times, even on the treated parts of the network.

5. In these circumstances, in order to comply with the changes in legislation, it will be necessary to undertake risk assessments to establish which routes should be included in a programme of treatment during inclement weather. In particular, the treatment of footways must be fully addressed, taking account of risk to all highway users and consideration of the available resources. It is particularly important to:

- Develop policies and operational plans, in consultation with users and other stakeholders, based on principles of risk assessment, defining the extent of the service;
- Ensure that these are widely known and understood especially by users, together with relevant advice on safe use of the network;
- Continually monitor performance during service delivery and respond effectively to changing conditions or network incidents.

6. There are, in all parts of the UK, very considerable user needs and expectations on which authorities should focus in accordance with the key principles of best value and continuous improvement.
Part B
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Section 3

3.0 Policy Statement

3.1 POLICY STATEMENT

Derby City Council as the Local Highway Authority notes that an amendment to Clause 41 of the Highways Act 1980 has from 31st October 2003 imposed a Statutory Duty upon the Highway Authorities to ensure that as far as is reasonably practicable snow and ice does not endanger users of the highway. The Council will therefore take measures to reduce the effects of adverse weather and provide travelling conditions as safe as reasonably practicable having regard to financial constraints and available resources.

3.2 DERBY CITY COUNCIL WILL:-

General

• Approve, adopt and publish the Highway Winter Service Plan based on the principles of “Well-maintained Highways: Code of Practice for Highway Maintenance Management: July 2005” published by The Stationery Office or subsequent amendments to this document.

• Provide to the residents of Derby and those travelling on the highway network, the Winter Service in accordance with the published Highways Winter Service Plan or as subsequently revised.

• Ensure that the Winter Service is provided in an efficient and effective way within the principles of best value and sustainability.

• Ensure that the Winter Service complies with the requirements of the Corporate Equality and Diversity Plan.

Consult

• Consult with adjoining highway and strategic authorities to co-ordinate the Winter Service to ensure that route planning and treatment regimens to meet road users’ reasonable expectations for consistency and provide value for money.

• We will consult annually with highway users via our web site using a snap survey and key stakeholders (those people currently on our weather action circulation list) prior to the production of the Highway Winter Service Plan to take account of changing local circumstances.

• Review all arrangements for delivering the Winter Service annually. The Council will consult with all service partners including Operatives, adjacent and strategic authorities to ensure clear terms of reference for the provision and management of all resources, health and safety, and insurance.

Define

• Define the hierarchy of the highway network for which it has responsibility. Each length of carriageway, footway and cycle route will be assigned to a Category in accordance with the principles of the Code of Practice for Highway Maintenance Management.
Design
- Design Winter Service treatment routes for carriageways, footways and cycle routes using the defined network categories to prioritise the network.

Manage
- Manage the Winter Service Operations to ensure a high standard of service is provided to the highway users.
- Issue instructions to the Winter Service Operational Teams to treat the defined network, to maintain the highway network in as safe a condition as reasonably and practically as we are able within the constraints of the Council’s budgets.
- Monitor the performance of the Weather forecast provider, Salt supplier in delivering salt, whether the daily ‘Action’ was issued on time, and the level of service provided by the Winter Service Operational Teams.

Publish
- Publish and review this Policy Statement annually.
- Publish a non-technical summary of the Highway Winter Service Plan which will include plans of the treated network and guidance on the safe use of the network.

Technical
- Annually review the Highway Winter Service Plan, with particular regard to changes in legislation, case law and good practice guidelines.
- Monitor new developments in weather forecasting and ice detection systems to ensure Best Value in the provision of Winter Service.
- Annually carry out a full technical review to ensure that full operational service status is reached prior to the commencement of the Winter Season. The review will ensure that the correct equipment, vehicles, plant and maintenance arrangements are in place and that salt, grit, specialist de-icing materials and fuel supplies are available.
- Ensure that all de-icing equipment and spreaders are calibrated in accordance with the required British or European Standard prior to the commencement of the Winter Season.
- Carry out an annual review of the personnel involved in the provision of the Winter Service to ensure that training and development needs are addressed. Where training needs are identified Derby City Council will provide the necessary training to the personnel directly employed by them in advance of the Winter Season commencing.
- Keep comprehensive and accurate records of all Winter Service activities including the timing and nature of all decisions, the information on which those decisions were based, and the nature and timing of all treatments.
- Manage the purchase, storage and use of salt and other de-icing materials consistent with the principles of Best Value and sustainability and in-line with our current resilience standards.
• Manage the purchase, storage, placement, filling and re-filling, and removal of salt bins consistent with the principles of Best Value and sustainability.
Part C
Section 4

4.0 Operational Plan

4.1 INTRODUCTION

1. The Winter Service is currently provided by the Highways and Engineering Section of Streetpride within the Neighbourhoods Directorate. The Winter Service Duty Officers act as decision makers on behalf of the City Council and determine whether the Winter Service Operatives should commence gritting, or snow clearing operations or not. The Service is planned to ensure adequate resources are available to respond to adverse conditions affecting public highways, to enable safe passage of travel for the majority of the highway users in Derby.

2. Derby is not usually affected for long periods of extreme weather conditions and, consequently, resources are provided to deal with conditions that might be expected to occur during an average winter season.

3. During a typical winter season the key method of maintaining the network will be by pre-treatment with salt, known as precautionary salting, and will be sufficient in most circumstances.

4. Post-treatment of the network may also need to be carried out where ice has already formed or snow has fallen and become compacted.

5. When significant amounts of snow fall, salting and other snow clearance operations shall take place. The primary and secondary routes are always cleared first which generally include routes to Hospitals, Fire Stations, Ambulance Stations, Police Stations and main arterial roads. Then at least one access road from the main road network to all communities permitting access to main supermarkets and district shopping centres.

6. The public perception of the Winter Service is often that the material spread from vehicles is “grit”. This perception is not assisted by the use of the terms “Gritting” and “Gritter”. In the majority of cases the actual material used is “Ground Rock Salt” otherwise known as Halite. Therefore the terminology adopted throughout this document shall be:

a) Gritter – custom built vehicle designed to apply salt, grit or other de-icing materials to the highway;

b) Gritting – the action of applying salt, grit or other de-icing materials to the highway;
c) Salt – ground rock salt or sea salt – used to prevent the formation of ice; to treat ice once it has formed; to prevent snow from settling on the highway; to treat un-compacted snow which has settled on the highway.

e) Ballast – a single-sized abrasive aggregate of particle size 0.6 – 1.0 mm (used in combination with salt on compacted snow and ice). Sand having a low fine content (used in combination with salt on compacted snow and ice).

OPERATIONAL PLAN

1. Operationally the plan is designed to provide a consistent and co-ordinated Winter Service across the City, including liaison and co-operation with adjacent authorities.

2. The Winter Service operations will be reviewed at the end of each winter season and the revised Plan will be issued annually in September.

3. The Winter Service Duty Officer will obtain the weather forecast each day and assess whether any action is required, and, if so, the time at which treatment is to commence.

4. Where action is instructed by the Winter Service Duty Officer the spread rate required will be stated.

5. All treatment routes have been designed to complete a 20 g/m² treatment within the specified treatment time of two hours and 30 minutes.

6. The Duty Officer will issue a text message to the Winter Service Supervisor (via the Vaisala Manager system), this will instruct them to commence treatment. This instruction will then be passed onto the Operatives by their Supervisor, and will confirm which routes are to be treated, the time at which treatment is to commence, and the required spread rate of salt and any other instructions considered necessary. (Appendix A3)

7. The Winter Service Duty Officer will monitor the weather and obtain updates as necessary, issuing further instructions where required.

8. The Winter Service Supervisor will liaise with the Operatives especially where conditions are subject to change. The Supervisor will pass “real-time” information back to the Winter Service Duty Officer when required to do so, acknowledging where the weather or road conditions have changed from what was expected, and any actions the Operatives have taken, for example: any decisions they have made to spot grit a particularly wet part of the road (which may later freeze), or where a temporary road closure necessitated that a diversion route to be gritted.

9. The Winter Service Duty Officer will complete the form retained within the Vaisala Manager system as shown in Appendices A3. This ‘Action’ form incorporates both of the previously used Action sheet and the Daily Decision Justification Logs into one form, and displays both the action and justification for the treatment. This is information is not made publicly available. During the Decision making process the Duty Officer will follow the processes suggested in the latest Code of Practice Appendix H issued September 2013. These now involve also taking the following into account.

- Type of salt being used (i.e. dry/treated or pre-wet)
- Distribution and discharge parameters
- Road Surface Wetness
- Traffic levels
- The Precautionary Treatment Decision Matrix guide.
• Recent calibration of the gritters
• Salt moisture content
• Wind speed
• Determining the spreader capability

When snow/freezing rain has been forecast the following will also be considered:
• Preparation and treatments before snow/freezing rain begins
• Whether ploughs need to be fitted
• Timing of treatments
• The effects of traffic
• Post treatments

10. The Vaisala on-line forms and text messages record the information passed between the Winter Service Duty officer and the Winter Service Supervisor. These forms including the forecast used at the time the decision was made, will be retained in a report format within the Vaisala manager system for future reference. These reports will also periodically be archived and retained by the City Council. This system is compliant with the latest revisions made to the Code of Practice Appendix H September 2013 and assists the Duty Officer in making their decisions.

4.3 CONTINGENCY ARRANGEMENTS DURING SEVERE WEATHER

1. In the event of a prolonged period of severe weather or in the event of snow, the following contingency arrangements may be employed:-

   a) Grounds Maintenance operatives may be instructed to cease grounds maintenance operations to assist with the provision of the Winter Service.

   b) Street Cleansing operatives may be instructed to cease street cleansing operations to assist with the provision of the Winter Service.

2. Refer to Section 5.8 regarding our Resilience Standards and the likelihood of Reducing Routes during Severe or prolonged winters. Refer to Section 10.7.1 regarding fuel resilience levels.

3. We have a demountable spreader available that can be fitted to our 18.5 tonne grab wagon, if an emergency spare gritting vehicle is required during severe conditions. Our smaller pick-up mounted and trailer mounted spreaders can also be utilised if necessary during severe weather, especially on narrower roads.
THE EMERGENCY PLAN

1. In extreme, prolonged or severe weather conditions or in the event of a Civil Emergency (reference Civil Contingencies Act 2004) the Emergency Plan may need to be invoked, the Emergency Plan will take precedence over the Highway Winter Service Plan. In this situation the Director of Partnership and Streetpride, or a delegated Senior Manager is likely to oversee the Operations and to provide guidance and direction to the Winter Service Duty Officer and/or the Operational teams. In the event of a Civil Emergency, Category 1 & 2 responders will liaise directly with the Senior Responsible Officer or an officer delegated to that role in accordance with the Emergency Plan.

The Emergency Plan is a protected document which contains contact details and other confidential information and is restricted to specific individuals within both Derby City and Derbyshire County Councils.

4.5 WHEN TO TREAT

1. The decision to pre-treat the highway network is based on two main factors:-
   a) The forecast ROAD SURFACE TEMPERATURE, and
   b) The presence of MOISTURE on the road surface.

2. The combination of these factors may lead to confusion on the part of the general public. Frost or ice on a vehicle early in the morning may not necessarily be a good indicator that treatment has taken place. Roads retain heat and do not cool down nearly as quickly as objects such as cars. So, although the AIR temperature may be at or below freezing, the ROAD SURFACE temperature may be above freezing and precautionary treatment will not be required.

3. Treatment with salt is likely when the weather forecast indicates with a HIGH CONFIDENCE levels that road surface temperatures are forecast to be at MS00 (Minus zero degrees) or below, and moisture is present or likely to be present to form ice. Sometimes the Met office forecast will indicate PS00 (Plus zero degrees) this describes when the Road Surface Temperature is between +1°C and 0°C (in other words the Road Surface Temperature is close to, but not likely to go below freezing). When this is forecast we will carry out gritting on our Cold Spot Routes only, where our thermal mapping process has identified where specific roads are consistently cooler than where our surface temperature sensor is located. Ultimately this decision is still the responsibility of the Winter Service Duty Officer.

4. Frost does not usually affect road surfaces until late evening or early morning so, whenever possible, treatment will be carried out overnight, and outside periods when road traffic is heavy, also avoiding times when school children are likely to be arriving or leaving their schools.

5. Great care is taken when applying salt to ensure that the appropriate rates of spread are used, so that enough salt is spread to be effective but not too much creating unnecessary waste. To do this we have incorporated the revised guidance on spread rates developed by the National Winter Service Resilience Group (NWSRG) into our working practices. Winter Service vehicles are extremely powerful and have to distribute the salt across the full width of the carriageway. Motorists are therefore advised to keep a safe distance when following a gritting vehicle, and to exercise great care if the motorist decides to overtake the gritting vehicle whilst it is spreading.
4.6 THE SERVICE PROVIDER(S)

1. The Winter Service is provided by the Highways and Engineering Division under the Neighbourhoods Directorate, therefore other staff may be employed as part of the contingency arrangements during periods of severe weather, they are:-
   - Street Cleansing
   - Grounds Maintenance

4.7 THE WINTER SEASON

1. The Winter Season is defined as the period 1st October to 30th April annually.

2. During this period the Winter Service Operatives will be available to respond as required 24 hours per day. This will be carried out on a rolling basis by rota.

3. There are two defined periods for operational and communication purposes as follows:-
   a) **Low Period** October and April, when it is anticipated that severe conditions are generally not to be expected.
   b) **High Period** November to March, when severe conditions might reasonably be expected.

4. If adverse conditions occur outside of these periods the Operatives are required to respond as and when necessary.
Section 5

5.0 Statement of Policies and Responsibilities

5.1 POLICIES AND OBJECTIVES

Policy

1. Part B of this document is Derby City Council’s Policy Statement.

2. Derby City Council has provided, and will continue to provide a Winter Service. The objective of the service is, as far as reasonably practicable, to mitigate the effects of the formation of snow and ice on the more important parts of the highway network. This will ensure as safe a journey as possible for the majority of the travelling public and minimise delays and accidents directly attributable to adverse weather conditions.

3. The highway network consists of carriageways, footways and cycle routes. Each of these parts of the highway is considered separately in terms of how the Winter Service will be applied.

4. Highway Authorities in England and Wales have a statutory duty under Section 150 of the Highways Act to remove snow. There has been no requirement in the past to treat ice or carry out precautionary treatment of the highway network, but this has been undertaken to provide as safe a journey as possible to the travelling public, having regard to financial constraints and National and local salt stock levels.

5. The Operational Plan has already taken account of these legal changes but may need to be revised further after the legal and insurance issues have been considered. Regardless of any modifications required as a result of any change in the law, the Operational Plan will be revised annually in any event.

6. This plan is based on current best practice guidance including the principals of the “Code of Practice for Highway Maintenance Management” Section 13: Winter Service Appendix H (and subsequent revisions) and the Institution of Civil Engineers Design and Practice Guide on Highway Winter Maintenance or as subsequently revised. Other recommendations have been considered such as the independent review (“the Quarmby Review”), research carried out by the Transport Research Laboratory on behalf of the Highways Agency, and the National Winter Service Research Groups (NWSRG) guidance on the possibility of reducing salt spreading rates.

Carriageway

7. The carriageway network is split into three levels of priority for the purposes of the provision of the Winter Service, as detailed in Section 7.

8. Precautionary treatment will be carried out on carriageways classified as Priority I and Priority II, to the standard detailed in Section 7. The Priority I and II networks are listed in the Appendices and include Principal Roads, Major Bus Routes and selected Distributor Roads.

9. The “Response Time” from the decision to commencing immediate treatment of precautionary carriageway routes shall be one hour.

10. The “Target Time” to complete the treatment routes shall be 2 hours and 30 minutes from commencement time.

11. Post treatment of carriageways will be carried out to the standard detailed in Section 7 on the designated Priority I and Priority II routes listed in the Appendices when snow or ice is forecast to persist for at least a further 24 hours.

12. During prolonged spells of snow or ice the remainder of the adopted highway network (Priority III routes) will be treated where appropriate and practicable with the priority...
being given to roads serving local shopping areas and in term time those next to schools.

Footway

13. The footway network is split into five categories in accordance with Appendix D1. These categories relate to the profile, location and typical usage in accordance with guidance provided by the current Code of Practice “Well Maintained Highways”.

14. Category 1A: Prestige Walking Zones are those footways with the highest profile and importance, and, in Derby refers to the pedestrianized areas of the City Centre.

15. Category 1: Primary Walking Routes are those footways in busy shopping areas and main pedestrian routes. In Derby these are the main arterial footway routes around the City Centre and the footways within the vicinity of the Derby Royal Hospital and when resources are available fronting district shopping areas.

16. The grounds around Derby County football stadium, the Park and Ride car parks and the main footways in the vicinity, which supporters use to access the stadium are gritted when a match has been planned and freezing condition are forecast, or when snow is lying. These are shown in Appendix B7.4 also refer to section 5.5.

17. Category 2, 3 and 4 footways are defined in Appendix D1.

18. Precautionary treatment of footways and pedestrian areas will be carried out on Category 1A footways when the forecast indicates (with a HIGH CONFIDENCE) that rain will be followed by freezing conditions, or when snow is forecast. Category 1 footways within and around the City Centre will also be treated where reasonably practicable and when resources become available. These footway routes are listed in the Appendices.

19. Post treatment of footways and pedestrian areas will be carried out on Category 1A footways and Category 1 footways within and around the City Centre when snow and/or ice is forecast to persist for at least a further 24 hours.

20. Post treatment of footways and pedestrian areas in Categories 2, 3 and 4 areas outside the City Centre, will not normally be carried out.

21. During prolonged periods of freezing (where temperatures are consistently below freezing for longer than a period of 48 hours) other footways and pedestrian areas will be treated but the priority always being:- important pedestrian routes within the City Centre, footways in the vicinity of the Derby Royal Hospital, main carriageway crossing points, footways fronting district shopping areas, and, in term time, those next to schools.

Cycle Routes

22. The cycle route network is categorised in accordance with Appendix D1. These categories primarily relate to the location of the cycle route within the Highway.

23. Category A: Cycle Lanes are those facilities which form part of the carriageway.

24. Category B: Cycle Tracks are those facilities which form part of the highway but are not generally located on the carriageway.

25. Category C: Cycle Trails are routes through open spaces which do not generally form part of the highway and are therefore not the responsibility of the highway authority.

26. Precautionary treatment of cycle routes will not normally be carried out except where the route forms an integral part of the carriageway or footway which is on a treatment route.

27. Post treatment of cycle routes will normally be confined to main links to the City Centre and are listed in the Appendices.
Snow Clearance

28. Snow clearing will be carried out throughout the network where appropriate and practicable, including carriageways, footways and cycle routes. Priorities will be determined by prevailing conditions but during severe snow conditions (where dense snow falls quickly and is likely to become compacted on the roads, causing a potential hazard) carriageway routes listed in the Appendices will be cleared and treated first.

Objectives

29. The Objectives of the Winter Service are:-

- To minimise delays, accidents and damage resulting from ice and snow.
- To prevent ice from forming on priority routes by precautionary treatment.
- To melt ice and snow already formed by post-treatment.
- To remove snow causing an obstruction.
- To undertake winter service effectively and efficiently.

5.2 RISKS AND RESPONSIBILITIES

Risks

1. The most important risk to the City Council is that treatment of the highway is not carried out when required i.e. the weather forecast indicates that the “Confidence Level” for icy conditions occurring is “Low”. The Duty Officer decides that Action is not required, when in fact later icy conditions do occur.

2. This risk can be minimised through effective liaison with adjoining authorities to co-ordinate action across the area and by referring to forecast updates, data displayed by our weather station, training and by assessing data from other Local Authority weather stations for any approaching weather conditions or changing weather fronts.

3. The most important risk to the Operatives is carrying out the actual treatment of the network. By definition the Winter Service treatment vehicles may be travelling on roads on which ice has already formed, or where snow may be present.

4. This risk can be minimised by effective training of all personnel involved in the treatment of the network.

5. Where the Duty Officer instructs a precautionary treatment which subsequently turns out to be unnecessary, this is also a risk. However, this is a financial consideration and, although important, should not receive too high a weighting in the decision making process. In other words, when in doubt, precautionary treatment should be carried out.

6. Additional risks shall be assessed on an on-going basis in accordance with Derby City Council’s policy and the Risk Assessment which are recorded in the Winter Service Appendixes. Any urgent risks will be reported to either the Area Manager/Health & Safety Advisor or the Winter Duty Officer so that appropriate action can be taken.

Responsibilities

7. During the Winter Season the City Council shall provide twenty-four hour control of treatment operations throughout the City, excluding the trunk roads as listed in Appendix B1.

8. The Council’s responsibilities are to –

   a) prepare and review treatment routes;

   b) provide salt and other de-icing material supplies;

   c) provide Winter Service Duty Officers as decision makers for the winter service. Who will receive and interpret meteorological forecast data, and live real-time data from our weather station, and issue
instructions to the Winter Service Supervisor(s) confirming when to
treat based on the meteorological forecast data;

d) assign Winter Service Supervisor(s) to oversee the Winter Service
operations

e) appoint the Operative(s) to drive the salting vehicles and to ensure
the network is treated;

f) provide salting vehicles and ensure they are maintained/calibrated
and spread salt efficiently and without waste;

g) provide snow ploughs;

h) supply suitable loading equipment;

i) provide salt bins and instruct the
Operative(s) with regard to distribution,
filling, replenishing and removal, as
required;

j) maintain the salt stock levels, manage
resilience levels and storage facility;

k) Maintain and archive records relating to
Winter Service activities

9. The Operative(s) responsibilities are to:

• carry out daily checks of salting vehicles and plant;
• ensure their assigned vehicle has sufficient fuel to carry out the
treatment;
• confirm that they are fit to operate the gritting vehicle
• conform to drivers’ hours regulations, unless a state of emergency
has been declared by, the City Council, County Council or the
Department for Transport.
• respond to instructions to treat the highway;
• apply rock salt and other de-icing materials at specified spread rates;
• remove snow by the use of ploughs, or if by hand by the use of
shovels;
• ensure winter service vehicles are weighed before and after any
treatments, to enable the quantity of used salt to be measured;
• distribute, fill, replenish and return salt bins to the depot when
instructed by the Winter Service Supervisor(s) or Operations
Manager.
• safely and sensibly operate winter service vehicles, and act
responsibly and with due consideration and respect to other highway
users when carrying out their duties.
5.3 SHARED RISKS AND RESPONSIBILITIES

1. The Winter Service is provided by Streetpride in the Neighbourhoods Directorate with the responsibilities as listed in 5.3.3 below.

2. These responsibilities are clearly defined, to minimise uncertainty. However, there is an element of shared risk as there is an overall responsibility to the community in terms of providing the best service possible within the limitations of resources and of present scientific understanding and weather predictions.

3. Streetpride’s overall responsibilities are:

<table>
<thead>
<tr>
<th>Responsibility</th>
<th>Controlled by</th>
</tr>
</thead>
<tbody>
<tr>
<td>preparation of Winter Service Operational Plan</td>
<td>Asset Management</td>
</tr>
<tr>
<td>purchase of salt and other de-icing materials</td>
<td>Asset Management</td>
</tr>
<tr>
<td>design of efficient treatment routes</td>
<td>Asset Management</td>
</tr>
<tr>
<td>key performance monitoring</td>
<td>Asset Management</td>
</tr>
<tr>
<td>purchase and maintain adequate fuel resilience</td>
<td>Fleet Management</td>
</tr>
<tr>
<td>purchase, maintenance and calibration of gritting vehicles</td>
<td>Fleet Management</td>
</tr>
<tr>
<td>Salt conformity and moisture content checks</td>
<td>Asset Management</td>
</tr>
<tr>
<td>pre- and post-treatment of routes</td>
<td>Duty Officer/Supervisor(s)</td>
</tr>
<tr>
<td>snow clearance</td>
<td>Duty Officer/Supervisor(s)</td>
</tr>
<tr>
<td>vehicles/plant</td>
<td>Fleet Management/Supervisor(s)</td>
</tr>
<tr>
<td>decision making and issuing instructions</td>
<td>Duty Officer</td>
</tr>
<tr>
<td>operational supervision</td>
<td>Works Manager/Supervisors</td>
</tr>
<tr>
<td>Manning levels/drivers hours/fitness to drive</td>
<td>Works Manager/Operative(s)</td>
</tr>
</tbody>
</table>

5.4 DECISION MAKING PROCESS AND RESPONSIBILITIES

Duty Officer Considerations

1. The decision to salt in the light of expected freezing conditions or snow rests upon the Winter Service Duty Officer. To be effective, salt must be spread evenly and at rates to suit the predicted/prevaling weather conditions.

2. For further information on the decision making process refer to Section 9.5, Page 60 of this document.

3. The Duty Officer will pay particular attention to the “Confidence” level quoted in the weather forecast. Forecasts with a “Low Confidence” level of predicted road temperature may result in “No Action” being taken, but real-time data from the weather station, neighbouring authorities and other weather stations may help verify the decision.

4. In general, control of salting all Council highways will be at the discretion of the Winter Service Duty Officer, but drivers do have some discretion such as treating any locations where lying water may be considered a hazard, or when road conditions deteriorate.

5. It is absolutely necessary for each of the routes to be treated in the correct order. Carriageways will always be the first priority.

6. Operatives often provide feedback to acknowledge that road/weather conditions may have deteriorated indicating that a review of the suggested treatment would be advisable, in this situation the Duty Officer would need to determine the appropriate action to take.
Council Departments – Winter Service and Enhanced gritting

General

7. In general, where a Department of the Council is responsible for land, highways and/or buildings which are outside the Highway Boundary, then that Department will be responsible for all aspects of the provision of a Winter Service.

8. Each Department will also be responsible for ensuring that safe access to their buildings is maintained, especially where public access is required. Also, with regard to health and safety legislation, an employer has a duty to ensure the health, safety and welfare of its employees.

9. This Operational Plan does not include any provision for operation outside the Highway Boundary. However, arrangements may be made between Departments to carry out Enhanced gritting; this may include areas for which they have responsibility in their Operational Plan but where they utilise our gritting or salt delivery services. Where any such arrangements are made the provision of the Winter Service on the highway network will always take precedence and additional salting or snow clearance operations will take place when resources and salt resilience levels are available.

10. Where arrangements have been made for the provision of salt for other Departments, it should be ordered and delivered prior to any requirement to treat the highway. The priority for the Winter Service Operative(s) will be to work on the Highway rather than delivering salt to other Council locations during a period of severe weather, or to provide a gritting service to other Council premises.

11. It is recommended that salt bins or other secure storage are procured by the relevant Department before any such cold period begins and these grit bins should be purchased and filled before the winter season commences, these will then be refilled outside of the peak winter period.

5.5 Liaison and Communication Arrangements with Other Authorities.

1. The public travel roads expecting a consistency that is very difficult to achieve across City, District, Borough, County and regional boundaries. The fact that a road is treated in Sinfin (Derby City Council) but not in Stenson Fields (Derbyshire County Council) may be hard for the ordinary road user to understand, even if they know where the various boundaries are.

2. It is important therefore to have liaison with the different decision makers in neighbouring authorities. There may obviously be times when it is not appropriate to treat roads in Derby City when those in Derbyshire are treated. There could equally be times when it is appropriate to treat routes in Derby and not in other neighbouring authorities. However, the possibility of people coming over a boundary onto an icy untreated City road should be considered in any decision making process.

3. Local Authorities with boundaries adjacent to Derby

   The authorities with boundaries adjacent to Derby City Council are:-
   - South Derbyshire District Council;
   - Erewash Borough Council;
   - Amber Valley Borough Council; and
   - Derbyshire County Council.

4. However, of these adjacent authorities, only Derbyshire County Council has the responsibility for the provision of a Winter Service on roads other than the trunk roads.

5. The Department of Transport (DfT) is the government department which has overall responsibility for the maintenance of the trunk road network in England. This includes
the provision of a Winter Service. Operationally the trunk road network is divided into areas. The HA appoints an Operative in each area to carry out all maintenance works on their behalf.

6. The trunk roads within Derby City Council’s boundary are entirely within Area 7, for which the maintenance Operative is currently A One+.

**Cross Boundary Arrangements and the Highways Agency**

7. Derby City Council and Derbyshire County Council have an established cross boundary agreement to cover the sections of the network along the shared boundary. This agreement has been created because sometimes vehicles would have to travel a long way without gritting, just to treat parts of the network that may be complicated to get to. This enables some roads to be gritted either by us on behalf of the County, or by the County on behalf of Derby City Council and improves our efficiency in gritting the roads.

8. This agreement enables Derby City Council’s gritting vehicles to treat sections of the highway network on behalf of Derbyshire County Council and vice versa.

9. The highways subject to this agreement are listed in Appendix B2.

10. The Duty Officer will liaise with Derbyshire County Council and the Highways Agency to ensure that changes to treatment routes continue to provide complete coverage of the network, both within Derby and Derbyshire. In accordance with (Recommendation 10) of the Lessons Learnt from the Severe Weather of February 2009.

11. Further information on the cross boundary agreement is detailed in Section 7.

12. A system will be implemented where the Action(s) and justification for those actions are e-mailed each day to the relevant adjacent highway authorities (Derbyshire County Council and the Highways Agency) with a request for them to do the same with their action sheets. This process will be carried out using the Vaisala Manager system.

13. Contact details are found in Appendix C5. These contacts are not made available to the public.

5.6 OTHER PUBLIC SERVICES (THE ENHANCED WINTER SERVICE)

1. The City Council provides a gritting and snow clearing service to other Council owned facilities such as, the Leisure Centres, Libraries, footway access to schools, car parks and the market place. This service takes place only if resources are available to deliver the required service, and only then if the current salt stock level has sufficient resilience to sustain at least a 12 day period of heavy snowfall, as per the recommendations provided by the Department for Transport. The gritting element of this service will generally be carried out as part of the normal carriageway treatments unless the process is likely to take longer than 10 minutes to complete.

2. The service also involves using both Grounds maintenance teams and Street Cleansing teams to carry out activities such as gritting/snow clearance or the delivery of rock salt, bagged rock salt or provision of grit bins to other City Council premises. The Street Cleansing or Grounds Maintenance Operatives may do this by using a towable trailer mounted gritter, or by clearing snow manually and also by assisting in the delivery of rock salt by a pick-up truck upon request.
Special Events at Pride Park Stadium

3. The footway routes to Pride Park Stadium listed in Appendix B7.4 shall be pre-treated when instructed by the Duty Officer. These include routes to the Stadium including the footbridges over the A52 Brian Clough Way which must be treated manually by hand and not by mechanical means. Other areas are gritted using either one of the dedicated gritting vehicles, or one of the Streetpride pick-up or trailer mounted gritters.

Snow Disposal

4. It is obviously desirable not to pay landfill charges for snow deposits, and therefore arrangements should be made by the Area Manager with the Waste Section before any snow is deposited at any disposal point.

5. Where transport of snow is authorised by the Duty Officer the locations for disposal will be notified to the Winter Service Operative. These locations may include public open spaces, roadside verges.

Environment Agency

6. During periods of very severe weather it may be necessary to move snow to areas which may have an impact on rivers and waterways.

7. The Duty Officer must consult the Environment Agency in these circumstances and comply with their recommendations and/or instructions.

5.7 WINTER RISK PERIOD

1. The Winter Risk Period for Derby has been determined to be the months October through to April. The criteria used to determine this period are:

   • The likelihood that the ROAD SURFACE TEMPERATURE will be below or at 0°C, and,
   • The likelihood that MOISTURE will be present on the road surface during the period when the temperature is below 0°C.

2. Each month is allocated a risk assessment level from “Very Low” to “Very High” based on the above criteria.

3. Refer to the Risk Assessment section in Appendix R1.1

5.8 RESILIENCE STANDARDS

1. Streetpride is responsible for purchasing all salt supplies for treating the highway. The Asset Team determines when the barn needs to be refilled, and make the necessary
arrangements with the salt supplier to deliver more salt. The barn is usually topped-up before the high period of winter commences.

2. The minimum winter resilience level (the quantity of salt required to carry out six treatments at 15gms/sq m spread rate over a 12 day period) during the Core period (01st December to 01st March). Our resilience level is maintained at 1,944 tonnes. This limit is lower than last year because we are now using treated salt and the benefits of using treated salt means, we can lower the spread rate. The previous use of dry salt lowered our resilience level and also increased the quantity we were required to store. The use of treated salt makes us less reliant on further deliveries during the Core period of winter. However during the low seasonal period the resilience requirement is lower and therefore the minimum stock level may be lowered to 1,000 tonnes during the low period. This lower level is based upon Department for Transport guidance requesting that Local Authorities should provide minimum resilience for heavy salt usage over a 12 day period during the high period of winter. As per (Recommendation 1 and 8) response to climate change and resilience levels.

3. With regard to fuel resilience standards refer to section 10.7.1.

4. However if the resilience level should drop below 1,944 tonnes during the high period of winter, then the Enhanced Service we provide to other Departments may be suspended to conserve salt supplies. It is essential that sufficient salt stocks are retained to continue to keep the Highway free of snow and ice; in this situation filling grit bins may also be suspended. This will likely have implications on the service we provide to other Council Departments, Schools etc. and this should be noted along with section 7.9.

5. In this event the Chief Executive may decide to treat a ‘Reduced Route’ network only as shown in Appendix B7.2 to conserve our valuable salt reserves. Once mutual aid, or deliveries of salt have been received at the depot, our Chief Executive may confirm a return to treating the normal routes.

6. Mutual Aid may be required by us or our Neighbouring Authorities generally at times of prolonged or severe weather. This may be in the form of us/them running low on salt supplies, or as a result of a vehicle breakdown or shortage of drivers. Each circumstance would have to be reviewed at the time to determine what help could be offered. Any Mutual Aid that we may provide would be at the discretion of the Director of Partnerships and Streetpride, or by a Senior Officer with delegated duties.

7. Re-stocking of the stockpile is normally carried out during the summer months. The Asset Team constantly monitors and reports the volume of salt in stock throughout winter, therefore the known quantity of salt in the barn is fairly accurate. Deliveries are arranged so the barn is replenished through the summer so that by 1st October the stockpile is up to its maximum capacity.

8. Towards the end of the Winter Season, as the possibility of severe weather reduces, the minimum stock level also reduces. The stock level may be brought down for the summer to a level of 1,000 tonnes. This is to reduce purchasing salt at the winter rate which is more costly than when purchased during the summer months.

9. Salt usage is monitored by the Asset Management Team using information supplied by the Operatives, Vaisala Manager system and Exactrak software, and the Department for Transport is notified of the quantity held in stock, so that they can monitor the National Salt stock situation.

10. Grit / Ballast will be ordered by the Highway Asset team when weather conditions indicate that a mixture of Sand/Grit and Salt is likely to be needed. Grit / Ballast is usually only used to provide additional grip on surfaces where ice may have already formed on roads that are not part of the dedicated gritting routes.

11. It has been considered impractical to store salt elsewhere in the City / County to be able to cope with an emergency situation because of the cost implications for
purchasing land and storage of salt. Security for such remotely stored salt stocks would also be a problem. We therefore took steps in 2011 to build a salt barn to provide us with enough salt to withstand prolonged or harsh winters. This season we have switched to using treated salt to continue to increase our resilience levels and further reduce our impact on the environment. (Recommendation 6)

12. We have also considered sharing our salt barn with other authorities, but as we have such a small depot, space is limited and it has been considered difficult to implement. (Recommendation 7).

13. As part of a joint contract we share with Derbyshire County council, our current weather forecast information is provided and updated on a twice daily basis by ‘The Met Office’ via their open roads web site and also emailed to us directly. In addition to this, the Met Office also provide us with regular updates as and when the weather changes throughout the night.

Service Resilience

<table>
<thead>
<tr>
<th>Service Resilience</th>
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<tbody>
<tr>
<td>Overall Winter Period</td>
<td>1st October to 30th April</td>
</tr>
<tr>
<td>Core Winter Period</td>
<td>1st November to 1st March</td>
</tr>
<tr>
<td>Days Resilience (Overall Winter Period)</td>
<td>6 days (1,000 tonnes)</td>
</tr>
<tr>
<td>Days Resilience (Core Winter Period)</td>
<td>12 days (min 1,944 tonnes)</td>
</tr>
</tbody>
</table>

Fuel Resilience

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<tr>
<th>Fuel Resilience</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Diesel Days Resilience</td>
<td>6 days (5,000 litres)</td>
</tr>
<tr>
<td>White Diesel Days Resilience</td>
<td>12 days (30,000 litres)</td>
</tr>
</tbody>
</table>
Section 6

Quality Management

6.1 QUALITY MANAGEMENT REGIME INCLUDING REGULAR SERVICE AUDITS

1. In general, control of salting city highways will be at the discretion of the Winter Service Duty Officer.

2. Some work (Highway Works and Street Cleansing) may be suspended as soon as a frost/snow warning is received from the Duty Officer. This action will allow the manoeuvring and loading of the gritting fleet with minimum disruption to the Service.

3. Winter Service operations will be controlled from:-
   Streetpride, Highways and Engineering
   15 Stores Road Depot,
   Stores Road,
   Derby
   DE21 4BD.

4. Winter Service vehicles are also located at the Stores Road Depot.

5. Contact details are found in Appendix C5.

6. All calls should be directed to the Streetpride help line during normal working hours, and outside these hours an out of hours emergency contact number is available.

   Streetpride help line – 0333 2006981
   Out of Hours Emergency number - 07812 300051

6.2 DOCUMENT CONTROL PROCEDURES

1. The documents issued to the officers on the distribution list Appendix C6, are all to be treated as uncontrolled copies.

2. Revisions will be circulated during the course of the year only to those on the restricted circulation list, and it is for each officer to maintain their copy as the latest version. There will be an annual review and the full circulation list will be reviewed and revised (if necessary) each year. Those who are on the revised list will receive an electronic copy of the latest revision of this document. Any revision/changes to this document will be reviewed and ratified by the Area Manager.

6.3 INFORMATION RECORDING AND ANALYSIS

Daily Report

1. The Duty Officer will complete the form displayed in Vaisala Manager system; this form incorporates both previously used forms, the Decision Justification Log and Action sheets, as shown in Appendix A3.

2. The “Action” will be sent by e-mail and text messaging service via the Vaisala Manager system (Appendix A3) this shall be completed by the Duty Officer once they have made their decision(s). The Supervisor(s) will verbally acknowledge they have received the text message confirming that the instructions have been passed onto the Operative(s); the Operatives will report to the depot and carry out the required treatments acknowledging the instructions.

3. Any locations where any extra gritting has been carried out, (for example where water runs onto the highway) can be identified within Exactrak’s vehicle tracking system. Operatives will also pass this information onto the Asset team via the drivers report as shown in Appendix A5. Any details relating to on-site vehicle breakdowns or maintenance issues should be reported to Fleet Management by the Supervisor. No
vehicle shall be used until the required repairs have been carried out and Fleet Management have confirmed the vehicle is fit for use.

4. Within the Vaisala Manager system any instruction(s) to commence gritting will be retained, this information is also transferred to our Facebook and Twitter accounts so that the general public can be informed when gritting is about to commence. This relates to methods of communicating with the general public as per (Recommendation 19) of the Lessons Learnt from the Severe Weather of February 2009.

5. By 9am (during the working week) the following information should be passed to the Asset Management Team.
   a) Each operatives winter drivers hours declaration for Winter services Appendix A8
   b) Any associated problems with treating their route, such as emergency road closures, breakdowns, obstructions or where there was a need to provide additional grit (commonly known as spot gritting) (for example: in situations where water is flowing off private land onto the highway and which is then likely to freeze).

6.4 ARRANGEMENTS FOR PERFORMANCE MONITORING, AUDIT, AND UPDATING

1. The following areas will be regularly monitored by the Technical Admin team:

<table>
<thead>
<tr>
<th>Quality Requirement</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Carry out gritting as per the instructions given by Duty Officer, apply salt or</td>
<td>100%</td>
</tr>
<tr>
<td>other specified materials to roads, in quantities that are appropriate and sufficient,</td>
<td></td>
</tr>
<tr>
<td>to render them reasonably safe for the passage of normal traffic.</td>
<td></td>
</tr>
<tr>
<td>2. All salting tasks requested by Duty Officer to be commenced within ± 15 minutes</td>
<td>100%</td>
</tr>
<tr>
<td>of requested time and to be completed within 2 hours 30 minutes, unless carrying out</td>
<td></td>
</tr>
<tr>
<td>a precautionary treatment for snow conditions in which case each route should be</td>
<td></td>
</tr>
<tr>
<td>completed within 4 hours.</td>
<td></td>
</tr>
<tr>
<td>3. Forecast accuracy, against actual Road Surface Temperatures. This will be</td>
<td>100%</td>
</tr>
<tr>
<td>monitored using the Vaisala manager system.</td>
<td></td>
</tr>
<tr>
<td>4. Reliability of the Salt Supplier delivering salt when requested</td>
<td>100%</td>
</tr>
<tr>
<td>5. Accuracy of Duty Officers in determining the correct treatment based on the</td>
<td>100%</td>
</tr>
<tr>
<td>current forecast.</td>
<td></td>
</tr>
</tbody>
</table>

Annual Timetable of Events

2. The performance of the Service will be reviewed on an on-going basis throughout the Winter Season and additionally the following milestone events will be programmed throughout the year.

   **Monthly:**
   - Performance Review / Winter Service monitoring meeting
   - Monthly salt conformity and fuel resilience level checks
   (During the Winter Season)

   **May to August:**
   - Inspect and overhaul all equipment whilst keeping sufficient vehicles operational to respond to any late frosts
   - Meeting to review the preceding winter
Annual review meeting with weather information provider
Annual review meeting with weather station and bureau service provider.
Review all training needs and conduct any training accordingly.

**Summer Period:**
The Highway Asset Team will arrange liaison meetings as required.
Salt deliveries to be arranged and delivered during the summer period to restock the salt barn.

**August:**
All vehicles to be calibrated in accordance with BS 1622 to check spread rate calibration and conformity.
Assessment of the gritting routes making revisions where necessary and provide plans for all operatives / drivers / duty officers and grounds maintenance operatives.
Inspections of the salt barn, compounds and equipment.

**September:**
The revised Annual Winter Service Operational Plan issued.
Duty Rosters for the winter period are distributed to all stakeholders during September.
Training records completed and checked.
Vehicle calibration checks are complete and certificates are issued.

**October to April:**
The Winter Service Period.
Calibration checks are carried out before the winter season begins and again mid-season, or more frequently if it becomes obvious that the spread rates deviate from the expected levels and there is evidence that more salt is being used by feedback provided by drivers and from regular checks.
Monthly Performance and monitoring meetings.
Daily vehicle checks.
Section 7

Route Planning for Carriageways, Footways and Cycle Routes.

7.1 CARRIAGEWAY ROUTES FOR PRE-TREATMENT

1. The total length of roads in Derby is approximately 770 km (excluding trunk roads maintained by the Highways Agency on behalf of the Department for Transport). A range of speed limits applies to the roads within the City Boundary.

2. The breakdown of road classifications is:-
   a) 76 km of principal roads;
   b) 83 km of classified roads;
   c) 611 km of unclassified roads.

3. From a combination of the above lengths the total length of roads allocated a Priority one status is 116kms (Appendix B3), and 159kms have been given a Priority two status. The details relating to which roads meet these criteria can be found in Appendix B4.

4. The total area is approximately 780 hectares.

5. Most of the City is built-up urban area in nature. There are a significant number of hilly roads within the City. The priority routes cover only about 35% of the total roads in the City and have been seen to be an adequate level of provision, leaving the lesser used roads to be treated only in the worst of conditions and after the priority routes have all been made as safe as is reasonable practical.

6. The problems associated with pre-salting on residential streets are three-fold:
   a) Difficult to resource without taking priority away from main routes;
   b) Lack of effectiveness due to salt needing to be crushed and moved about by the traffic travelling over the road;
   c) Lack of road width due to on-street parking. Which in turn leads to two problems:-
      (i) The gritting vehicles cannot get down some streets and needs to reverse; this requires a second person to help guide drivers through tight spots.
      (ii) The salt is often ineffective as it simply reaches the centre of the road, then when a parked vehicle moves it leaves untreated surfaces in the road which residents may believe have been treated. To combat this problem we have purchased a fleet of new gritters equipped with low-throw spreaders, this should enable grit to be spread under many parked vehicles.

7. All roads shown on the treatment routes will be treated during the winter according to their level of priority. These priority levels are based on the carriageway hierarchy shown in Appendix D1, amended in accordance with the recommendations of the Code of Practice.

8. For operational reasons there is a “cross boundary agreement” between Derby City Council and Derbyshire County Council. This agreement is designed to facilitate ease of treatment route design. For example, a roundabout may be a convenient location for
a salting vehicle to turn, even though the vehicle has crossed the City Boundary. It makes operational and economic sense for the vehicle to continue to salt this section of highway. Across the area of Derby City these lengths will balance out so that there is no net gain or loss of areas salted by each authority. The lengths of highway subject to this cross boundary agreement are listed in Appendix B2.

9. Three levels of priority are defined on the Network as follows:-

**Priority One – Strategic / Principal / Primary Routes**

10. The list of Priority One Routes covers all the main roads including de-trunked roads, but not those that are the responsibility of the Highways Agency, and most but not all major bus routes.

11. These roads form the backbone of the Road Network within the City of Derby and as such the Winter Service Operations shall be:-

   d) All precautionary treatments are undertaken whenever necessary to prevent the formation of ice.

   e) Snow clearance is immediate and continuous until all priority 1 roads are available.

   f) On dual carriageways snow clearance is immediate and continuous until at least one lane is available. Additional lanes shall be cleared as resources become available and after Priority 2 Routes have been cleared.

12. For the list of roads and sections covered together with maps for each of the routes see Appendix B3.

**Priority Two Routes**

13. These roads, though not as important as those designated as Priority One, are important roads to keep well maintained for the free movement of all traffic onto and off the major roads.

14. The roads included within this category are subdivided into two groups:-

   g) Main Distributor Roads; Main Secondary Distributor Roads; Major Bus Routes with high frequency services; heavily trafficked routes with major industrial centres; access to hospitals, police, ambulance and fire services.

   Generally these roads will be Classified Roads.

   h) Minor Secondary Distributor Roads; Link Roads; Local Access Roads.

   These roads would normally be classified as part of the priority three road networks but are promoted to priority two based on specific characteristics which warrant their inclusion in the precautionary network.

   Generally these roads will be Unclassified and can be found in Appendix B4.

15. The roads promoted from priority three to priority two shall be selected for inclusion in the precautionary network based on a number of relevant factors. Single factors alone are very unlikely to support inclusion. The factors used to determine the eligibility of a road are:-

   i) Road Classification

   j) Traffic Flows

   k) Traffic Type
l) Traffic Speed (Average)
m) Premises on Route
n) Access to Schools
o) Bus Service (Type)
p) Bus Usage
q) Bus Frequency before 09:00hrs
r) Site Conditions
s) Location
t) Gradient
u) Radius of bends
v) Altitude
w) Exposure (routinely subject to ice formation) Established using thermal mapping
x) Availability of Salt Bins
y) Frequency and Severity of Accidents
z) Route Optimisation
16. The Winter Service Operations shall be that:-
   a) All precautionary treatments are undertaken whenever necessary to prevent the formation of ice;
   b) Snow clearance commences upon the completion of operations on priority one routes;
   c) On dual carriageways snow clearance commences upon the completion of operations on priority one routes until at least one lane is available. Additional lanes shall be cleared as resources become available and after additional dual carriageway lanes on the priority one route have been cleared.

17. For list of roads and sections covered together with maps for each of the routes please see Appendix B4.

Priority Three Routes
18. All other Highways, either Classified or Unclassified
19. The Winter Service Operations shall be:-
   a) No precautionary treatment is provided on these roads;
   b) Snow clearance commences only when the higher priority routes have been cleared. Operations shall be undertaken only during normal working hours unless requested by the Police, or in exceptional circumstances, as approved by the Area Manager of Streetpride highways. Suitable equipment for the site conditions must also be available.

Gritting routes
20. Six gritters are currently available during the Winter Season; therefore, the priority network has been divided into six FULL ROUTES (numbered 1 to 6).

Route Optimisation
21. Derby City Council carried out a route optimisation exercise during 2008/09 to identify the most efficient and cost effective means of treating both the priority one, and priority two routes. This exercise determined that the most efficient method was to combine and carry out treatment of both priority one and two routes simultaneously, and thus permitting each of the six routes to be completed within 2 and a half hours, as recommended by the Code of Practice.

22. Under normal winter conditions where a precautionary treatment is required at spread rates of up to 20 g/m2, the Priority one and two routes are combined and treated as the six FULL routes.

23. Where a spread rate of greater than 20 g/m2 is required (normally during snow conditions), the routes will require the gritting vehicles to be re-loaded and the routes have been optimised such that the “free-running” distance is minimised, as much as possible.

24. The priority route system will be reviewed annually to take into account alterations to the highway network, bus routes, traffic management schemes, etc. Dry runs will then be made to test the practicality of the routes and amendments made where necessary.

7.2 CARRIAGEWAY ROUTES FOR POST-TREATMENT BY RISK LEVEL
1. The routes for pre-treatment have been designed taking into account the risk level and are therefore consistent with the requirements for post-treatment.

2. The priority routes for post-treatment shall be the same as for pre-treatment. The spread rates shall be as detailed in Section 9, Treatment Matrix table C depending on the conditions.
7.3 CARRIAGEWAY ROUTES FOR SNOW CLEARING BY RISK LEVEL

1. The routes for pre-treatment have been designed taking into account the risk level and are therefore consistent with the requirements for snow clearance.

Snowfall on Roads

2. The priority routes for snow clearance shall be the same as for pre- and post-treatment. The spread rates shall be as detailed in Section 11.4, depending on the conditions.

3. The treatment routes will also be used when snow ploughing is necessary and have been designed to take account of the likelihood of parked vehicles, traffic calming features and the danger of ploughing near pedestrians.

4. When snow is forecast to fall in the City, conditions are monitored very closely so that all Priority Routes are completely salted before snowfall commences. It can be difficult to predict when rain may turn to snow and vice versa and consequently on occasion this can lead to unnecessary salting. But it is important to spread a layer of salt to prevent snow from sticking to the road surface and accumulating to create a hazard for highway users.

5. Salting does not take place whilst rain is falling, as it will become diluted and washed away. This may lead to a late response to the deteriorating road conditions and may be seen by the public, erroneously, as a failure to respond by the Authority.

6. When snow falls in succession over a number of days, then additional salting will be instructed to keep a high concentration of salt on the roads. At such times, numerous complaints of packed snow lying on lower priority roads may be received from the public, and when the higher priority routes are fully treated, gritting vehicles will be deployed to attend to these complaints, or smaller trailer mounted gritters may be used especially where narrow streets are concerned.

7. In England and Wales, highway authorities had until recently only a statutory duty under Section 150 of the Highways Act to remove obstructions. Snow is considered to be an obstruction when it impedes use of the road network.

8. With the new legislation now enacted this duty is now being extended to ensure, so far as is reasonably practicable, that safe passage along a highway is not endangered by snow or ice.

9. This plan is based on current best practice guidance including the principles of the “Code of Practice for Maintenance Management” Section 13: Winter Service and the Institution of Civil Engineers Design and Practice Guide on Highway Winter Maintenance, as far as is applicable to an urban situation like Derby where heavy snowfalls are infrequent.
10. It is expected that severe weather warnings will be provided by the weather forecaster in advance of any significant snow falls. These forecasts are designed for the Derbyshire region. In the event of sudden changes there will be an update to the forecast. If in doubt the forecaster can be contacted directly by telephone to enable clearer understanding of the local situation.

11. Although Derby in general rarely gets significant falls of snow, if heavy snow is forecast the guidance from the Highway Winter Maintenance Guide by ICE detailed in Procedure C5.1 of the Operational Manual should be followed.

12. On receiving a snow warning the procedure detailed in Procedure C5.1 should be carried out with the network priority as stated in that Procedure.

**Post-snow emergency action**

13. After the snow period it is important that all gullies and drainage outlets are cleared of any accumulations of salt. Carriageways and footways should be swept where accumulations of salt remain.

14. All vehicles and equipment should be cleaned, lubricated and checked.

15. All salt bins will be checked after heavy snowfall and refilled as necessary once resources become available.

**Priority Points to be treated manually**

16. All roads will be salted by spreading machines, but the Operative(s) Supervisor will be responsible for ensuring that, where necessary and instructed by the Duty Officer, priority points are salted manually as soon as snow clearing operations have started. These locations will be identified by the Duty Officer and may include access roads to emergency service premises, hospitals, schools and the like. These may be generated from calls from the general public, the emergency services or by the Winter Service Operative(s) themselves.

**Loading and Transportation of Snow**

17. This Winter Service Operational Plan is based on the removal of snow from the network either by melting with salt, or by ploughing. Due to the urbanised nature of Derby there are times when circumstances may lead to accumulations that need removing. Recourse to transport of snow will be an extreme measure and can be authorised only by the Area Manager.

18. Where transport of snow is authorised by the Area Manager the locations for disposal will be notified to the Winter Service Operatives. These locations may include public open spaces, roadside verges.

**7.4 ROUTES FOR FOOTBRIDGES, SUBWAYS AND OTHER HIGH RISK PEDESTRIAN AREAS**

1. Footbridges, subways and other high risk pedestrian areas on trunk roads are the responsibility of the DfT and will not be treated by Derby City Council unless assistance is requested in the form of mutual aid.

**Footbridges**

2. The locations of all footbridges, and the Footway Category in which they are situated, are listed in Appendix B6.

3. Footbridges within Footway Categories 1A and 1 will be treated as part of that category.

4. Footbridges within other Footway Categories will not normally be treated.
5. Exceptionally, the two footbridges which cross the A52, Brian Clough Way near Pride Park will be treated as part of the “Match Day gritting routes” when a football match is planned at the Stadium.

Subways
6. The locations of all subways, and the Footway Category in which they are situated, are listed in Appendix B6.
7. Subways within Footway Categories 1A and 1 will be treated as part of that category.
8. Ice is unlikely to form within the covered section of a subway. Therefore any treatment will be limited to the access ramps and the first 2 – 3 metres within the subway. Where moisture is present further into the subway it is unlikely to form ice under normal winter temperatures. However the presence of such moisture may indicate a drainage defect and the Winter Service Operative will notify the Duty Officer of any such instance.
9. Subways within other Footway Categories will not be treated. Salt bins may be provided where the risk assessment indicates that the criteria are satisfied. (Appendix A8)

Other high risk pedestrian areas
10. The locations of other high risk pedestrian areas, and the Footway Category in which they are situated, are listed in Appendix B6.
11. High risk pedestrian areas within Footway Categories 1A and 1 will be treated as part of that category. Treatments of pedestrianised footways within the City Centre will be restricted to times when shoppers are not present, such as outside of shop opening times. This is because the number of pedestrians that are present in the area are likely to prevent gritting operations from being carried out safely.
12. High risk pedestrian areas within other Footway Categories will not be treated. Salt bins may be provided where the risk assessment indicates that the criteria are satisfied. (Appendix A7)

7.5 ROUTES FOR OTHER FOOTWAY TREATMENT BY RISK LEVEL

General
1. Footways on the trunk road network are the responsibility of the DfT and will be treated by the Highways Agency.
2. Footways which are not adjacent to the carriageway will not be treated unless they are already part of the footway gritting routes.
3. The spread rates for pre-treatment, post-treatment and snow clearance shall be as detailed in Section 11.4, depending on the conditions.
4. Footways are categorised in accordance with the definitions in Appendix D1.

Pre-Treatment
5. Footways in Categories 1A and 1 will be pre-treated with salt. Footways and sections covered, together with maps for each of the routes, are listed in Appendix B6.
6. Treatment will be by means of a mechanical spreader suitable for use in pedestrian areas, with hand spreading in some areas where access is restricted such as, footbridges or steps located on Category 1A and 1 footways and entrances to pedestrian subways.
7. Footways in Categories 2, 3 and 4 which are not adjacent to carriageway priority routes will not be treated separately. However, during pre-treatment of the carriageway priority routes a certain amount of salt may find its way onto the footway which will reduce the need to salt footways in these Categories.

**Post-treatment**

8. The priority routes for post-treatment shall be the same as for pre-treatment.

**Snow Clearance**

9. The priority routes for snow clearance shall be the same as for pre- and post-treatment.

10. The procedure to be adopted is detailed in the Operational Manual – Procedure C5.2: Snow Clearance – Footways.

11. If snow has settled and cannot be treated by salt alone, a pathway of 1.2 metres (4’0”) must be cleared of snow and salted manually to allow 2 (two) pedestrians to walk past each other without obstruction.

12. When clearing the footway, snow shall not be piled or banked up unless this is completely unavoidable. Where the piling or banking of snow does occur a pathway should be cleared to the kerb edge every 25 metres (30 yards).

13. A pathway should also be cleared to give access for pedestrians to use telephone kiosks, bus shelters, post boxes, pedestrian crossings etc.

14. It is recognised that the speed and ability to respond to meet this need is limited by access of the operatives to depots and salt supplies. Therefore use of salt bins etc. is to be encouraged as much as possible.

**Mechanical Clearance**

15. Upon receipt of snow warning and where practicable mechanical footway spreaders are to be used. These footway spreaders should be set to a spread rate suitable for de-icing snow 40 grams per square metre.

**Piling of Snow Prior to Transportation**

16. Snow must not be collected into piles or heaps unless special dispensation is given by the Duty Officer.

17. Where permission is given by the Duty Officer, piling or heaping of snow must on no account be made on pedestrian crossings or bus stops. If piles or heaps are made in the channel, a space of not less than 300 mm (1’0”) wide must be left between the snow and the kerb to allow for drainage and sufficient space must be left between the piles or heaps for the convenience of pedestrians.

18. Gully grates must be kept free from obstructions.

**Loading Snow**

19. Transport must be used to the best advantage by allowing sufficient loaders per disposal vehicle. Loading and moving snow from the front of shops and defined premises must be carried out first and less important areas left until later.

7.6 **ROUTES FOR CYCLE ROUTE TREATMENT BY RISK LEVEL**

1. For defining Category of Cycle Route see Appendix D1.

2. Cycle lanes forming part of the carriageway will be treated at the same time as those priority routes.
3. Cycle ways which are on a shared cycle route/footway facility will be treated where they are part of a footway treatment route.

4. Cycle trails will not generally be treated.

5. As a policy, cycle trails will not be treated separately from the road or footway prioritisation, due to it being operationally very difficult to send a gritting vehicle down such tracks and trails. It could also mislead people into thinking that when part of a cycle route has been treated as part of the carriageway salting process, the whole cycle way has been treated. The question of whether it is sensible to encourage the riding of a bicycle in such weather is also of a concern. This policy will be reviewed if new methods of treating such routes become available.

7.7 SPECIAL SITES OR FEATURES (E.G. NEAR RAILWAYS OR TRAFFIC CALMING)

Carriageways

1. There is one level crossing situated on the carriageway treatment routes. **No snow ploughing or salt shall be applied to the carriageway between the limits of the railway lines as indicated by the level crossing barriers.** Care must also be exercised on the approach to the crossing to ensure that the spreading mechanism is turned off in advance of the barriers. The mechanism must not be switched back on again until the vehicle has reached a safe distance beyond the crossing to prevent accidental spreading of salt onto the tracks.

2. Where traffic calming has been applied to a section of the carriageway, the speed of travel of the gritter may need to be reduced to negotiate the speed hump. This will affect the rate of the salt being spread whilst the vehicle travels over it.

3. Roads where traffic calming is present cannot be ploughed because the plough could cause damage to the traffic calming feature, but it is more likely that this feature would cause damage to the gritting vehicle and possibly even to the driver or any vehicles that may be following behind the gritter. For this reason we do not allow snow ploughs to be used on roads where traffic calming is present. In these locations the spread rate will be increased to 40gms/sq m to prevent snow from sticking to the road surface or accumulating.

4. Additionally the presence of splitter islands and other features may create areas of “dead” carriageway which do not receive treatment. It may be necessary to travel the route in both directions to ensure complete coverage. Where such instances occur the treatment routes are designed to ensure complete coverage.

7.8 RESPONSE AND TREATMENT TIMES FOR ALL CARRIAGEWAY TREATMENTS

1. The target response times are as follows:

<table>
<thead>
<tr>
<th>Definition</th>
<th>Target Time</th>
</tr>
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<tbody>
<tr>
<td>Response</td>
<td>1 hour maximum</td>
</tr>
<tr>
<td>The time taken from the instruction to begin treatment until the Winter Service vehicles are loaded, crewed and ready to leave the Depot.</td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>2½ hours maximum</td>
</tr>
<tr>
<td>The time taken from leaving the Depot to completion of treatment routes</td>
<td></td>
</tr>
<tr>
<td>Treatment during snow</td>
<td>4 hours maximum</td>
</tr>
<tr>
<td>The time taken from leaving the Depot to completion of the treatment routes (under snow conditions)</td>
<td></td>
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</tbody>
</table>

2. The Treatment Time is dependent upon weather conditions, traffic and efficient use of resources.
3. In most cases pre-treatment is carried out at night using gritting vehicles with the target being to complete all the priority routes within two and a half hours.

4. If snow falls which has not been predicted, the Duty Officer will instruct the Supervisor to mobilise the gritting vehicles (within one hour) or as soon as possible, and will arrange the salting of all priority routes. However, the time taken to complete this operation will depend on traffic congestion and the varying weather conditions.

5. Under such circumstances public reports and complaints will be widespread and the only action available is to continue salting and snow clearance until the weather conditions ease and the situation becomes controllable again.

6. Daytime salting is disrupted by traffic; consequently every effort is made to have any wet roads salted before the temperature drops below zero and before the early morning or evening traffic begins to build-up and avoiding school opening/closing times.

7. Footways and cycle routes are normally treated only during periods of prolonged and severe weather conditions.

**Operational Plan**

8. Six salting vehicles will be available at Stores Road Depot from 1st October.

9. The Winter Service operations will generally be controlled from Stores Road Depot to clear snow, ice or frost from all City Highways including most major bus routes and should be available for operation 24 hours a day throughout the winter period until the tasks have been completed. Obviously this may mean that drivers are available and can work on rotational shift patterns until the weather conditions improve.

10. Drivers must follow the procedures laid down in the Winter Service Operational Plan with regard to the driver’s hour’s regulations, loading salt, carrying out vehicle checks, and making sure they return completed salting records to the Asset Management Team.

11. If the Duty Officer gives the operatives the instruction to “commence salting as soon as possible” and this occurs during the night, drivers should make their way to the depot. Vehicles should be loaded at Stores Road Depot by a fully qualified loading shovel driver, and the gritting vehicle drivers should commence salting once they have arrived at the depot and after they have carried out their pre-gritting checks on the vehicle. If the forecast indicates that the Road Surface temperature is close to but not below zero,
it might be appropriate to spread salt only on certain roads that are known to be slightly cooler than the base station. These routes have been named ‘Marginal Night routes’ or ‘Cold Spot routes’. This decision will be made only by the Duty Officer and the reasons for this decision should be fully recorded within the Vaisala Manager system.

12. If the instruction to “commence salting as soon as possible” occurs during the working day, vehicles are to be loaded by a fully qualified loading shovel driver. Operatives should cease whatever they are doing, ensure they leave whatever they were working on in safe condition before returning to the depot, carry out the necessary pre-gritting check on the vehicle and begin treating the routes, as instructed by the Winter Service Duty Officer.

13. The routes in Derby are designed to treat Priority 1 and 2 roads at the same time. The Routes will be treated as shown on the Winter Service Route cards (these have also been recorded into the Econ Spargo satellite navigation devices) or unless otherwise informed by the Duty Officer.

14. All work will be co-ordinated by either the Duty Officer, or their delegated Supervisor.

15. Salting of highways will commence within one hour of being notified by the Duty Officer, unless the action is immediate. In which case the Duty Officer will use the words commence or start “as soon as possible”. The drivers will then commence gritting once they have arrived at the depot, all pre-gritting checks have been carried out and the vehicles have been loaded.

16. Routes will be allocated by the Winter Service supervisor and must be strictly adhered to. The only time that drivers deviate from the gritting route is when a route is impeded by an obstruction such as a fallen tree, road closure or obstructions that mean they cannot travel part of their usual route.

17. The gritting will be controlled from Stores Road Depot (during normal working hours) and will clear snow from all City highways including most major bus routes and should be operated in accordance with the times detailed in the table below until the task has been completed.

<table>
<thead>
<tr>
<th>Network Priority</th>
<th>Period of Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>24 hours per day</td>
</tr>
<tr>
<td>2</td>
<td>24 hours per day</td>
</tr>
<tr>
<td>3</td>
<td>Normal working hours as and when resources are available</td>
</tr>
</tbody>
</table>

18. Drivers must follow the procedures laid down in the Winter Service Operational Plan with regard to loading salt, the number of loads, ensuring that driver hour’s regulations are adhered to (Appendix A8).

7.9 RESPONSE AND TREATMENT TIMES FOR FOOTWAY AND CYCLE ROUTE TREATMENTS UNDER SNOW CONDITIONS

Footways
1. Upon receipt of a “Snow Forecast” the Duty Officer will decide if footways are to be treated as part of the Decision Making Process. Where treatment is required the Duty Officer will issue an instruction to the Grounds Maintenance Supervisor and also to the Cleansing Supervisor. The instruction will state the time at which treatment is to
commence. The cleansing operations will be suspended until such time as the Duty Officer issues an instruction for the cleansing operations to recommence. The cleansing contract operates 24 hours per day therefore salting can be instructed at any time. Full use of mechanical Spreaders will be used wherever possible to treat the footways as shown in Appendix B7.3. The priority areas are given in 7.4 above.

2. The priority areas must be tackled immediately either mechanically or manually before any other pavements are treated. Staff must be allocated in pairs to clear snow from pavements either by mechanical means or manually using shovels. Once these key target areas have been dealt with, clearing the remaining streets will commence in liaison with the Duty Officer.

3. Cleansing operatives shall be diverted at the start of their day to salt key points such as Railway and Bus Stations, Shopping Areas and Bus Stops. These key points are listed in Appendix B9. The operatives will be issued with the appropriate quantity of salt from the Salt barn, but the quantity of salt taken from the salt barn must be recorded and reported back to the Technical Admin team using the form shown in (Appendix A5.2).

Duty Officers and the Operatives Supervisor must ensure that the above priority areas are treated before the general salting of footways is fully implemented.

7.10 ALLOCATION OF PLANT, VEHICLES, EQUIPMENT AND MATERIALS TO ROUTES

1. Salting vehicles will be allocated to salting routes as stated in Appendix A6.

7.11 LOCATION AND MAINTENANCE OF SALT BINS AND GRIT HEAPS

1. The current locations of Salt Bins are given in Appendix B8 and a map can be found on our mapping portal at [http://maps.derby.gov.uk/](http://maps.derby.gov.uk/).

2. Where requests for Salt Bins are received they will be assessed using the criteria detailed in Appendix A8.

3. As with depot facilities the Environment Agency (EA.) is concerned about the Environmental impact of salt storage, and the EA’s “Pollution Prevention Guidelines Highway Depots: PPG10” says there is a risk of pollution of rivers and groundwater, due to the run-off from rock salt stockpiles. We do not currently use any uncovered road side salt stores in Derby.

4. All Salt Bins in Derby are covered and contained.

5. Salt Bins may periodically be returned to the Depot if they are being misused or damaged particularly during the summer months. These will be returned to their street location and restocked prior to the winter season commencing.
Section 8

Weather Prediction and Information

8.1 ROAD WEATHER STATIONS

1. Derby City Council has one road weather station and this is located on Morley Road in the Oakwood ward. This location has been identified as being one of the most exposed locations within the Derby City boundary. The weather station information is accessible via the weather bureau service provided by Vaisala Ltd. Login details are provided for all Winter Service Duty Officers.

8.2 ROAD WEATHER INFORMATION BUREAU SERVICE

1. Vaisala’s weather information bureau service permits the Duty Officer to view real time information such as current Road Surface Temperature, air temperature, road state, relative humidity, the level of grip, precipitation and the presence of moisture on the road surface, and also includes visual camera images from the Morley Road weather station. In addition to this the bureau service allows the Duty Officer to view information from other Authorities weather stations including visual camera imagery, providing a vitally important level of service to the Duty Officer.

8.3 ROAD WEATHER FORECAST

1. Derby City Council has a joint agreement with Derbyshire County Council for the provision of Road Weather Forecasts. Derby City’s Contract for the provision of these forecasts is currently with The Met Office. The contract is for the provision of a Derby specific forecast based on our weather station data made available to them from our Morley Road weather station, and also includes other information from other Local Authorities weather stations located in neighbouring County’s. As Derby City is an urban authority the Road Surface Temperatures are generally 1 – 2 degrees warmer than are usually found on more exposed rural roads in the County Council’s domain.

2. The Met office provides both the County Council and Derby City Council with a lunchtime forecast via their Openroad web site at 11:30am and an evening update at 4:30pm. Regular updates to the weather forecast are also available whenever the weather is forecast to vary throughout the evening / night. The Met Office also provides a service where a phone call is sent directly to the Duty Officer mobile phone notifying them that the weather is likely to change, this service is available outside normal working hours.

8.4 THERMAL MAPPING

1. During the winter season of 2012/13 Derby City Council procured the services of Vaisala Ltd to carry out a number of thermal mapping surveys of the road network. The purpose of these surveys was to identify locations where the road surface temperatures were consistently colder than the road surface temperature located adjacent to the weather station site. Several surveys were carried out which confirmed this. 

2. This information has enabled the City Council to create three “Marginal night routes”, or “Cold Spot Routes”. These routes are much shorter than the overall length of the priority one routes, and will be gritted at times when the forecast predicts that the road surface temperatures are below PS01 (plus 1 degree) but above zero degrees (PS00 Centigrade). This temperature range was previously considered to be borderline of carrying out a treatment. This will allow the City Council to make a nominal saving on the amount of salt, fuel and resources it would normally use on a marginal night by reducing the necessity to treat the whole of the gritting route network, thus reducing the Council’s carbon footprint, and the impact on the environment by using less salt and also reducing vehicle emissions whilst maintaining a safe network.
3. A plan of the Marginal night routes can be found in Appendix B7.1.

8.5 INFORMATION TO BE PROVIDED

1. The Duty Officer will circulate a weather report to the stakeholders included on the circulation list each day via the Vaisala Manager system (Appendix A3). The report will indicate whether action should be carried out, and if so the time it shall commence.

2. The Duty Officer will update this information where a change in the weather conditions have been predicted, either by an amended forecast update, or visually by the operatives.

3. The Vaisala Manager text messaging service will also be used to communicate their justification to confirm why the Duty Officer has made their decision(s). (Appendix A3)

8.6 TIMING AND CIRCULATION OF INFORMATION

1. The forecasts provided by The Met Office are:-
   - 1130 hours – 24 hour ahead forecast.
   - 1630 hours – evening update to confirm the earlier forecast, or to amend the forecast if it has changed.
   - 2 – 5 day forecast (predicting what the weather will be like over the next five days).
   - A Morning Summary (Summarising what the morning weather conditions are likely to be).

2. Where the forecast changes, indicating that a “Change of Action” may be required, the Duty Officer will be alerted of a change in the forecast by the Met Office. This is usually in the form of a text message. The Duty Officer will review the weather forecast and if necessary revise the Action form within the Vaisala Manager system and text messages will be issued to the Duty Supervisor’s mobile phone.

3. The forecast at 1130 hours will be used to make the initial decision and the Duty Officer should make their decisions and input the details into the Vaisala Manager system no later than 1300 hours, so that arrangements can be made in good time. If there is doubt as to the precise action then the ‘Action’ can be delayed until the evening update has been issued at 1630 hours, depending on latest forecast update.

4. If a forecast is considered borderline or leads to uncertainty the Duty Officer may contact the weather centre directly and speak to the forecaster for clarification. The Met Office weather forecasters are available and can be contacted 24/7 if necessary to clarify the weather forecast that has been issued.

8.7 REPORTING PROCEDURE

1. Weather reports shall be retained on file within the Vaisala Manager system, copies will be extracted and archived for future reference by the City Council.

2. If road conditions are found to differ from those expected or indicated by the forecast, then operatives will contact the Duty Officer to notify them.

8.8 MAINTENANCE OF ICE DETECTION EQUIPMENT

1. Maintenance of the Morley Road weather station will be carried out only by appropriately qualified personnel from Vaisala Ltd, unless our current contract with them changes.
Section 9
Organisational Arrangements and Personnel

9.1 COMMAND, CONTROL AND OPERATIONAL ORGANISATION

1. Organisation chart and employee responsibilities

2. The organisational chart is given below, but it is important to realise the interlinking of the different parts of the service provision.

3. This is shown diagrammatically in the figure on the right, showing that Derby City Council is reliant upon, not only the Winter Service Operatives for the delivery of the Service and the Weather Forecasting provider for the accuracy of the weather forecasts, but also on the work of the Highways Agency in salting the trunk roads, and the neighbouring authorities for the work done at Council borders.

4. In Derby the only neighbouring authority with Winter Service responsibilities is Derbyshire County Council.

5. The public expects the Council to get it right every time, and they do not see the complicated relationships and responsibilities. It is therefore important that close working relationships are developed with the other parties involved.
6. The City Council’s organisational structure is as follows:

[Organisational structure diagram]

Chief Executive

Strategic Director

Neighbourhoods

Director of Partnership and Streetpride

Streetpride

Head of Highways and Engineering

Streetpride

Head of Traffic and Transportation

Streetpride

Head of Waste Management and Fleet

Streetpride

Head of Grounds Maintenance & Cleansing

Streetpride

Highways and Engineering (Area Manager)

Out of Hours Duty Officers x 4 (on rota)

Operatives Supervisors x 3 (on rota)

Winter Service Drivers (Operatives) x 12 (On rota)

All drivers are qualified to operate the loading shovel
7. The Duty Officers in the chart above are responsible for issuing instructions to the Operatives Supervisors. This is based on the interpretation of the received weather forecasts combined with information from our Morley Road weather station. The current Duty Officer / Supervisor and Operatives are decided by rota, and any decision to take action will be made by the Winter Service Duty Officer who is currently on duty for that particular week.

8. The responsibility of the various parties follows this chain of command although in general it will be the Duty Officer and the Supervisor who have responsibility on a day to day basis.

9.2 EMPLOYEE ROLES AND RESPONSIBILITIES

Derby City Council – Duty Officers

1. The Duty Officer of Derby City Council fulfils the role of the “decision maker”.

2. The Duty Officer has the following responsibilities:
   a) Receiving and interpreting weather forecasts;
   b) Instructing the Winter Service Supervisor;
   c) Instructing the Grounds Maintenance Supervisor;
   d) Instructing the Street Cleansing Supervisor;

Winter Service Supervisor

9.1 Employee roles and responsibilities.

1. The Duty Officer fulfils the role of “Decision maker” and has the responsibility to:
   a) Decide whether to instruct the Supervisors that ‘Action’ needs to be taken to treat the highway network and what the appropriate action should be.
   b) Make decisions based on the most recently issued weather forecast from the forecast provider and up to date information from our weather station.
   c) Act as liaison officer between the Highways Agency (currently A One+) and Derbyshire County Council, and the emergency services relating to the Winter Service.

2. The Supervisor of the Operatives fulfils the role of “enabler” and has the following responsibilities:
   a) Check and advise the Winter Service Duty Officer of alterations to the operatives rota due to sickness, holidays etc. Ensuring that sufficient drivers are available in order to complete the treatment of the network within the specified treatment time;
   b) Ensure that all vehicles have returned to the depot, and that vehicles are emptied and washed down following each treatment.
   c) Ensure drivers declarations are completed and returned to the Highway Asset Team.
   d) Ensure that Fleet Management are informed any breakdowns or maintenance requirements with the gritting fleet. No vehicle shall be used until the required repairs have been carried out and Fleet Management have confirmed the vehicle is fit for use.
   e) Ensure that drivers are fit to drive and have adhered to the European drivers
hours regulations, unless an emergency situation has been declared which fully justifies deviating from the regulations.

3. **The Operatives** have the following responsibilities:
   a) Carry out any pre-treatment vehicle checks to ensure the vehicle is safe to use.
   b) Ensure their vehicle is loaded safely, and the vehicle is not overloaded or dangerous to other highway users.
   c) Leave the depot within ±15 minutes of the instructed commencement time, unless they are requested to “start as soon as possible”. In which case the treatment should start within an hour of the instruction.
   d) Ensure their routes are treated as Instructed.
   e) Spot blast any wet/damp patches or locations where water is found lying on the highway.
   f) Operate their vehicles in a responsible manner, and act courteously to other highway users.
   g) Ensure their vehicles are emptied and washed down at the end of every shift.
   h) Ensure they are fit to drive and a copy of their European Drivers hours declaration is completed and passed onto the Asset Management Team at the end of each week.

4. **Fleet Management**
   a) Ensuring that the Winter Service vehicles are serviced at the correct intervals during the Winter Season;
   b) Ensuring that the gritting fleet is prepared and calibrated in advance of the Winter Season, and re-calibrate vehicles throughout the winter if the Asset team determine that excessive salt is being used;
   c) Ensure that fuel resilience levels are sufficient to permit the winter service vehicles to continue to operate during prolonged cold periods; this will mean ensuring that fuel tanks have the capacity to hold sufficient quantities of fuel to ensure operations can continue for a period of more than 12 days without a delivery.

5. **Health and Safety Advisor**
   a) Shall ensure that all operatives have the required training and qualifications;
   b) Will retain evidence of competence and training certificates of all Duty Officers/Supervisors and Operatives;

### 9.3 **EMPLOYEE DUTY SCHEDULES, ROTAS AND STANDBY ARRANGEMENTS**

1. Appendix C4 gives the duty rota for the Winter Season and lists all the names, qualifications and home address and telephone numbers (this information is confidential and will be circulated only where necessary).

### 9.4 **STANDARD OPERATING PROCEDURES**

1. All standard operating procedures are detailed in Part D: Operational Manual.
9.5 DECISION MAKING PROCESS

The Duty Officer will make all decisions in relation to the provision of the Winter Service, apart from in the circumstances of a Civil Emergency, or if the Emergency Plan has been invoked. In this situation, the Senior Responsible Officer (i.e. the Director of Partnership and Streetpride) or a delegated Senior Officer will make the decisions.

Decision Makers should be suitably trained and experienced and fully competent to make the winter service decision across the full range of conditions that may be met in a winter season.

They should have a thorough understanding of the network and technical processes to determine how changes in de-icer, de-icer condition, spreader capability and late changes in winter weather, road or traffic conditions may impact the level of service delivered.

H8 DECISION MAKING PROCESS

The following information and tables are extracts from ‘Well Maintained Highways’ Code of Practice: Appendix H 2013, and this information has been adjusted to suit Derby City’s processes.

1. 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.

2. Salt discharge and distribution checks (as shown in App H7.18B of the CoP) will be carried out on each gritter at the start of the season, then again if Supervisors/drivers or the Asset Management Team notice any variation in the amount of salt being used. This can also be monitored using the Exacttrak tracking and Vaisala Manager reporting systems.
Traffic levels are also an important part of the treatment decision. Two levels of trafficking have been defined: heavily trafficked roads and medium/light trafficked roads. The Duty Officer will decide which level applies whilst making their decision and should refer to Appendix H Table H8 to help make that decision.

### Table H8 – Effect of vehicle trafficking

<table>
<thead>
<tr>
<th>Traffic level &amp; timing</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic level is High</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before treatment</td>
<td>Removes water from wet road surfaces</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Reduces water film thickness on damp roads</td>
<td></td>
</tr>
<tr>
<td>Traffic level is Low/Medium</td>
<td>None</td>
<td>Little water removed from a wet road surface</td>
</tr>
<tr>
<td>Before treatment</td>
<td></td>
<td>Higher water film thickness for damp and wet roads</td>
</tr>
<tr>
<td>Traffic level is High</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At treatment</td>
<td>None</td>
<td>May deflect salt from target areas, vehicle draughts may remove salt from road, particularly in dry conditions. Operation of spreader may be less than optimal in slow moving or stop/start conditions</td>
</tr>
<tr>
<td>Traffic level is Low/Medium</td>
<td>Little loss due to traffic</td>
<td>None</td>
</tr>
<tr>
<td>At treatment</td>
<td>Salt spreading unhindered by vehicles adjacent to spreader</td>
<td></td>
</tr>
<tr>
<td>Traffic level is High</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shortly after treatment</td>
<td>Will help dissolution by crushing salt grains and reduce loss due to wind</td>
<td>Much salt may be removed from road by tyres and vehicle draughts before it enters solution</td>
</tr>
<tr>
<td>Traffic level is Low/Medium</td>
<td>Less losses due to traffic</td>
<td>Dissolution may be slow particularly for dry roads and low humidity conditions. Some salt will be removed from the road before dissolution takes place.</td>
</tr>
<tr>
<td>Shortly after treatment</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Precautionary Treatment Decision Matrix

4. A sample decision matrix for precautionary treatments based on road surface conditions and predicted weather conditions is given in Table H9 below.

<table>
<thead>
<tr>
<th>Road Surface Temperature</th>
<th>Precipitation</th>
<th>Predicted Road Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Wet</td>
</tr>
<tr>
<td>Above 1°C</td>
<td>No action, monitor weather</td>
<td></td>
</tr>
</tbody>
</table>

 Forecast indicates RST’s between PS01 and PS00 degrees, but not below 0°C.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Salt Cold Spot Routes Only (see note a)</th>
<th>Salt Cold Spot Routes Only (see note a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No rain</td>
<td>No Hoar Frost</td>
<td>Salt before frost (see note a)</td>
<td>Precautionary Salt (see note a)</td>
</tr>
<tr>
<td>No Hoar Frost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Fog</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expected Hoar Frost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expected Fog</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

 Expected to fall below 0°C

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected rain</td>
<td>Before freezing</td>
<td>Salt after rain stops (see note c)</td>
<td></td>
</tr>
<tr>
<td>Expected rain</td>
<td>During freezing</td>
<td>Salt before frost, as required during rain and after rain stops (see note d)</td>
<td></td>
</tr>
<tr>
<td>Possible rain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Possible Hoar Frost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Possible Fog</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

 Expected snow (See H10)  

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected snow (See H10)</td>
<td>Salt before snow fall</td>
<td></td>
</tr>
</tbody>
</table>

All decisions require continuous monitoring and review.

Notes:

a. Particular attention should be given to the possibility of water running across carriageways and other running surfaces e.g. off adjacent fields after heavy rains, washing off salt previously deposited. Such locations should be closely monitored and may require treating in the evening and morning and possible other occasions.

b. When a weather warning contains reference to expected hoarfrost, considerable deposits of frost are likely to occur. Hoarfrost usually occurs in the early morning and is difficult to cater for because of the probability that any salt deposited on a dry road too soon before its onset, may be dispersed before it can become effective. Close monitoring is required under this forecast condition which should ideally be treated just as the hoarfrost is forming. Such action is usually not practicable and salt may have to be deposited on a dry road prior to and
as close as possible to the expected time of the condition. Hoarfrost may be forecast at other
times in which case the timing of salting operations should be adjusted accordingly.

c. If, under these conditions, rain has not ceased by early morning, crews should be called out
and action initiated as rain ceases.

d. Under these circumstances rain will freeze on contact with running surfaces and full
pre-treatment should be provided even on dry roads. This is a most serious condition and
should be monitored closely and continuously throughout the danger period.

e. Where there is any hint of moisture being present, a pessimistic view of the
forecast should be taken when considering treatment to negatively textured surfaces.

Road Surface Wetness
5. For the purpose of allocating treatments a distinction is made between dry, damp
and wet road surfaces. Definitions for use when making treatment decisions are
given in Table H10.

<table>
<thead>
<tr>
<th>Table H10 – Road Surface Wetness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition</td>
</tr>
<tr>
<td>Dry road</td>
</tr>
<tr>
<td>Damp road</td>
</tr>
<tr>
<td>Wet road</td>
</tr>
</tbody>
</table>

Thermal mapping of our existing routes has demonstrated which roads are likely to be colder than
our weather station site. These roads have been named the ‘Cold Spot Routes’. If the road surface
temperature has been forecast to be below Plus 1 degree and zero degrees (i.e. marginally above
freezing), we will only treat our Cold Spot Routes. This is because other Road Surface
Temperatures have been shown to be warmer than the ‘Cold Spot Routes’ and therefore not likely
to freeze when our weather station RST is within this range.

General
1. The rates may be adjusted to take account of residual salt levels. However,
it should be noted that residual salt levels will tend to be lower if lower
spread rates are introduced. Residual salt levels are most likely to be
significant on marginal nights after treatments on two or three successive
days without precipitation in the intervening period.
2. During periods of sustained freezing and provided that surfaces are well drained and there is neither seepage (from melt water) nor ice present, rates of spread for treatments carried out within six hours of previous treatments may be 50% of the rates stated in the appropriate table.

3. With our new efficient fleet of gritters, calibrated at the start of the season and using treated salt with a moisture content within tolerance, a good or fair rate of spread should be achievable. But this will be confirmed by carrying out regular discharge and distribution checks. If the discharge or distribution checks confirm 'poor' spread rates apply then, Appendix H should be referred to in order to check that the correct spread rates are being used.

Table H12

<table>
<thead>
<tr>
<th>Spreading technology</th>
<th>Treatment Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treated Salt Spreading</td>
<td>Treatment matrix C (Applies for Derby using treated salt)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Salt distribution</th>
<th>Traffic level</th>
<th>Losses</th>
<th>Treatment matrix column</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fair</td>
<td>High</td>
<td>Normal</td>
<td>E</td>
</tr>
<tr>
<td>Fair</td>
<td>High</td>
<td>High</td>
<td>F</td>
</tr>
<tr>
<td>Fair</td>
<td>Medium/light</td>
<td>Normal</td>
<td>G</td>
</tr>
<tr>
<td>Good</td>
<td>High</td>
<td>Normal</td>
<td>I</td>
</tr>
<tr>
<td>Good</td>
<td>High</td>
<td>High</td>
<td>J</td>
</tr>
<tr>
<td>Good</td>
<td>Medium/light</td>
<td>Normal</td>
<td>K</td>
</tr>
<tr>
<td>Good</td>
<td>Medium/light</td>
<td>High</td>
<td>L</td>
</tr>
</tbody>
</table>

Table H13

Treatment Matrix C (Which applies to Derby using treated salt)
Treated Salting (De-icer spread rates in G/m²)

<table>
<thead>
<tr>
<th>Frost or forecast frost Road Surface Temperature (RST) and Road Surface Wetness</th>
<th>Column Coverage</th>
<th>Traffic Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>RST at or above -2°C and dry or damp road conditions</td>
<td>E FC HT NL</td>
<td>7</td>
</tr>
<tr>
<td>RST at or above -2°C and wet road conditions</td>
<td>F FC HT HL</td>
<td>7</td>
</tr>
<tr>
<td>RST below -2°C and above -5°C and dry or damp road conditions</td>
<td>G FC MT NL</td>
<td>7</td>
</tr>
<tr>
<td>RST below -2°C and above -5°C and wet road conditions</td>
<td>H FC MT HL</td>
<td>7</td>
</tr>
<tr>
<td>RST at or below -5°C and above -10°C C⁻¹ and dry or damp road conditions</td>
<td>I GC HT NL</td>
<td>7</td>
</tr>
<tr>
<td>RST at or below -5°C and above -10°C C⁻¹ and wet road conditions</td>
<td>J GC MT HL</td>
<td>7</td>
</tr>
<tr>
<td>RST at or below -5°C and above -10°C C⁻¹ and wet road conditions</td>
<td>K GC MT NL</td>
<td>7</td>
</tr>
<tr>
<td>RST at or below -5°C and above -10°C C⁻¹ and wet road conditions</td>
<td>L GC MT HL</td>
<td>7</td>
</tr>
</tbody>
</table>

Key:

Coverage: FC = Fair coverage, GC = Good coverage

Refer to Table H13 for variations to the rates given above
Traffic: HT = High traffic, MT = Medium traffic
Loss: NL = Normal loss, HL = High loss
* Refer to Section H10.21 Notes 3,4 & 5 when spreading at temperatures below -5°C
H10 TREATMENTS FOR SNOW, ICE AND FREEZING RAIN

General

1. It is impractical to spread sufficient salt to melt more than very thin layers of snow and ice. Ploughing is the only economical, efficient, effective and environmentally acceptable way to deal with all but light snow.

   However, in Derby traffic calming has been introduced to reduce traffic speeds on certain roads, and it would be dangerous for the driver to use a plough on these roads, therefore repeated treatments of 40g/m² will be required in these locations which shall be determined by the Duty Officer.

2. Ploughing down to the road surface is preferable as it minimises salt usage however the ploughs should be set to avoid risk of damage to the plough, the road surface, street furniture and level crossings.

3. Drainage should not be obstructed when ploughing snow. Snow should be ploughed to allow the drainage systems to function or it should be moved. Where necessary snow should be removed to prevent melt water overloading of drainage systems or running back into the carriageway.

4. Providing space for ploughing of further snowfalls is important; and may require Heaped snow to be removed or ploughed further off the carriageway.

5. Consideration should also be given to not continuously salt when ploughing. After a full route ploughing treatment, consider instructing drivers to salt only as and when required (spot salting).

Preparation before snow, ice and freezing rain.

1. When snow is forecast, ploughs should be prepared and positioned in order that snow clearance can start without delay as and when required.

2. To facilitate the breakup and dispersal of ice and snow by trafficking, pre-treatments must be made before snowfall or freezing rain. This ensures that there is de-icer present on the surface to provide a de-bonding layer.

3. Although it will increase salt usage, before snowfall and where practicable, consideration should be given to spreading salt on as much of the network as possible (i.e. beyond the normal precautionary salting network). This will provide a de-bonding layer and facilitate the breakup and dispersal of snow by traffic where subsequent treatments will not take place for a considerable time or at all.

4. Freezing rain occurs when droplets of water freeze upon contact with the ground and freeze instantaneously into ice, often forming ‘black’ ice. Freezing rain is difficult to forecast and can cause ice to build up very quickly on the road surface.

5. Forecasting and timing are critical to efficient treatment of snow and freezing rain conditions. Decisions should be based on the best available forecast information and treatments carried out as close to the optimum time as is practicable.
Depths of snow (light, moderate to heavy snow)

1. The guidance defines two main snowfall categories – light snow and moderate/heavy snow. The differentiation is based on the amount of snow that a 40g/m² treatment of dry salt would adequately treat at freezing down to -2°C. This relates to dilution amongst other factors and it is suggested that light snow relates to a snow depth with an equivalent depth of water of 1mm. Depending on the type of snow (dry (powdery), normal and wet) the depth varies. Matrix D below defines light and moderate/heavy snow.

<table>
<thead>
<tr>
<th>Road surface snow depth</th>
<th>Light or Medium traffic</th>
<th>Heavy traffic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-treat to provide a de-bonding layer</td>
<td>18g/m²</td>
<td>18g/m²</td>
</tr>
<tr>
<td>Light snow, forecast (0 – 15 mm)</td>
<td>30g/m²</td>
<td>15g/m²</td>
</tr>
<tr>
<td>Moderate/Heavy, forecast (depth greater than 15mm)</td>
<td>15 – 30g/m²</td>
<td>30g/m²</td>
</tr>
<tr>
<td>Freezing rain forecast</td>
<td>30 treatments or 2x 15g/m²</td>
<td></td>
</tr>
<tr>
<td>Slush when freezing conditions are forecast</td>
<td>36g/m²</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Road Surface Temperatures</th>
<th>Light/Medium traffic</th>
<th>Heavy traffic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above -5°C</td>
<td>36g/m²</td>
<td>18g/m²</td>
</tr>
<tr>
<td>Below -5°C</td>
<td>40g/m² of salt/abrasive mix (50:50)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatments for medium or thick ice/compacted snow (using treated salt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>For thicknesses between 1mm and 5mm</td>
</tr>
<tr>
<td>For thicknesses greater than 5mm</td>
</tr>
</tbody>
</table>
### Extract from Appendix C3: Footway Treatment Decision Matrix

<table>
<thead>
<tr>
<th>Category</th>
<th>Overnight Frost Conditions</th>
<th>Daytime Frost Conditions</th>
<th>Extended Frost Conditions</th>
<th>Snow Events</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>moisture present OR rain forecast AND overnight forecast temperatures below zero but not extending beyond 8am</td>
<td>moisture present OR rain forecast AND overnight forecast temperatures below zero extending beyond 8am</td>
<td>moisture present OR rain forecast AND forecast temperatures remaining below zero throughout daylight hours</td>
<td></td>
</tr>
<tr>
<td>1a</td>
<td>Precautionary treatment undertaken outside of shop opening times (i.e. completed before 8am or after 6pm, or outside extended shopping hours).</td>
<td>Monitor and further treatment as required by hand (When resources become available)</td>
<td>Snow removal will commence when resources come available from carriageway treatments. Endeavours will be made to complete clearance within 12 hours of cessation of snowfall, subject to availability of resources</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Precautionary treatment</td>
<td>Monitor and further treatment as required (When resources become available)</td>
<td>Snow removal will commence when resources come available from carriageway treatments. Endeavours will be made to complete clearance within 12 hours of cessation of snowfall, subject to availability of resources</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>No treatment</td>
<td>Reactive treatment (when resources become available)</td>
<td>Monitor and further treatment as required (When resources become available)</td>
<td>Snow removal will commence when resources come available from carriageway treatments. Endeavours will be made to complete clearance within 24 hours of cessation of snowfall, subject to availability of resources</td>
</tr>
<tr>
<td></td>
<td>No treatment</td>
<td>No treatment</td>
<td>Reactive treatment not normally undertaken other than in response to specific circumstances</td>
<td>Snow removal will commence when resources come available from carriageway treatments. Endeavours will be made to complete clearance within 48 hours of cessation of snowfall, subject to availability of resources</td>
</tr>
</tbody>
</table>

1a (pedestrianized footway in the City Centre)

1 (Within and around the City Centre) and access to the Derby Royal Hospital (also include Enhanced Gritting routes and Match Day gritting if required).

2 (Outside the City Centre)
| 3 | No treatment | No treatment | Reactive treatment not normally undertaken other than in response to specific circumstances | Snow removal will commence when resources come available from carriageway treatments. Endeavours will be made to complete clearance within 5 days of cessation of snowfall, subject to availability of resources |
| 4 | No treatment | No treatment | Reactive treatment not normally undertaken other than in response to specific circumstances |
9.6 OPERATIONAL MONITORING
1. The Highway Asset Team will be responsible for monitoring the operational performance of the operatives in accordance with the relevant performance targets.

9.7 OPERATIONAL RECORD KEEPING AND REPORTING
1. The Vaisala Manager system will keep a record of all treatment operations and provide the facility to issue the instruction to the Winter Service Operatives.
2. The Vaisala Manager system will retain copies of all instructions, actions and will document the following: Information from the weather station, the latest weather forecast from our weather provider, Action sheets and communications used in the Manager system. The weather forecast will be stored at the time that the decision was made, and all information will be recorded in a Portable Document Format (pdf) report which can be exported as required.
3. Operational records will be used to determine the effectiveness of the Winter Service, and to provide reports to users and key stakeholders.

9.8 PLANT AND VEHICLE MANNING ARRANGEMENTS, INCLUDING MANAGEMENT OF DRIVERS HOURS REGULATIONS

Standby Arrangements
1. On receipt of instructions to commence Winter Salting Operations, the Operatives who are scheduled to be on-call will be contacted by their Supervisor on their mobile phones, and proceed to the Stores Road Depot. The on-call duty rotas will be revised as and when required.

Call Out Procedure
2. The Duty Officer will check the Weather Forecast and decide if and when treatment is required.
3. Out of Hours monitoring will be carried out by the Duty Officer who will immediately notify the Supervisor by automated text message to their mobile phones. This process also sends a similar message to our Communications Officer who posts the information on Facebook and Twitter web pages to inform the public of when we are gritting.
4. In assessing the Weather Forecast, due account is to be taken of any Police reports and all other relevant information.
5. Very careful monitoring of the Weather Forecasts is required, especially to deal with sudden overnight adverse changes in the weather conditions, which may mean that an early morning salting of the roads is required.
6. On receipt of an automated text message operatives will respond to the text message and proceed to the Stores Road depot. They will aim to arrive early enough to carry out the necessary vehicles checks, load the vehicle and leave the depot within ±15 minutes of the time indicated by the Duty Officers instructions.

Ploughing
7. Whenever possible, when ploughing, all Winter Service vehicles will be double manned, that is, plough mates will be added. Plough mates help the driver by watching the left hand side of the snow plough. This can be especially difficult for the driver along narrow streets, or where on-street parking makes the road even narrower. It is not a requirement that plough mates are qualified to drive the vehicle, but they must have undergone a general induction briefing and have received an instruction briefing immediately before the ploughing operation commences.
9.9 MATERIALS MANAGEMENT
1. The day to day management of de-icing materials will be monitored by the Yardman, he will receive any deliveries and ensure the salt is consolidated efficiently to maximise the quantity of salt in the barn. The Yardman will notify the Asset team when stock reduces sufficiently and deliveries should be made. The stock management, purchase, restock and delivery arrangements are controlled by the Highway Asset Team.

9.10 SCHEDULES OF CONTRACT AND VOLUNTARY PERSONNEL (CVP)
1. There is the option in very severe conditions to use the Grounds Maintenance and Street Cleansing Operatives, if conditions are too severe to continue with Grounds maintenance or Street Cleansing operations. However, it would require the agreement of the Grounds Maintenance and Street Cleansing Supervisors to authorise such a decision as it would have consequences on their performance indicators for “Best Value”.

2. Derby City Council does not currently have any arrangements to use voluntary personnel, but there are plans to make arrangements for members of the public or Neighbourhood boards to volunteer to become snow wardens for their local area, especially during periods of very severe weather. In this situation Snow shovels and road salt will be provided to these volunteers who wish to help clear the footways in their neighbourhood of snow and ice. The ‘Snow Code’ has been published by the Department for Transport to provide advice to the general public who also wish to help clear snow from footways where they live.

3. We do not currently have any plans in place to use CVP for the forthcoming season, this will be reviewed annually.

9.11 CONTACT AND COMMISSIONING ARRANGEMENTS FOR CVP
1. Arrangements are not currently necessary.

9.12 TRAINING AND DEVELOPMENT ARRANGEMENTS
1. All Duty Officers involved in the Winter Service have practical experience, hold City & Guilds training certificates 6159 unit 021 Winter Supervision and Monitoring, relating to managing the winter service, and have passed both of the Met Office Weather Essentials and Weather in Practice training courses, that relate to interpreting the weather forecast information and have been trained to use the Vaisala Manager systems.

2. Prior to the commencement of each Winter Season and throughout winter, briefing sessions are held with all staff and the Operatives’ supervisors to discuss the provision of the Winter Service Operations and all associated procedures.

3. Each operative will ensure that they are familiar with the route they have been given to treat and any other special arrangements that are required. All Drivers involved in the salting and ploughing of roads must hold a Category C Heavy Goods Vehicle licence and should be trained or have completed the City and Guilds Scheme 6157. This proves the operators’ competence to operate salting machines including snow plough attachments.

4. All loading shovel drivers shall have a Certificate of Training Achievement Award, or similar approved qualification.

5. All allocated drivers must undergo training prior to operating any vehicle to ensure that they are fully aware of the vehicle operations and systems of allocation as dealt within Winter Service Operation.
6. During the period August to September each year all staff will undergo refresher training on:
   - Use of equipment.
   - Requirements regarding hours of work and driver’s hours regulations.
   - Methods of working.

7. Copies of all training certificates and driving licences are required by the Asset Management Team and must be supplied by September of each year. Training Certificates for new members of staff shall be supplied to the Asset Management Team prior to the new staff member being employed on the Winter Service.

9.13 HEALTH AND SAFETY PROCEDURES

1. The whole operation of the Winter Service is generally carried out in unfavourable weather conditions and often at night. Therefore safety is paramount. It is necessary for every part of the operation to be carefully considered when any new plant or new procedure is introduced.

2. The Team Leader or Area Manager shall ensure that all operatives have undergone health and safety induction training which makes them aware of the safety issues involved in Winter Service as well as who their safety coordinator is.

3. Operatives will be required to sign to confirm that they have received induction and are aware of current procedures involved on site for health and safety matters and emergency procedures are in place, and their responsibilities relating to driver’s hours regulations and fitness to operate machinery in their charge (Appendix A8).

4. All safety, health and environmental matters are communicated to operatives by means of core briefs, team briefs, one to one’s as well as tool box talks, memos or risk assessments.

5. Training is essential but is not in itself sufficient. Every person engaged on the Winter Service must comply with the following documents at all times:

   N.B. Not all of these documents are provided in the Appendix

   (1) Derby City Council Health and Safety Policy, and any policies applicable to the individual employees.
   (2) Derby City Council lone working policy.
   (3) Transport Act 1968: Relating to drivers hours.
   (5) COSHH (Care of Substances Hazardous to Health) Regulations 2003
   (7) RIDDOR (Reporting of Injuries Diseases and Dangerous Occurrences Regulations) 1995.
   (10) Risk Assessments for each of the following activities.
       - JSA14 Salt Spreading using a dedicated vehicle
       - JSA15 Salt Spreading using push along spreaders
       - JSA16 Clearing Snow, Spreading Salt and Filling Grit bins
       - JSA19 Snow Ploughing (including mounting and de-mounting spreaders)
   (11) European Driver’s hours regulations, See Appendix A8.
6. It is the responsibility of the Winter Service Operative(s) to complete and revise items (11) above.
Section 10

Facilities, Plant, Vehicles and Equipment

10.1 WINTER SERVICE COMPOUNDS AND FACILITIES

1. The Winter Service Compound is located at the Stores Road Depot.

2. The Winter Service Operative has facilities within the Depot which are fully equipped to cater for the personnel involved in the provision of the Winter Service.

10.2 FLEET INVENTORY INCLUDING LICENCE REQUIREMENTS AND CAPACITY

1. The gritting fleet inventory is detailed in 10.2.3 below. Our gritting vehicle registration numbers are not published.

2. All gritter drivers are required by law to have achieved a Class 2 HGV licence to drive dedicated gritting vehicles. Driver’s names are not published in this document.

3. The following transport and equipment is available:
   - 6 No. Uni Body Gritters – ECON 6.0Cum
   - 1 No. Demountable Gritter – ECON 4.5Cum
   - 6 No. Snow Plough Blades
   - 1 No. Trailer mounted gritter
   - 2 No. Pick-up mounted gritters
   - 2 No. Turbocast 3000 footway gritters

4. The responsibility for maintenance of some sections of the highway network has passed from the DfT to Derby City Council. Due to the addition of these extra lengths of highway the current treatment routes have been redesigned. The existing fleet has sufficient capacity to treat the network within the specified timescale when implementing up to a 20 g/m² treatment.

5. The existing fleet has insufficient capacity to carry out a 40 g/m² treatment within the specified 2 and a half hour response time.

   This is a variation from the recommendations contained in the Code of Practice.

6. The variation is due to local circumstances as permitted by the Code.

7. The highway network maintained by Derby City Council has a high proportion of urban roads subject to 30 mph speed limits. There are also a considerable number of bus routes through and around the City, often on unclassified roads, which are included in accordance with the Council’s Policy.

8. The length and nature of the treated network therefore require the gritters to be reloaded twice when carrying out more than a 20 g/m² treatment, resulting in an overall treatment time of approximately 3 hours.

The solution to this is to carry out two smaller treatments over the full length of the routes. This is consistent with the latest Code of Practice guidance.

This process provides an initial thin coverage of de-icer over the complete length of the route within the target time, which is then followed by a second layer allowing the correct spread rate to be applied to the road surface.
This method also avoids drivers having to return to the depot to re-load, when only half of their route had been treated. Because this would leave some roads without any deicer being applied to them long after roads had begun to freeze.

10.3 LOCATION OF PLANT, VEHICLES, SNOW-BLOWERS AND OTHER EQUIPMENT

1. All equipment required for the provision of the Winter Service is located at the Stores Road Depot.
2. A complete list of the equipment is contained in Section 10.2.3
3. A daily check will be carried out during the Winter Season on the availability of vehicles and any vehicles not available must be notified to the Fleet Manager.

New gritting fleet and driver assistance

4. The new fleet are equipped with the Exatrak vehicle tracking and Navigation system to plot the driven routes. The details of each route are stored in the on-board Satellite Navigation System, so that any driver can drive any route and be navigated by the system, informing the driver where to turn, when to switch on the salt spreader and when to travel without spreading. With the aid of Satellite Navigation this technology allows other Streetpride drivers to be able to grit a designated route without previous knowledge of the routes. Full training will be provide to these additional drivers.

5. Once the routes have been driven a few times the on-board system can remember the road widths as indicated on the spreader settings, and the angle and direction that the spreader is facing. So within a very short time it can autonomously aid the driver by making the necessary adjustments to the spreading mechanism for them.

Mechanical loading Shovel

6. A mechanical loading shovel must be available at all times when treatment is in progress. Derby City currently owns two loading shovels, one is located at the Stores Road depot and the other is based at our London Road depot which we can utilise if necessary.

7. A JCB excavator can be used as an emergency back-up if the Stores Road shovel should breakdown; this will be until the loading shovel is repaired or until a replacement can be brought in.

10.4 GARAGING, SERVICING AND MAINTENANCE ARRANGEMENTS

Garaging

1. The gritting fleet is not garaged at any time during the year.

Use of Transport

2. No vehicles shall be allowed to stand loaded with salt, all vehicles must be off loaded once the treatment routes have been completed any residual salt should be washed off.

3. All vehicles shall use the weigh bridge located in the Stores Road Depot to calculate the total weight of the salt that they use on-site. Drivers will submit their Salt Usage forms to the Asset Management team for stock monitoring purposes, to permit reports to be sent back to the Department for Transport, and to inform them of the total volume of salt present in our salt barn, and to demonstrate our current salt resilience levels.

4. All Winter Service vehicles and plant provided by Derby City Council shall not be used for any purpose other than Winter Service activities as specified without the prior
written approval of the Area Manager, unless the vehicles have been specifically
designed for multi uses in mind.

**Washing of Vehicles and Plant**

5. All vehicles used to transport salt should be thoroughly washed at the end of
operations and where possible all moving parts should be greased.

6. Salting vehicles and plant must be unloaded and thoroughly washed down whenever
circumstances permit; ideally this would be done at the end of each working shift.

7. This will be carried out under the instruction of the Winter Service Supervisor.

8. The Fleet Manager is to ensure that the fleet is regularly serviced and that all salting
machines are ready for immediate use at all times as from 1st October. All machines
must have had a major service prior to the start of the Winter Season and be calibrated
to BS 1622 1989.

9. When a salting machine or a mechanical shovel is under repair and remains off the
road for more than 1 hour, the Fleet Manager must inform the Area Manager or Duty
Officer. Sufficient machines are to be available at all times.

**Workshop**

10. In consultation with the Fleet Manager, duty mechanical fitters will be placed on call
throughout the Winter Season, unless other arrangements are made with a heavy
goods vehicle recovery/servicing company to provide this service. In addition to this
Econ fitters are also contactable should breakdowns arise out-of-hours.

**Garaging**

11. Our depot is too small to dedicate sheltered parking bays to park the gritters. So our
fleet of gritters must be parked outside, this is unless the salt barn is empty during the
summer months allowing sufficient room for the gritters to be stored.

**Servicing**

12. Our gritters are serviced every six weeks throughout the winter season, the four
dedicated gritters are not serviced during summer because they are not used for any
other purpose and are therefore decommissioned during summer. The two
demountable gritters are utilised for other activities and continue to be serviced every
six weeks.

13. In September the whole fleet is serviced, calibrated, spreading patterns are checked
and practice runs are driven to familiarise drivers with routes. During this process
vehicles are thoroughly checked and tested and any problems are corrected in
advance of the winter season.

**10.5 CONTACT AND HIRE ARRANGEMENTS FOR CONTRACT PLANT**

1. The Fleet manager will have contact details for the hire of plant and machinery, if any
additional vehicles are required.

**10.6 CALIBRATION PROCEDURES**

1. To be effective, salt shall be spread evenly and at rates to suit prevailing conditions.
The controls of the salting mechanisms shall be calibrated to BS 1622 1989, and
clearly marked for distinct rates of spread up to a maximum of 40g/m². Higher rates are
unnecessary, wasteful and can be environmentally harmful. Care shall be taken to
ensure that spread widths are neither too wide nor too narrow.
2. It is never recommended that salt be spread at a rate greater than 40g/m². It is further required that calibration testing of the salting mechanisms shall be carried out each year during the annual major service prior to the start of the Winter Season, together with precise instructions to the operators as to the settings needed to give the required rates of spread.

3. Fleet Management shall provide the Asset Management Team with copies of all calibration test certificates prior to the start of the Winter Season.

10.7 FUEL STOCKS AND LOCATIONS

1. We currently have two tanks in the Stores Road depot, one of (gasoil) or red diesel the other tank contains white diesel (Derv). The red diesel capacity is 5,000ltrs the white diesel tank holds 30,000ltrs.

If the 5000ltr tank of red diesel should run dry the gritters could refuel using derv if necessary. **If for some reason these tanks cannot be used or have run low, then we can use fuel from local filling stations using our fuel card.**

Since two of our six gritters are utilised for other highway services such as gully cleansing, these two vehicles are always filled with, and run using white diesel. The other four are dedicated gritters that are only fuelled with red diesel. With this in mind, the 5,000ltr tank of red diesel could achieve a 12 day level of resilience during heavy usage. Whilst the 30,000ltr tank, would be able to sustain the other two gritters for a 12 month period. During severe weather it is likely that Streetpride Refuse vehicles will be un-able to operate and this will result in even more white diesel being available during the colder periods, increasing the resilience levels further.

These tanks are restocked before the Core period of the winter season and then checked and refuelled if severe weather has been forecast.

The capacity of these fuel tanks is currently under review with the intention on increasing the tank sizes to 20,000 litres of red diesel and 80,000 litres of Derv. The resilience levels will be reviewed again if this plan is approved.

This is in accordance with **(Recommendation 8)** relating to resilience levels of salt and fuel of the Lessons Learnt from the Severe weather February 2009.

2. The drivers will be responsible to ensure vehicles have adequate fuel before commencing their route and refuelling on returning to the depot.

3. Hydrocarbon Oil Duties Act 1979 provides that only vehicles that are constructed or adapted, and used, solely for gritting roads can use red diesel for that purpose.
Throughout winter our dedicated gritters will be fuelled with red diesel. These four vehicles are generally decommissioned during the summer months.

4. In recent winters, during periods of extreme weather, HMRC have temporarily relaxed rules around use of red diesel and allowed tractors being used for gritting rural roads to also be fuelled with red diesel. However Derby city does not currently intend to procure the services of farm vehicles for gritting purposes. However during winter we do use pick-up mounted and trailer mounted gritters, these vehicles are used throughout the year for different activities, and we do not intend to use red diesel to fuel them because they are used as gritters for such a short period of time.

5. During winter if the temperature becomes very cold diesel fuel can become waxy and this can cause vehicle engines to stop during very cold weather conditions. Therefore during very cold weather winter grade fuels will be used that contain an anti-waxing agent to avoid this from happening.
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Section 11

Salt and Other De-Icing Materials

11.0 LOCATION AND CAPACITY OF STOCKS FOR SALT AND OTHER MATERIALS

Salt Storage and Delivery

1. The salt is stored at the Stores Road Depot within the salt barn provided, we currently do not have any other provisions to store salt externally within the depot, or elsewhere at other council depots.

2. Our salt barn has the capacity to store in the region of 4,200 tonnes of salt.

3. If grit or sand is required to be mixed with the salt, this will be stored outside the barn but close-by to facilitate the mixing process. We do not currently use any other forms of de-icing materials on Derby’s highway.

4. Salt will be ordered, monitored and restocked by the Highway Asset Management Team. The Depot Manager is responsible for the safeguarding the City Council's stocks. All salt is currently purchased through the Eastern Shire Purchasing Organisation (ESPO) who manage the purchasing contracts on behalf of a consortium of Local Authorities. ESPO confirm who has been awarded the contract for supplying salt for the current season, and the Asset Management Team liaise with the supplier to arrange for deliveries.

5. The bulk of the Salt will be purchased and re-stocked over the summer months, to avoid the increase in cost for purchasing Salt during the winter period. When the barn is being re-stocked and wherever possible the existing stock should be moved to one side of the barn, this is to enable stock rotation and this is to avoid older salt becoming compacted at the back of the barn.

6. The responsibility for arranging for the salt stock to be rotated will lie with the Asset Team in connection with the Operations Manager, who will arrange for the hire of an excavator to carry out the process. This process will be overseen by the Yardman during the restocking process.

7. Our treated salt is currently being stored in the salt barn to be kept at its optimum condition and to protect it from the environment. All rates of spread quoted throughout this operational plan are for treated salt. Salt will be stored in its optimum condition. This will enable the salt moisture content to be kept within the tolerances specified by Appendix H of the Code of Practice 'Well Maintained Highways' 2013. We do not currently store any salt outside, but if any salt should be stored externally the weather would likely increase the moisture content. This wet salt is likely to be outside of the permitted tolerances to enable a 'reasonable' spread rate to be achieved and should only be used for filling grit bins. This is unless it is mixed with dry salt to bring the moisture content levels within the recommended tolerances.

8. Our salt barn adheres to the Environment Agency's “Pollution Prevention Guidelines Highway Depots: PPG10” there is no risk of pollution of rivers and groundwater, due to the run-off from an exposed rock salt stockpile. Our salt barn is covered with an impermeable membrane, and situated on an impervious base and sited more than 10m away from the nearest watercourse or soak-away. Drainage from our barn passes into a water filtration unit and into two rain water harvesting tanks for re-use in the wash down bay for washing vehicles. This water then passes into an interceptor which separates the water from any solid materials, and the sediment is periodically removed by an environmental cleansing vehicle for safe disposal off-site. The water from the interceptor passes into the foul sewer for treatment by the water authority.
9. To avoid our resilience levels running low it may be necessary to top-up the salt barn during the high period of the Winter Season; this may be avoided if deliveries are arranged well before the high period of winter begins.

10. Regular stockpile measurements will be taken to confirm the quantity of salt remaining in the barn, these measurements will be used to substantiate other measurement tools and records of salt usage. These measurements will be taken at the start of the season, mid-season and at the end of the season as part of our stock take valuation to Corporate Accountancy.

11. The responsibility for ensuring that salt bins are filled lies with the Operations Team who will issue an instruction to the Operatives to fill the salt bins as necessary. (Note salt for non-Highway use will not be made a priority during times of severe weather due to the limited resources available to carry out the legal requirements on the Highway. In addition to this, if the salt resilience level drops below the minimum level required for the high period of winter, then our Enhanced Service to other Departments may also be suspended. This will likely have implications on the Enhanced Winter Service that the Highways Section provides to other Departments, Schools etc. and this should be noted along with section 7.9)

11.1 TESTING ARRANGEMENTS

1. The chemical composition of all salt should be stated by the supplier and tested (where necessary) in accordance with BS3247 Part 1. All salt should be transported to the depot in covered vehicles and have a moisture content between 2 to 3.5% by mass when delivered.

2. The salt moisture content will be tested and reviewed on a monthly basis. These tests will be carried out by a UKAS accredited laboratory to verify the moisture content.

3. Regular discharge and distribution checks will be carried out by the Operations team to determine our spreading capabilities.

11.2 LOADING ARRANGEMENTS

1. All loading will be carried out at Stores Road Depot.

2. Operatives will be responsible for loading their own vehicles, it is their responsibility and in their interest to ensure the vehicle in their charge are evenly loaded and not overloaded.

3. The weight of a level shovel of salt shall be established every year as a minimum and whenever a replacement shovel is used. The method adopted shall be to load a vehicle with a set number of level shovel loads and weighing the vehicle full and empty on the Depot weighbridge.

4. A note should be kept of any problems occurring with clogging of salting within the mechanism. Although this is unlikely to occur with dry treated salt, but if these circumstances do occur the operatives should reduce the weight of the load.

11.3 TREATMENT REQUIREMENTS INCLUDING SPREAD RATES

Precautionary Salting

1. The Well Maintained Highways - Code of Practice for Highway Maintenance Appendix H8.14 suggests spreading rates can be lowered if an authority’s gritting fleet can be demonstrated to have a ‘Reasonable’ spreading rate capability. For 2014-15 season we will be using treated salt, this salt is stored in its optimum condition and kept dry within the salt barn. Our new fleet should be able to achieve a ‘Good’ spreading capability; therefore Appendix H of the Code of Practice suggests we are able to follow the spread rates as shown in the CoP Appendix H Treatment Matrix C for treated salt (Refer to Section 9 Page 62).
Section 12

Operational Communications

12.0 TECHNICAL SYSTEMS INFORMATION

1. The Streetpride and Derby Direct telephone numbers will be used to take calls and enquiries etc. from the Public and will be logged into the Councils Customer Relations Management system (LAGAN) e-mails will be received from either the generic e-mail address customerservices@derby.gov.uk or Street.Pride@derby.gov.uk these will be forwarded onto us in highways and recorded in our own Public Enquiry Management system. This is the process for collecting and recording enquiries and the responses relating to them. All other written communications are e-mailed or faxed and if urgent confirmed by phone.

2. All Winter Service treatment operatives are issued with a mobile telephone. However the City Council Policy is that mobile devices must not be used whilst driving. If the driver’s phone rings whilst they are driving they must pull the vehicle over and stop in a safe location before answering the call. Plough mates will deal with all calls when they are on duty.

3. In addition all Winter Service vehicles are fitted with a vehicle tracking system that allows pin-point location 24 hours per day.

Emergency Power Supplies

4. If required, Emergency generators will be obtained from local plant hire companies. The procedure for ordering these will be retained by Fleet Management.

5. Mobile Emergency Lighting Units will be provided at the depot as and when required to provide emergency lighting for loading, unloading and washing down vehicles.

6. An emergency back-up generator will be required to cover the Operative’s Depot.

7. The Stores Road Depot currently has no emergency power supply.

12.2 INVENTORY AND ALLOCATION, INCLUDING BACK-UP

1. Records of ‘Actions’ and ‘Decisions’ are stored within the Vaisala Manager system, this is a web based system that can be accessed from any web browser, and this means that Decisions can be made remotely from the office. This provides a back-up in the event of flood, fire or other serious problem. It is important that all forms of written and verbal communication are recorded; these are stored electronically and backed-up.

12.3 REPORTING ARRANGEMENTS AND PROTOCOLS

Daily Report

1. At present Operatives will communicate information to the Asset Management Team about the quantities of Salt used, breakdowns and issues relating to the gritting routes. This will be recorded on paper by the drivers, and later transferred to the comments section of the Vaisala Manager software. This should be completed at the end of each shift and the Asset Management Team should be notified the following day. The following information will be recorded:

   • Salt used during each shift.
   • Time commenced / Completed salting operations
   • Both manual and mechanical salt application/snow clearance.
   • Driver’s hours regulations forms
   • Any other issues, such as road closures etc.

Any breakdown’s or vehicle problems should be reported to Fleet
Management. **No vehicle shall be used until the required repairs have been carried out and Fleet Management have confirmed the vehicle is fit for use.**

**REGULAR OPERATIONAL MEETINGS**

2. Monthly meetings are to be held throughout winter including a selection of operatives, Duty Officers and Managers, to discuss details activities and working procedures and any possible issues or improvements that need to be made. At the end of each season a full review meeting will be held to assess the entire process and identify whether any lessons can be learnt from any issues encountered throughout the Winter period.
Section 13

Information and Publicity

13.1 LOCAL PRESS AND BROADCAST CONTACT INFORMATION
1. All enquiries from the media must be referred to the press and public relations officers in all circumstances. Only certain individuals are permitted to speak directly to the media.

13.2 OTHER KEY LOCAL AND NATIONAL CONTACT INFORMATION
1. The main contact numbers are given in Appendix C5. These are the general numbers and it is advisable to get actual contact names and numbers for the respective Duty Officer. These numbers are not published in this plan but in the confidential Appendix.

13.3 RESPONSIBILITIES AND GUIDANCE FOR PROVIDING INFORMATION
1. It is important that correct information is always given to the public; however it is difficult for the operations to continue smoothly if constantly interrupted by the public phoning for information. Therefore regular updates will be communicated to our Facebook and Twitter pages and during severe weather information will be passed onto the Call Centre and the public will be instructed to phone those numbers.

   Emergency Hot-line – 0333 2006981

2. Where feasible additional information will be posted on the Derby City Council web site along with general guidance on the Winter Service and advice on winter driving.

13.4 ROAD WEATHER STATIONS
1. Derby City Council has recently installed a road weather station. This station is located on Morley Road, Oakwood which has been selected because it is one of the colder and more exposed areas in Derby. The data produced by the weather station is accessible via Vaisala’s Manager system, and is used by our weather provider to predict how our Road Surface Temperatures are likely to change, and from which they produce various forecast models.

13.5 ROAD WEATHER INFORMATION BUREAU SERVICE
1. Derby City Council has a direct link to the Vaisala road weather information bureau. This enables the Duty Officer to access the weather station located on Morley Road. The information is not made available to the Call Centre or the general public because some of the data may be misinterpreted or misused, and in addition to this the Met Office have a requirement to protect their intellectual property rights.

13.6 ROAD WEATHER FORECAST
1. The road weather forecast is provided by The Met Office and the Duty Officer can access this from any web browser at 11:30am and again at 16:30pm. The Duty Officer is sent an automated text message from the Met Office if the forecast is likely to change outside of these times.

13.7 THERMAL MAPPING
1. During the winter of 2012/13 the City Council carried out an exercise to carry out a mobile Thermal mapping process. This exercise permitted us to identify specific sections of the treated network where the road surface temperatures are consistently cooler than the road surface temperature situated adjacent to our weather station on Morley Road. These sites are generally more exposed parts of the network such as bridge decks or roads located near the River Derwent.
13.8 THE DECISION MAKING PROCESS

1. The decision making process is detailed throughout this Plan (Section 9). In accordance with the Policy Statement (Section 3) the Plan will be published annually with a copy of the non-technical summary will be made available to the general public which will also be posted on the Derby City Council website.

13.9 INFORMATION TO BE PROVIDED

1. The following information will be made available to various individuals via the circulation e-mail:
   - “Action” Form (Appendix A3) which includes a justification of why a treatment is being carried out, Duty Officers may also make comments to pass on information to the Operatives.

13.10 TIMING AND CIRCULATION OF INFORMATION

1. The forecasts provided by The Met Office are accessible via the Openroad web site (password protected):
   - 1130 hours – 24 hour ahead forecast – received daily;
   - 1630 hours – forecast up to 1200 hours the next day – only received when the forecast changes; and
   - 2100 hours – forecast up to 1200 hours the next day – if no change the 1630 hours forecast is repeated – only received when the forecast changes.
   - At 1130 hours – we also receive the morning summary to indicate what the morning forecast will be for the following day.

2. The 1130 hours forecast is used to make the initial decision on whether treatment is required.

3. The decision will be circulated to all relevant parties on the distribution list (Appendix C6). This information is not available to the general public due to protect the Intellectual property rights of the weather provider.

13.11 REPORTING PROCEDURES

Internal reporting procedures

1. Information regarding the condition of the network is gathered by the gritting vehicle drivers during normal precautionary treatments. This information is reported to the Operative’s Winter Service Supervisor via mobile telephone; the Supervisor will report these issues to the Duty Officer. Where the condition of the network varies significantly from the forecast conditions the Operative will inform the Duty Officer so that the appropriate action can be taken.

External reporting procedures

2. Requests for treatment received from the emergency services via the Call Centre or the Operative are to be passed to the Duty Officer who will make a decision on any action required in accordance with the decision making process (Section 9).

3. The general public may also report icy conditions on the network by either telephoning our call centre (Derby Direct), by e-mail or by submitting an on-line form via the Derby City Council website, or if outside normal working hours the emergency telephone number can be called.

4. Requests for treatment received from the general public are passed to the Duty Officer who will make a decision on any action required in accordance with the decision making process (Section 9).
Part D
Procedure C5.1: Snow Clearance – Carriageways
**Procedure C5.1**

**Snow Clearance – Carriageways**

The procedure for the clearance of snow from carriageways shall be as follows:

1. **General**
   a. This procedure details how carriageways are to be cleared of snow during periods of very severe weather.
   b. This procedure must not be invoked without the express approval of the Duty Officer.

2. **Duty Officer**
   a. Duty Officer receives weather forecast and completes the relevant form in the Vaisala Manager system “Action” sheet (Appendices A3)
      - During the process the type of snow will be determined by whether there is any likelihood of freezing rain
      - Traffic volume
      - And whether ploughs need to be fitted in advance of a forecast of snow
   b. Duty Officer issues the “Action” to Winter Service Supervisor. (Appendix A3)
   c. The “Action” Form will indicate that the Snow Clearance Procedure is to be initiated and confirm what time action should commence and whether snow ploughs should be fitted.

3. **Operative**
   On receiving a snow warning the following procedure shall be carried out:
   a. Fix ploughs to all vehicles if significant accumulations or drifting are expected.
   b. Pre-treat the network in accordance with the pre-defined hierarchy immediately prior to snow falling to prevent snow settling on the road surface.
   c. Start ploughing as soon as snow becomes deep enough to plough i.e. approximately 50mm in depth.
   d. Ploughing shall be carried out in accordance with procedure C5.3: Snow Clearance – Ploughing Techniques.
   e. After ploughing, treat un-compacted snow with sufficient salt refer to Section 9 and spread rates for snow conditions.
   f. When prolonged snow fall is forecast it will be found useful to continuously plough from the onset of snow to prevent build up and to prevent compaction by traffic. Such ploughing can be combined with simultaneous salting at 18g/m² so that a wet base is maintained. However, once snow depths of 120 mm have been reached, or when tackling snowdrifts or where vehicles are operating on gradients, it may be desirable to continue ploughing without salting. The weight of a salt load will aid vehicle traction when ploughing.
   g. After ploughing, a further treatment of salt is required at the rate of 18 g/m² for every 25 mm of un-compacted unless slush is expected to re-freeze.
   h. As snow melts under the action of salt, keep ploughing to remove slush.
   i. If snow has become compacted and the thickness is less than 5mm treat with mixture of Salt/Abrasive (50:50) spread at 40g/m². Neat salt must not be used, as it will accumulate in the form of salt solution in depressions and produce a very uneven and slippery running surface. In these circumstances spreading of grit is advised.
   j. Abrasive alone should be used on hard packed snow spread at 40g/m². Abrasives should ideally be between 5-6mm and angular particles. Once the compacted snow begins to break-up under the movement of traffic, then abrasive/salt mix (50:50) at 20g/m² should be used.
k. Very low temperatures do not usually follow immediately after a snow fall and it is therefore very important to apply salt early, plough early, salt again and get the resultant slush off the road before compaction by traffic.

l. When ploughs are fitted but not being used, a travel bar safety device shall be fitted in place to prevent the plough from accidentally lowering without the driver's knowledge.

m. It is also essential that ploughs are fitted with safety sheer pins, which are designed to break off in the event of the plough colliding with a solid object. Spare Sheer pins are to be kept in the vehicles in-case they become lost during ploughing.

4. **Snow Clearance – Network Priority**

   The network should be cleared in the following priority order:

   a. Treatment network in priority order including the accesses to emergency service establishments.

   b. Highways to other important locations, essential industrial establishments, Rail and Bus Stations, shopping centres and pedestrianised areas.

   c. Other commuter routes.

   d. Single accesses to schools.

   e. Residential roads and footways.

   f. Roads to single premises.
Procedure C5.2: Snow Clearance – Footways
Procedure C5.2
Snow Clearance – Footways

The procedure for the clearance of snow from footways shall be as follows:

1. General
   a. This procedure details how footways are to be cleared of snow during periods of very severe weather.
   b. This procedure must not be invoked without the express approval of the Duty Officer.
   c. The Operations team shall ensure that full risk assessments and method statements are in place before any work is commenced.

2. Duty Officer Controller
   a. Duty Officer issues the “Action” by means of an automated text message to the Winter Service Supervisor, Street Cleansing Duty Officer and the Grounds Maintenance Duty Officer. (Appendix A3)
      - During the process the type of snow will be determined by whether there is any likelihood of freezing rain
      - Pedestrian Traffic volume
      - And whether City Centre footways and other special event footways need to be pre-treated in advance of a forecast of snow.

3. Operatives
   a. The “Action” text message will indicate the required treatment.

      On receiving the “Action” text message the following procedures shall be carried out.

      Snow is forecast
      b. When snow is forecast but has not settled the Duty Officer will issue the Winter Service Supervisor and Grounds Maintenance Duty Officer with an instruction to commence salting. With the Street Cleansing Duty Officer this will confirm that they should cease Street Cleansing operations on City Centre Streets and be prepared to clear any snow from their designated routes.
      c. Treatment will commence at the time instructed by the Duty Officer. Where a time to commence is not specified, treatment will begin immediately.

      Snow is settling
      d. When snow is settling, treatment with salt shall continue until such time that treatment is no longer effective.

      Snow has settled
      e. If snow has settled and cannot be treated by salt alone, a pathway of 1.2 metres (4’0”) shall be cleared of snow and treated with salt to enable 2 (two) pedestrians to walk past each other without obstruction.
      f. When clearing the footway, snow shall not be piled or banked up unless this is completely unavoidable. Where the piling or banking of snow does occur a pathway should be cleared to the kerb edge every 25 metres (30 yards).
      g. A pathway shall also be cleared to give access for pedestrians to use telephone kiosks, bus shelters, post boxes, pedestrian crossings and the like.

4. Mechanical Spreading and Clearance
   a. Mechanical salt spreaders designed for use on footways are to be used wherever reasonably practical to do so. Where access is restricted manual treatment will be permitted.
b. The current footway salt spreaders are manually propelled and do not have plough attachments. But if any mechanical spreading vehicles are purchased in future they shall have the capability of using snow plough attachments.

5. Any snow ploughs purchased for mechanical spreading on footways shall be designed and suitable for use on footways.

6. **Piling of Snow Prior to Transportation**
   a. Snow must not be collected into piles or heaps unless special dispensation is given by the Duty Officer.
   b. Where permission is given by the Duty Officer, piling or heaping snow must on no account be made on pedestrian crossings or bus stops. If piles or heaps are made in the channel, a space of not less than 300 mm (1'0") wide must be left between the snow and the kerb to allow for drainage and sufficient space must be left between the piles or heaps for the convenience of pedestrians.
   c. Gully grates must be kept free from obstruction wherever possible.

7. **Loading of Snow**
   a. It is not envisaged that snow will be moved from its location other than where it is causing an obstruction. If it is necessary to relocate snow to a different location, then transport must be used to the best advantage by allowing sufficient loaders per goods vehicle. Loading of snow from the front of shops and defined premises must be carried out first and less important areas left until later.
## Appendix D4: Glossary of Terms

### Abbreviations

The following are abbreviations used throughout the document.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>DfT</td>
<td>Department for Transport</td>
</tr>
<tr>
<td>DCC</td>
<td>Derby City Council</td>
</tr>
<tr>
<td>RST</td>
<td>Road Surface Temperature</td>
</tr>
<tr>
<td>SCAM</td>
<td>Spreader Computer Aided Management</td>
</tr>
</tbody>
</table>

### Definitions

In this Winter Service Plan the terms used are defined as follows:-

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General</strong></td>
<td></td>
</tr>
<tr>
<td>Ballast</td>
<td>A single-sized abrasive aggregate of particle size 0.6 to 1.0 mm.</td>
</tr>
<tr>
<td>Carriageway</td>
<td>The part of the highway laid out for use by motor vehicles.</td>
</tr>
<tr>
<td>Classified Road</td>
<td>A road with a classification letter and number, e.g. A1, B5020 and C607. All other roads are unclassified (U/C).</td>
</tr>
<tr>
<td>Duty Officer</td>
<td>An officer of Derby City Council with the responsibility for the Winter Service.</td>
</tr>
<tr>
<td>Cycle Lane</td>
<td>A lane forming part of the carriageway.</td>
</tr>
<tr>
<td>Cycle Track</td>
<td>A route for cyclists not contiguous with the public footway or carriageway; a shared pedestrian / cycle path either segregated or unsegregated.</td>
</tr>
<tr>
<td>Cycle Trail</td>
<td>Leisure routes through open spaces. These are not necessarily the responsibility of the Highway Authority.</td>
</tr>
<tr>
<td>Cycle Route</td>
<td>A collective term for all segregated facilities laid out specifically for cyclists.</td>
</tr>
<tr>
<td>Distributor Road</td>
<td>A road that distributes traffic from main roads onto smaller streets.</td>
</tr>
<tr>
<td>Footpath</td>
<td>Off Road un-surfaced Public Right of Way for pedestrian use.</td>
</tr>
<tr>
<td>Footway</td>
<td>A collective term for all segregated facilities laid out for pedestrian use.</td>
</tr>
</tbody>
</table>
### Appendix D4: Glossary of Terms (continued)

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grit</td>
<td>Sand or ballast applied alone or in combination with salt.</td>
</tr>
<tr>
<td>Gritter</td>
<td>A purpose built vehicle designed to apply salt or grit to the highway.</td>
</tr>
<tr>
<td>Gritting</td>
<td>The action of applying salt or grit to the highway.</td>
</tr>
<tr>
<td>Highway</td>
<td>A collective term for publicly maintained facilities laid out for all types of user and includes all carriageways, footways, footpaths, cycle tracks, cycle paths and public rights of way within the City boundary for which Derby City Council is the Highway Authority.</td>
</tr>
<tr>
<td>Highway Boundary</td>
<td>The delineation of the extent of the Highway, generally a fence, wall or hedge.</td>
</tr>
<tr>
<td>Plough</td>
<td>A purpose built blade attached to the front of a gritter to remove snow from the highway. Blades can be straight or “V” shaped.</td>
</tr>
<tr>
<td>Porous Asphalt</td>
<td>A form of road pavement which contains minute drainage channels to allow water (or salt solution) to drain down from the road surface into the road bed.</td>
</tr>
<tr>
<td>Post Treatment</td>
<td>The application of salt or grit to the highway network to remove ice or snow which has already formed or settled on the highway.</td>
</tr>
<tr>
<td>Precautionary Salting</td>
<td>The application of salt or grit to the highway network prior to the forecast formation of ice or snow fall. Also known as “pre-salting” or “pre-treatment”</td>
</tr>
<tr>
<td>Principal Road</td>
<td>Principal roads are classified ‘A’ class roads such as the A52, A601 or A514.</td>
</tr>
<tr>
<td>Priority Route</td>
<td>A treatment route.</td>
</tr>
<tr>
<td>Response Time</td>
<td>The time elapsed from the Duty Officer issuing the instruction to commence treatment until the Winter Service vehicles are loaded, crewed and ready to leave the Depot.</td>
</tr>
<tr>
<td>RST</td>
<td>Road Surface Temperature.</td>
</tr>
</tbody>
</table>
### Appendix D4: Glossary of Terms (continued)

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salt</td>
<td>Ground rock salt or Halite. In England this is usually mined from Salt mines from deep underground and usually contains quite a high proportion of Marl (clay material) this gives the salt its brown hue.</td>
</tr>
<tr>
<td>Salt Bin</td>
<td>A container placed on the highway containing salt or grit for use by the general public, this is provided to allow the general public to apply salt to the road to aid them with their vehicles during freezing conditions.</td>
</tr>
<tr>
<td>Sand</td>
<td>0.5 mm sand having a low fines content.</td>
</tr>
<tr>
<td>Seepage</td>
<td>The leakage of ground water from roadside verges. Can cause roads to become wet, when otherwise they would have stayed dry, possibly leading to ice formation later.</td>
</tr>
<tr>
<td>Spread Rate</td>
<td>The amount of salt or grit distributed from the rear of a gritter (or applied by hand), expressed as grams per square metre (g/m²).</td>
</tr>
<tr>
<td>Supervisor</td>
<td>The officer with responsibility for receiving and acting on the instructions of the Duty Officer. Includes the Contract Manager and Supervisors.</td>
</tr>
<tr>
<td>Treatment Route</td>
<td>A predetermined route for a gritting vehicle to travel whilst applying salt or grit to the highway.</td>
</tr>
<tr>
<td>Treatment Time</td>
<td>The time taken from leaving the Depot to completion of the treatment routes.</td>
</tr>
<tr>
<td>The Council</td>
<td>Derby City Council.</td>
</tr>
<tr>
<td>Trunk Road</td>
<td>A highway which is the responsibility of the Secretary of State for Transport. Generally these are Motorways and main routes between towns and cities.</td>
</tr>
<tr>
<td>Vaisala Ltd</td>
<td>References to Vaisala Ltd, Vaisala Weather Bureau, Vaisala RoadsDSS or Vaisala Manager are registered trademarks and/or registered service marks owned by Vaisala Oyj and its affiliates”. Vaisala Ltd are our weather bureau service provider, and also responsible for provision and maintenance of the weather station located on Morley Road.</td>
</tr>
<tr>
<td>Winter Service</td>
<td>The service provided by the Council during the Winter Season to achieve the objectives of the Council.</td>
</tr>
<tr>
<td>Winter Season</td>
<td>The period during which the Winter Service will be provided and is the period 1(^{st}) October to 30(^{th}) April annually.</td>
</tr>
</tbody>
</table>
### Appendix D4: Glossary of Terms (continued)

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Weather Forecasting</strong></td>
<td></td>
</tr>
<tr>
<td>Accretion</td>
<td>The build-up of snow on objects such as overhead cables, road signs and tree branches. It occurs when wet snow, with temperatures close to freezing, is accompanied by a strong wind. The wet snow freezes on to objects under pressure of the wind. The build-up of snow can be quite large, and can cause damage to cables and trees.</td>
</tr>
<tr>
<td>Air Frost</td>
<td>The air temperature (measured between 1 and 2 metres above the ground) falls below 0°C.</td>
</tr>
<tr>
<td>Black Ice</td>
<td>Clear ice which forms on roads due to the freezing of standing water. Occasionally it may be formed by the transformation of hoar frost, under pressure from car tyres. The name black ice is used because the road blacktop can be seen through the clear ice.</td>
</tr>
<tr>
<td>Climatic Domain</td>
<td>An area of a country with broadly similar climatic characteristics, e.g. an urban area, or high level area, or a coastal area.</td>
</tr>
<tr>
<td>Condensation</td>
<td>The change of state of water vapour to liquid water, thus forming a thin film or mist of water on surfaces such as roads.</td>
</tr>
<tr>
<td>Confidence Factor</td>
<td>The term used by weather forecast organizations to give guidance on the likelihood of forecasts having to be subsequently amended.</td>
</tr>
<tr>
<td>Damped</td>
<td>The thermal-map type that occurs on cloudy, windy nights. Temperature differences along a stretch of road are at a minimum.</td>
</tr>
<tr>
<td>Deposition</td>
<td>This change of state from water vapour to ice without going through the liquid water stage.</td>
</tr>
<tr>
<td>Dew</td>
<td>Liquid water formed on a surface by condensation from the atmosphere.</td>
</tr>
<tr>
<td>Dew point</td>
<td>The temperature to which a sample of air must be cooled for condensation to take place. Dew point can be measured directly by instrumentation, e.g. road sensors.</td>
</tr>
<tr>
<td>Drifting</td>
<td>The movement of snow (usually powder snow) under the influence of wind. Snow need not be actually falling for drifting to take place.</td>
</tr>
<tr>
<td>Dry Frost</td>
<td>The road surface is at 0°C or below, with most roads expected to be dry. However, ice may form due to seepage, burst pipes or in known hollows where moisture persists.</td>
</tr>
<tr>
<td>Evaporation</td>
<td>The change of state of water to water vapour. This process takes in heat and causes cooling.</td>
</tr>
<tr>
<td>Extreme</td>
<td>The thermal map type that occurs on calm clear nights. Temperature differences along a stretch of road tend to be at their maximum.</td>
</tr>
</tbody>
</table>
### Appendix D4: Glossary of Terms (continued)

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash Frost</td>
<td>The rapid build-up of hoar frost on roads around sunrise. Roads can change from dry to a significant cover of hoar frost within 15 minutes.</td>
</tr>
<tr>
<td>Fog</td>
<td>The suspension of water droplets in air at or close to the ground.</td>
</tr>
<tr>
<td>Forecast Site</td>
<td>A road sensor site for which a graphical forecast is provided. It is usual to have one forecast site per climatic domain.</td>
</tr>
<tr>
<td>Freezing Fog</td>
<td>Fog which forms when air temperatures are below freezing. The fog droplets remain in the liquid state, but will freeze on contact with trees and other objects, and under some circumstances the road surface.</td>
</tr>
<tr>
<td>Freezing Point</td>
<td>The temperature at which pure water will change to ice (although strictly it is the temperature at which ice melts). In practice, 0.0°C.</td>
</tr>
<tr>
<td>Freezing Rain / Drizzle</td>
<td>A very dangerous condition where raindrops (from warmer air aloft) fall on to surfaces below freezing, thus freezing instantly and causing widespread ice. Most likely to occur at the end of a prolonged spell of cold weather.</td>
</tr>
<tr>
<td>Frost</td>
<td>Temperatures below freezing.</td>
</tr>
<tr>
<td>Ground Frost</td>
<td>The term used to describe occasions when the temperatures on the ground (as opposed to in the air) fall below freezing. The official meteorological definition uses the temperature over short-mown grass. The term has little relevance to Winter Service, which is concerned specifically with road temperatures. The term ‘ground frost’ heard on media forecasts does not guarantee that there will also be a road frost.</td>
</tr>
<tr>
<td>Hail</td>
<td>Precipitation in the form of frozen raindrops.</td>
</tr>
<tr>
<td>Hoar Frost</td>
<td>The deposition of water vapour directly as ice on ground surfaces.</td>
</tr>
<tr>
<td>Ice</td>
<td>A generic term for frozen water. In Winter Service terms refers to treating ice on road surfaces.</td>
</tr>
<tr>
<td>Intermediate</td>
<td>The thermal map type that occurs on nights where cloud cover, wind speed (or both) is variable. Road temperature differences tend to lie between the damped and extreme values.</td>
</tr>
<tr>
<td>Marginal</td>
<td>The description of nights where the road temperature is expected to be very close to freezing (normally within 1 °C).</td>
</tr>
<tr>
<td>Masterstation</td>
<td>The computer system which dials the road sensors (once an hour usually), controls communications with the weather forecast organization and allows access by secondary masterstations or workstations.</td>
</tr>
</tbody>
</table>
### Appendix D4: Glossary of Terms (continued)

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Powder Snow</td>
<td>The form of snow which occurs when the air temperatures are well below freezing (&lt;-2°C). This form of snow is very fine, drifts very easily, but does not stick to objects. It can be handled by snowblowers. Salt is usually less effective.</td>
</tr>
<tr>
<td>Precipitation</td>
<td>A general term which covers all water (or ice) which ‘falls’ from the skies. As well as rain, sleet, snow and hail it also includes dew, hoar frost and fog.</td>
</tr>
<tr>
<td>Precipitation Type</td>
<td>The individual type of precipitation. In Winter Service activities this will be one of rain, drizzle, sleet, wet snow, dry snow, hail, freezing rain and freezing drizzle.</td>
</tr>
<tr>
<td>Rain</td>
<td>Water droplets which fall from clouds. Rain takes many forms, and can be of many different intensities and durations. Within road weather forecasts there will often be differentiation between rain and showers, the former usually referring to longer-lived but light intensity precipitation, and the latter to short duration but heavy intensity.</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>The amount of actual water vapour held in a sample of air at a given temperature, divided by the maximum amount of water that could be held in that sample of air at that temperature, expressed as a percentage. Within fog or heavy rain, humidity may reach 100%; on a sunny, warm afternoon in summer, humidity may fall to 30%. On an average night in winter, humidity rarely falls below 80% (which is the minimum humidity at which salt crystals will start to absorb water).</td>
</tr>
<tr>
<td>Rime</td>
<td>The deposition of ice from freezing fog. It is a white form of ice, similar to hoar frost, but has a finer structure. On roads, tends to be more of a problem at higher levels than lower levels.</td>
</tr>
<tr>
<td>Saturated</td>
<td>Air at a given temperature holds the maximum amount of water vapour possible. Any cooling below its current temperature will result in condensation. The relative humidity of saturated air is 100%.</td>
</tr>
<tr>
<td>Site-Specific Forecasts</td>
<td>A standardized form of road weather forecast which shows a graphical plot of road temperature and road states against time, for 24 hours ahead at hourly intervals. The forecasts are for a single point in the road surface, and are normally collocated with a road sensor to allow monitoring of the forecast. Site-specific information can be turned into a forecast for the whole road network by the use of a forecast thermal map.</td>
</tr>
<tr>
<td>Sleet</td>
<td>Partially melted snow. If precipitation becomes heavy. Sleet may readily turn to snow.</td>
</tr>
<tr>
<td>Snow</td>
<td>A form of precipitation where tiny ice crystals bond together into flakes. Snow can be either of the wet or powder forms.</td>
</tr>
</tbody>
</table>
### Appendix D4: Glossary of Terms (continued)

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal Fingerprint</td>
<td>The temperature trace along a road surface (usually recorded by an infrared thermometer during a thermal mapping run). Regardless of the mean temperature of the trace, it shows the thermal characteristics of the road surface (warm and cold spots).</td>
</tr>
<tr>
<td>Thermal Map</td>
<td>The representation of relative variations in road surface minimum temperature for each of three weather categories, presented in colour bands (usually of 1 °C).</td>
</tr>
<tr>
<td>Thermal Mapping</td>
<td>The technique used to produce the thermal fingerprint of a road.</td>
</tr>
<tr>
<td>Thermal Map Type</td>
<td>Damped, intermediate or extreme.</td>
</tr>
<tr>
<td>Urea</td>
<td>No more effect on steel than water alone, but is less effective than salt for equivalent weight, and ceases to be effective at about -6 °C. Used in certain specialist locations because of its less corrosive effect. Supplied in pellets and needs special attention to storage. Conventional spreading equipment requires modification to obtain satisfactory results. Approximately 15 times more expensive than salt.</td>
</tr>
<tr>
<td>Wash Off</td>
<td>The occurrence of rain sufficiently heavy to remove salt solution from the road surface.</td>
</tr>
<tr>
<td>Water Vapour</td>
<td>Water in its gaseous state.</td>
</tr>
<tr>
<td>Weather Radar</td>
<td>A network of radars which use a beam specifically tuned to detect rain droplets (or snowflakes) and hence infer the location and intensity of rain reaching the surface.</td>
</tr>
<tr>
<td>Wet Snow</td>
<td>Snow which falls with air temperatures close to freezing point. It melts easily and can be very sticky. It is more common in the UK than powder snow.</td>
</tr>
</tbody>
</table>
Appendix D4: Glossary of Terms (continued)

**Interpretation**

Reference to time shall be construed, during the period of summer time, to be British Summer Time and other times to be Greenwich Mean Time (GMT).

A reference to any Act of Parliament or to any Order, Regulation, Statutory Instrument, or the like shall include reference to any amendment or re-enactment of the same for the time being in force.

Words importing the masculine gender include the feminine gender and vice versa.

Words importing individuals shall be treated as importing corporations and vice versa.

References to supervisory staff shall be construed as including all staff performing a supervisory or managerial function.