

WINTER SERVICE POLICY 2018/19

1.0 EXECUTIVE SUMMARY

- 1.1 Each year Members consider for approval the Council's Winter Service Policy. The format and general content of the Winter Service policy 2018/19 remains the same as in 2017/18.
- 1.2 The policy sets out priorities for treatment and routes that will be 'pre-treated' in advance of winter hazards. In prolonged winter conditions the policy provides for all roads to be treated with resources being allocated to focus on the hierarchy of priorities (i.e. the lower priorities will only be cleared once the higher priorities have been treated and are clear).
- 1.3 The policy is a comprehensive document setting out the management, governance and operational requirements for the winter service. The policy sets out signing provision to warn the travelling public of roads that are unsuitable for use during extreme winter conditions. The policy also provides a protocol for the reduction in use of salt and preservation of remaining stocks in the unlikely event of replenishment salt stocks not being available. This was introduced following the severe winters of 2009/10 and 2010/11.
- 1.4 It is recommended that the Committee approves :-
 - The 2018/19 Winter Maintenance Policy at Appendix 2, and
 - The Salt Use Reduction and Preservation of Stocks Protocol at Appendix 4.

WINTER SERVICE POLICY 2018/19

2.0 INTRODUCTION

2.1 The proposed Winter Maintenance Policy for 2018/19, in terms of treatment standards and routes, remains unchanged from that approved by the Environment, Development and Infrastructure Committee in 2017. This is generally based on the network and times of the public bus service with additional priority and resources allocated to strategic high speed roads.

3.0 RECOMMENDATIONS

3.1 It is recommended that the Committee approves:-

- The 2018/19 Winter Maintenance Policy at Appendix 2
- The Salt Use Reduction and Preservation of Stocks Protocol at Appendix 4.

4.0 DETAIL

Winter Maintenance Policy 2018/19

4.1 The proposed Winter Maintenance Policy for 2018/19, in terms of treatment standards and routes, remains unchanged from that approved by the Environment, Development and Infrastructure Committee in 2017. The number and category of pre-treatment salting routes remains the same. No other direct changes to the category or length of routes treated is proposed at this time. The current level of treatments is based largely around the public bus service network.

4.2 The advisory signs of alternative routes in severe snow conditions remain similar to the four routes proposed in 2014. Details on sign configuration and locations are contained in Appendix 3 of this report.

4.3 Winter stand-by arrangements commenced on Friday 2nd November 2018 and will continue until Friday 12th April 2019. There are a total of 31 treatment routes detailed in the policy's operational planning web-based management tool.

- 4.4 The Winter Treatment Fleet for 2018/19 will consist of 17 hired gritters from Gulliver's Hire Ltd. 1 contractor vehicle on Jura, one shared route assisted by 1 contractor in Lochgoilhead and 12 Council vehicles. This provides 31 main frontline vehicles with 2 spare vehicles to cover breakdowns. In addition, there are 3 x 7.5 tonne tipper vehicles which also incorporate 'multispread' units (gritting attachments) and ploughs and a further 4 x 7.5 tonne tippers that can accommodate ploughs giving a total of 7 extra vehicles that can be deployed if conditions demand.
- 4.5 The requirement to manage drivers' hours within the delivery of all Council Services directly impacts on the retention of the Council's Operator Licence. Drivers from Amenity Services assist Roads in delivering the pre-treatment service, in conjunction with external contractor assistance on the islands of Jura and partly in North Cowal. In extended periods of extreme winter conditions consideration will be given, at an operational level, to prioritising services to ensure that winter treatments can be delivered. This may result, for example, in refuse collections being temporarily suspended in order to prioritise the clearing of ice and snow. Such measures are only likely in prolonged periods of extreme weather.
- 4.6 Steps are being taken to increase the available driver "pool" by utilising other council drivers including amenity and waste disposal operatives. Additional resilience is being provided by engaging assistance from external contractors on some mainland routes where in-house coverage is limited. In extreme and prolonged weather events and where other priority tasks occur (such as responses to road traffic collisions, collapsed culverts etc) resource may need to be allocated based on a risk based priority.
- 4.7 The table below indicates the statistical variations in operational activities over the last five winter seasons. Weather patterns vary with some years experiencing hazards more widespread and in others more concentrated on inland and higher routes. The equivalent Full Fleet runs statistic is used to indicate an approximation to the budget allowance. The application of salt varies between 10gm² and 40gm² depending on a number of factors including road surface temperature, forecast and residual salt. In parallel with these methods, grit and sand are applied in snow conditions. The route with the individual highest number of turn-outs, remains consistently the A819 East Lorn Strategic Route.
- 4.8 Whilst there was considerable media coverage in April 2018 regarding the "Beast from the East" weather event, the Argyll and Bute area was on the periphery of the main disruption. Bute, Cowal and especially Lomond were affected by heavy snowfall and drifting in high winds. However this was, in comparative terms, localised and of limited duration, affecting communities in 3 of 8 domains for 3 to 5 days duration within the overall winter period of 5 months.
- 4.9 Footways and footpaths will only be treated, in periods of lasting hazard, when it is considered by the winter management team that the physical condition of the footways and footpaths makes it necessary and treatments will be effective. Footways and footpaths will usually only be treated during normal working hours.

Appendix 1 to this report provides a summary of the 2017/18 winter conditions.

Winter Season	2013-14	2014-15	2015-16	2016-17	2017-18
Equiv Fleet Runs	65nr	82nr	58nr	66nr	110nr
Salt used tonnes	9,962t	19,204t	10,151t	11,457t	22,992t
Most turned out run	A819 = 125nr	A819 = 120nr	A819 = 107nr	A819 = 99nr	A819 = 162Nr

- 4.10 The Council's Winter Maintenance budget was increased by £500k in Financial Year 2014/15 to an operational budget of £1.65M and this level of funding remains in place for the coming season. This provides the capability to deliver the equivalent of 55 full runs over the season. The actual cost of winter maintenance is dependent upon the severity of winter conditions and is a financial risk in that the service responds in accordance with set policy to variable weather events that are not predictable.
- 4.11 As of 31st March 2018, the Council held a stock of 8,061 tonnes of salt, although this dropped to 7,502t by the end of activities on 16th April. Provisional replenishment orders were called forward from mid-Oct, for 4,000 tonnes. This will top up to capacity in storage facilities to the target starting stock of +11,000 tonnes. Initial deliveries in October have achieved 9,800t in stock to 9th Nov.
- 4.12 The Salt Use Reduction and Preservation of Stocks protocol was introduced in December 2010 in light of severe shipping and material shortages has been updated and attached at Appendix 4.
- 4.13 The assessment of school routes subject to pre-treatment before 08:00hrs, as required under Priority 3b of the route hierarchy, in section 4 of the Policy, will be assessed each year after the confirmation of enrolment numbers from the autumn intake. Once the levels of occupancy on school bus routes have been confirmed, amendments will be made as necessary to the pre-treatment route plans and descriptions. These amendments will then be fixed in the operational plan for the winter season and will not be subject to adjustment during the season.

Transport Scotland

- 4.14 Following the decision to trunk the southern section of the A83, Transport Scotland are now roads authority for this section of road. Argyll and Bute Council continue to provide a winter service and reactive emergency repair service on behalf of Transport Scotland via Bear Scotland to the section of trunked A83 between Kennacraig and Campbeltown.

Winter Review

- 4.15 A winter maintenance review is currently underway during the 2018/19 winter season. The review is considering vehicle type and procurement, staffing issues and route optimisation. Multiuse vehicles will reduce the overall vehicle numbers

Policy Lead Councillor Roddy McCuish

November 2018

For further information contact: Jim Smith, Head of Roads and Amenity Services

APPENDICES

1. Summary of 2017/18 winter conditions
2. 2018/19 Winter Service Policy
3. Advisory Signing – Road Closures in Severe Conditions.
4. Salt Use Reduction and Preservation of Stocks Protocol (2018 revised)

Appendix 1 – Summary of 2017-18 Winter Conditions

Weather Forecast and Observed conditions. – Oct-Nov 2017

Forecasts indicated mixed conditions through the first week of operational winter standby with only the morning of the 30th Oct. having sub-zero road surfaces forecast in most mainland domains. During the following two weeks mixed conditions continued with colder conditions in the first half and drier towards the end. The forecasted road surface temperatures dropped sub-zero a couple of times each week to Minus 1.3 Deg C and Minus 3.0 Deg C respectively.

Throughout the first three weeks, the outer island domains were predicted to remain hazard free. During the fourth week the forecast gradually deteriorated as a period of colder conditions arrived by the 23rd Nov. with road surface temperatures down to Minus 4.0 Deg C. Week commencing the 24th Nov. had forecast sub-zero road surface temperatures on a daily basis with the lowest down to Minus 6.0 Deg. C. Showers were also being forecast daily although drier towards the end of the week.

This was accompanied by the full range of winter hazards including freezing rain. Throughout the first five weeks, observations at sensors showed minimum temperatures comparable with the forecast road surface temperatures. The lowest road surface temperature noted on the 1st Dec. was Minus 5.6 Deg. C.

Weather Forecast and Observed conditions. – December 2017

Further to the initial report for month 1, the weather patterns changed during the early part of December with a movement to northerly airflows. Similar to the brief cold spell in November, this generated wintry showers running over the area. From 7- 8th Dec this weather pattern became static and temperatures dropped to Minimum RSTs of Minus 7 to 8 Deg C overnight. By 12th-13th Dec the mainland domains were experiencing 24hr periods of sub-zero RSTs in areas sheltered from any mid-day sun. Where sunshine was active, this caused localised thaw and re-freeze and due to the sub-zero surface temperatures, allowed ice to re-form even after the shower activity up to 10th-11th Dec had largely ceased.

This sustained cold spell, the first of the winter continued through to the 18th Dec before milder southerly airstreams allowed a thaw during the following weekend. A further spell of cold weather developed after Christmas day, with wintry showers and overnight frosts developing. RSTs dropped to between Minus 2 and Minus 7 Deg. C. overnight. A brief spell of heavy snow passed over most of the area on 29th, only Kintyre and Islay domains escaped this, showers never developing beyond heavy rain/sleet here, although in Cowal and Lomond accumulations of 75mm or above developed. This snow preceded a warm front with temperatures recovering to milder conditions with rain by Hogmanay.

Weather Forecast and Observed conditions. – January 2018

January commenced with a brief milder spell after Hogmanay with only limited sub-zero RSTs until a general drop in temperatures from 8th onwards. Minimum overnight RSTs fluctuated through to 13th from minus 5 Deg C to minus 8 Deg C with hazards generally of ice and hoar frost, with some problems caused by rain or sleet falling on sub-zero surfaces. From 15th January onwards more intense wintry showers caused disruption, with RSTs dropping briefly to minus 9 Deg C at some sensors. There was a shift in wind direction as a warm front passed over the area, allowing temperatures to recover before again dropping to minus 4 to 5 Deg C to 25th January.

This fluctuating pattern was again repeated with a mild period until 29th, when sub-zero RSTs returned. The major event of the month was the short period of intense snow fall 14th – 16th where accumulations were in some cases well in excess of forecasts.

The conditions were however variable, with cloud cover and clear spells making definitive predictions and hence settled treatment plans problematic. This mixed shower activity affected the network to varying degrees throughout the remainder of the month.

Weather Forecast and Observed conditions. – February 2018

February started with a brief spell of benign conditions which allowed for reasonably settled plans through 1st – 5th Feb. The combination of North-Westerly winds and scattered wintry showers returned on Tue 6th. Wintry conditions continued through the remainder of that week, the weekend saw heavy rain and briefly milder conditions give way to frequent snow showers and light to medium accumulations again on

Sunday, increasing in intensity to result in heavier than forecast snow fall overnight into Monday 12th, especially in higher areas of Cowal, Lorn, Mid-Argyll and Lomond. High level routes were affected by lying snow, with the A817 Haul Road snow gates closed, for most of the day. Overnight RSTs dropping to Minus 2 to Minus 5 Deg C with a slow improvement towards milder conditions for a while over the weekend 17th / 18th overcast with showers and longer spells of rain. There were still wintry conditions with intermittent hazards due to freezing rain, high level sleet/snow and ice during clear spells. Conditions continued to settle as the week through to Friday 23rd progressed until by the weekend 24th/25th dry settled conditions allowed road surfaces to dry out, however hoar frosts were still in the forecast. The much heralded "Beast from the East" Siberian airflow developed from Monday 26th onwards, with increasing presence in the forecast and conditions of wintry showers, although these were coming East–West in the airflow, rather than the Westerly norm. Overnight RSTs varied depending on cloud cover but dropped to between Minus 5 Deg C and Minus 8 Deg C as the week progressed. By Wed 28th snow fall developed with high intensity in the Lomond, Cowal and Bute as the day progressed, with varying degrees of intensity farther west. Lorn West, Islay/Jura and Mull escaped the snow. Heavy accumulations in the East, exacerbated by dry conditions and strong winds allowed higher than normal disruption due to drifting snow on routes. Again the A817 snow gates were close, as was Carman Hill between Cardross and Renton.

Weather Forecast and Observed conditions. March 2018

March started with the aftermath of the heavy snow fall in Central Scotland, which affected Lomond, Cowal and Bute severely, in comparison with domains farther North and West. The A817 snow gates were close, as was Carman Hill between Cardross and Renton. On the evening of 1st March A814 Dumbarton – Helensburgh was also closed, all of this and more in Bute and Cowal, due to the unusually dry snow and easterly air flow. This caused considerable drifting even after precipitation had largely ceased mid-morning on Fri 2nd. Overnight temperatures gradually improved through the weekend and as snow fall ceased the effects of windblown snow also reduced. All roads were open or passible by Sunday afternoon as rain affected western districts and hazards dissipated.

During all this period there was a contrast in the conditions in the West mainland and Outer Islands where stable, dry conditions allowed a reduction in treatments due to residual salt levels. Despite the dry conditions RSTs were as low as Minus 8.7 in Helensburgh on 1st March and generally throughout the network, Minus 5 to Minus 6 RSTs for the first days of March before a fluctuating pattern took effect for most of the remainder of the month.

Brief mild spells, around 12th – 15th and 20th - 23rd and from 25th to the end of the month but where sub-zero temperatures were recorded, between Minus 6 and Minus 2 Deg. C, these came accompanied with wintry showers, which made predictions on treatment times and residual salt levels difficult. Marginal conditions affected mainly the East and Central mainland areas, with limited effects in South and West domains in comparison.

Weather Forecast and Observed conditions. – April 2018

April started with a carryover of the marginal conditions experienced at the end of March. The Easter weekend was a mixture of sunny days and clear nights but with cloud developing by Tuesday 3rd with rain overnight. Wintry showers developed into Wednesday with accumulations, mainly of higher routes in Lorn, Lomond, Cowal and Mid-Argyll causing travel disruption during the morning. A sharp frost developed in most mainland domains Wed evening in clear skies but mixed conditions and cloud cover returned by the morning of Thursday 4th April. Minimum RSTs of minus 4.5 to minus 4.7 Deg. C developed, mainly in Central and NE districts through to the next weekend before RSTs recovered to Plus 3.5Deg C to Plus 4.8Deg C for the remainder of the standby period through to Friday 13th April by which time minimum overnight temperatures were Plus 6 to Plus 8 Deg. C. and the winter season, hazardous conditions was at an end.



WINTER SERVICE POLICY 2018-19

Author	Network and Standards Manager
Owner	Head of Roads & Amenity Services
Date	November 2018
Version	1.0

This page left blank.

CONTENTS

		Page No.
Section 1	Introduction	2
Section 2	Outline Principles	4
Section 3	Management Arrangements	5
Section 4	Policy on Treatment Priorities	6
Section 5	Winter Standby, Standby Procedures and Gritting Guidelines	8
Section 6	Snow Clearance Strategy	9
Section 7	Assistance from Other Authority Resources and Contractors	11
Section 8	Salt, Etc.	11
Section 9	Plant Resources and Servicing Practices	14
Section 10	Weather Forecast and Monitoring	14
Section 11	Operational Communications	15
Section 12	Instruction and Record Keeping	17

1. INTRODUCTION

- 1.1 Argyll & Bute Council has a statutory obligation, under Section 34 of the Roads (Scotland) Act 1984, to "...take such steps as it considers reasonable to, prevent snow and ice endangering the safe passage of pedestrians and vehicles over public roads" in the Council area, which by definition includes carriageways, footways, footpaths, pedestrian precincts, etc.
- 1.2 Argyll and Bute Council will consider implementation of the recommendations included in the UK Roads Liason Group document - Well Managed Highways Infrastructure , code of practice (first published October 2016) within the practicalities of resources and geography. The Council, through its officers, will liaise and take guidance from the Society of Chief Officers of Transportation in Scotland (SCOTS), Winter Service Subgroup on the consistent approach to implementation, in the context of the Geographical and Climatic conditions relevant to Scotland.
- 1.3 It is the aim of Argyll & Bute Council to provide a service with respect to the above that will:-
- a) Ensure the provision of a standard of treatment appropriate to the prevailing weather conditions.
 - b) Establish patterns of working which will produce the greatest benefit from the deployed resources, with the view to reducing the level of risk and the extent of any delays to the public, caused by adverse weather conditions.
 - c) At all times comply with the requirements of the Health & Safety at Work Act 1974.

2. OUTLINE PRINCIPLES

The Council, through the Executive Director of Development and Infrastructure Services, will:-

- a) Set policy and strategy and monitor the winter maintenance service.
- b) Arrange weather forecasts to assist the Winter Management team to determine the daily winter maintenance treatment strategy.
- c) Provide specialist winter maintenance plant. e.g snow plough attachments, bulk gritters, demountable gritters, towed gritters and loading shovels.
- d) Provide salt, grit, grit bins, snow gates and signing.
- e) Provide organise and manage a trained labour force.
- f) Provide non specialist plant e.g. lorries for demountable gritters, pickups, non-specialist loading equipment, hand tools, tarpaulins and the like.

3. MANAGEMENT ARRANGEMENTS

- 3.1 The Executive Director of Development and Infrastructure Services is responsible for implementing the Council's Winter Service Policy.
- 3.2 The Head of Roads and Amenity Services has overall responsibility for ensuring that the Council's winter maintenance activities are carried out in line with the Council's Winter Service Policy.
- 3.3 The Operations Manager is responsible for the day to day operation of the Council's winter service policy. He is responsible to the Head of Roads and Amenity Services for the appointment of a Weather Service Provider (forecaster), collection of winter management and weather data, maintaining salt stocks, winter plant and communications, training of staff, preparation of rotas for on-call Managers and Area Supervisors.
- 3.4 The Operations Manager shall appoint appropriate staff as Winter Managers. The Winter Manager on duty is responsible for consulting with the Duty Manager and approving the draft winter plan of action together with any subsequent updates to that plan produced by the on-call Duty Manager.
- 3.5 Duty Managers are responsible for analysing forecast data, liaising with the forecast provider and producing the daily winter maintenance action plan and gaining approval from the Winter Manager. They will ensure that the daily winter maintenance action plan is submitted to local areas for action by 15:00 hrs each day. They will monitor the weather information and make any changes to the action plan as conditions require.
- 3.6 The Operations Manager will ensure that the appointed staff in their areas are aware of and understand the strategies and priorities as stipulated. On receiving the Duty Manager's approved daily winter action plan they will ensure, through the Area Winter Supervisor, that the plan is correctly implemented. They will ensure, wherever practicable, that adequate resources are available to fully undertake the Council's Winter Service Policy.
- 3.7 Discussions will take place between Senior Management to monitor performance, at regular meetings. Any problems highlighted by the Duty Managers will be resolved at local level, where possible. Duty Managers will be relieved by other Area Office staff, from any local management responsibilities, during their weekly duty requirements.
- 3.8 Provision of the Winter Service on Council roads will normally run from the nearest Friday to the 1st November through to 15th April each season. However, this period may be extended, at either end, to accommodate prevailing weather conditions.
- 3.9 Daily communication will take place with the Trunk Roads Service provider to inform each other of their respective treatment proposals. The Council work in partnership with the Trunk Road Operation Company and provide the winter and emergency response service for A83 Trunk Road, Campbeltown to Kennacraig section. Treatment instruction for this road is received as part of the daily TR plan and actions are recorded on the TR gritlog form and transmitted to their control room on completion.

POLICY ON TREATMENT PRIORITIES

4.1 Carriageway treatment

4.1.1 Prior to the commencement of each winter the Operations Manager will produce carriageway gritting routes based generally on the following principles:-

Priority 1 Strategic high speed, main traffic routes				
Lomond - A814 Dumbarton- Garelochhead, A818 Arden (A82) - Helensburgh Cowal - A815 Cairndow – Dunoon Ferry Lorn / Mid-Argyll - A816 Oban - Lochgilphead, A819 Dalmally – Inveraray				
	04:00 – 08:00hrs	08:00 – 16:00 hrs	16:00 – 22:00 hrs	22:00 – 04:00 hrs
Mon - Sat	Pre-treat as required + reactive	Pre-treat as required + reactive	Pre-treat as required + reactive	Reactive as reported conditions dictate
Sun & PH	Pre-treat as required + reactive	Pre-treat as required + reactive	Pre-treat as required + reactive	Reactive as reported conditions dictate

Priority 2 Other “A” and “B” classified roads, Except where treatment is categorized under Priority 3 bus routes, or less.				
A814 Garelochhead –Arrochar, A815 Dunoon-Toward, A817 Haul Road & B833 Rosneath Peninsula, A880 to Ardentiny, A885 Sandbank, A886 Strachur– Colintrave, A8003 Tighnabruich, A844 / A845 & A886 on Bute, A846 / A847 on Islay, A846 on Jura, A848 / A849, A884 & B8073 Tobermory – Dervaig, on Mull, B828 / B839 to Lochgoilhead , B842 Southend –Carradale, B843 to Machrihanish, B844 / B8003 to Easdale & Cuan, B8024 Kilberry Loop , B841 / B8025 Achnamara & Tayvallich. Plus Principal Accident and Emergency routes or roads to hospitals and routes to Police stations, Fire stations and Ambulance depot accesses Other selected streets in main urban areas e.g. steep hills, etc where route efficiency permits.				
	06:00 – 08:00hrs	08:00 – 16:00 hrs	16:00 – 22:00 hrs	22:00 – 0600 hrs
Mon -Sat	Pre-treat as required + reactive	Pre-treat in advance (if possible) + reactive	Reactive as reported conditions dictate	Reactive - only in extreme conditions
Sun & PH	Pre-treat as required + reactive	Pre-treat in advance (if possible) + reactive	Reactive as reported conditions dictate	Reactive - only in extreme conditions

Priority 3 Any section of public road, outwith P1 & P2 above, subject to :- Main Public Service bus routes as timetables require that can be met within operational time bands. Should it be impractical to cover a service then the operator must be notified or Main School Bus routes prior to or during term days only.					
New designation		06:00 – 08:00hr	08:00 – 16:00 hrs	16:00 – 22:00 hrs	22:00 – 0600 hrs
Priority 3 Service Route	Mon-Fri	Pre-treat as required + reactive	Pre-treat in advance (if possible) + reactive	No treatment unless stable conditions forecast a.m.	No Treatment
	W/E	Pre treat in advance of journey, if possible, but no guarantee. Timetabled days only.			
Priority 3 School Route (12 or more occupied seats)	Mon- Fri	Pre-treat as required + reactive	Pre-treat in advance + reactive	No treatment unless stable conditions forecast a.m. (Not Friday p.m.)	No Treatment
	No treatments out-with School Term days (apart form Sunday evenings in advance, if stable conditions forecast Monday a.m.)				

Priority 4 All other public roads, Only as actual conditions dictate and resources are deemed to be effective.				
	06:00 – 08:00hr	08:00 – 16:00 hrs	16:00 – 22:00 hrs	22:00 – 0600 hrs
Mon - Fri	No treatment	Reactive (may include pre-treat)	Reactive – only in extreme conditions	No treatment
W/E & PH	No treatment	Reactive – only in extreme conditions	No treatment	No treatment

4.1.2 The above route priorities are set around the requirements to pre-treat in advance of freezing conditions or react to developed hazards within a reasonably practicable timescale within the confines of the resources available. Where hazards re-occur after treatment or in conditions where instantaneous hazards occur, resources may be required to concentrate on re-application of several treatments prior to moving on. In such circumstances the highest priority routes, experiencing such conditions, will generally be treated first and resources will only be released to other priorities once it is determined that treatments have an expectation of remaining effective.

4.2 Footway and Footpath Priorities

4.2.1 At the start of each winter, the Operations Manager will produce footway and footpath treatment routes based generally on the following principle.

Priority 1 - Urban Shopping Areas and Precincts

Priority 2 - Other areas of high pedestrian concentration, e.g. in the vicinity of hospitals and schools.

Priority 3 - Steep hills in housing developments and in the vicinity of residential homes for the elderly.

4.2.2 Footways and footpaths will only be treated, in periods of lasting hazards, when the Duty Manager, in consultation with Area staff, considers that their physical condition makes it necessary and treatments will be effective. They will usually only be treated during normal working hours.

4.2.3 Resources

Labour

To ensure that an adequate labour resource is available to allow treatment to be carried out, arrangements are in place with Amenity Services section to participate in the supply of additional labour when conditions require.

Plant

Plant to assist with the clearance of snow and spreading of salt has been provided by Roads and Amenity Services. Attachments to mowers to allow footpath ploughing will be fitted at the start of each season, where practicable.

Footway salt spreading barrows are provided for use by available labour when required.

4.3 Cycleways

Only cycleways contiguous with roads and footways will be treated in conjunction with any planned treatments.

5. WINTER STANDBY, STANDBY PROCEDURES AND GRITTING GUIDELINES

5.1 The formal winter standby period for Council roads will normally be from the end of the working day on the Friday nearest to 1st November to the Friday nearest to 15th April. This period may be extended at either end as the prevailing weather conditions dictate.

5.2 Shift and Standby Procedures.

5.2.1 During the operational period, standby arrangements will be operated on a formal home standby basis, with call-out as required. Arrangements will be put in place to allow mobilisation of any frontline vehicle within 1 hour of call out.

5.2.2 Standby rotas will include sufficient drivers to ensure that the priority 1 routes can be treated within 2 hours of commencing treatment

5.2.3 On receipt of a weather forecast indicating medium to heavy snow, sufficient Second men will be placed on standby to cover all priority 1 & 2 routes and any priority 3 routes likely to be affected as timetables indicate, by the forecast.

5.3 Carriageway Treatment

5.3.1 Carriageways will generally be treated in the order of priority as specified in section 4.

5.3.2 By 13:00 each day during the winter months, having considered the most recent weather forecast, the level of residual salt on the road network and the available resources, the Duty Manager will compile an Action Plan for carriageway treatment for the following twenty-four hours. The Winter Manager will review, recommend any adjustments if needed and then approve the proposed plan.

5.3.3 Precautionary treatment for frost and light snow will be spread at a target rate of 10g/m² of salt.

5.3.4 Precautionary treatment for conditions where frost is forecast after rain should be delayed as long as possible to reduce loss of salt due to wash-off. This should not preclude the treatment of routes during

showers where freezing of rain on contact has been predicted, or is reported.

5.3.5 Precautionary treatment when heavy snow falls are expected should be at a rate of between 20 and 40g/m² of salt according to the anticipated severity of snowfall and confidence level of the forecast.

5.3.6 In conditions where current snowfall is forecast to continue, substitution of salt with abrasive materials, sand or grit, will be instigated until such time as showers cease and any use of de-icing materials are deemed to be more effective. In extreme or persisting conditions, all material spreading will cease until there is an expectation that any deposits will remain on the carriageway and be effective in aiding traction.

5.3.7 In marginal conditions, consideration will be given to limiting treatment to known localised areas prone to icing. During periods of prolonged freezing conditions in the absence of precipitation, spot salting of areas of persistent seepage will continue while hazards remain.

5.3.8 Where areas of seepage from adjoining land are recorded on a regular basis, these will be identified and pre-emptive rectification of the drainage system will be instigated. Land owners will be notified of their requirement to carry out such work as it affects public roads. The Council will take necessary steps to effect repairs, in the absence of any undertaken by landowners and pursue recovery of costs accordingly.

5.4 Footway and Footpath Treatment

5.4.1 Treatment of footways and footpaths will be by a combination of mechanical and manual operation. In large urban areas footway salting will be carried out by purpose built spreader barrows with a nominal design spread rate of 50g/sq.m.

5.4.2 Salt will only be utilised where ice and frost are the main hazard. In all snowfall conditions, physical clearance will be the priority with sand / grit spread thereafter to aid traction.

5.4.3 Treatment of footways and footpaths will normally only be carried out during the normal working day as resources permit. In most cases additional resources should be mobilised at local level as conditions dictate. The Winter Manager and Duty Manager will be kept informed of all additional resources mobilised by local management.

6. SNOW CLEARANCE STRATEGY

6.1 Carriageways

- 6.1.1 On receipt of a weather forecast indicating medium to heavy snow, carriageways should be treated in accordance with section 5.3.5. When the forecast is for rain turning to snow or the snow prediction is marginal the salting operations should be delayed accordingly.
- 6.1.2 When forecasts indicate that there will be medium or heavy snow falls, the Duty Manager will instruct that all vehicles capable of being fitted with ploughing devices will be so equipped.
- 6.1.3 Salting should be continued or be restarted when snow is falling, as conditions warrant however sand / grit must be used to preserve de-icing materials until such time as it can be used effectively.
- 6.1.4 Snow ploughing will commence as soon as it is considered that the operation will be effective. Generally snow can only be ploughed effectively at depths exceeding 30mm.
- 6.1.5 Spreading treatment of ploughed surfaces will be carried out when it is considered that the material will have the most beneficial effect. The normal case on two lane carriageways will be for spreading treatment to be started when the second lane is being ploughed, generally in the return direction. However in persisting snow conditions the spreading of materials shall be delayed until clearance of accumulations is effective.
- 6.1.6 Resources should generally be allocated to clear roads in the order of priority shown in section 4, but with precedence being given to those areas which have experienced the heaviest snow falls and drifting
- 6.1.7 Where slush is formed it should be ploughed as soon as practicable to avoid the risk of rutting should there be a further significant drop in temperature which might result in freezing conditions.
- 6.1.8 Where snow hazards are predicted to persist or develop intermittently throughout the night, consideration will be given to continuing action in some circumstances. Mainly in cases where a break in operations may result in hard packed snow or other conditions difficult to treat on resumption.
- 6.1.9 Individual circumstances, such as access for emergency services or other lifeline service vehicles will normally take precedent over the above route priority arrangements.
- 6.1.10 Where it is judged that a road cannot be kept open, early closure in liaison with the Police in a planned manner, should be initiated. Direct consultation at local level must be maintained where conditions are changeable and in some circumstances this may mean discussions on site between local Supervisors and Police officers.

6.1.11 In specific locations additional information and diversion signing will be erected to further inform drivers of the hazardous conditions on some routes and advise them of alternative routes where available resources will concentrate on maintaining treatments. There are three roads where signing to indicate specific alternative routes are available.

1. A817 "Haul Rd" , Lomond.
Snow gates at A82 and A814 "central" roundabout
Diversion via A818 Arden - A814 Garelohead
2. C46 Glen Aros / Glenbellart road , Mull
Signs at Aros Bridge and Dervaig Primary School
Diversion via A848Tobermory
3. C9 Glenfinart Road (The Larach) , Cowal
Signs at Whistlefield Hotel and Sligrachan Bus turning head;
Diversion via A880 Cot House
4. C11 Otter Hill road (Bealach an Drain) , Cowal
Signs at Glendaruel A886 and Otter Ferry B8000;
Diversion via A8003 Tighnabruich and Kames.

6.1.10 Road closures will be reported to the Director, Head of Service, Operations Managers as soon as practicable, with immediate notification transmitted to Traffic Scotland and local radio stations where appropriate.

6.2 Footways and Footpaths

6.2.1 Where footways and footpaths are covered with light accumulations of snow i.e. less than 30mm, treatment will consist of the application of Sand or Grit as described in section 5.4. of this document.

6.2.2 Where snow depths exceed 30mm footways clearance will be carried out where practicable by pedestrian operated or ride on powered footway ploughs. This will be enhanced by manual clearance when necessary i.e. where access precludes the use of the above plant.

6.2.3 Snow clearance of footways will normally only be carried out during the normal working day and as resources permit.

7. ASSISTANCE FROM EXTERNAL CONTRACTORS

7.1 Roads and Amenity Services provide labour and non-specialist plant as specified. In some districts, mainly islands, resources are limited and private contractors are used to provide cover to comply with this policy.

7.2 In severe weather conditions additional resources can be drafted in from local private contractors to supplement those of the Council. Arrangements are made

through the Operations Manager to contact these contractors in advance to determine their availability and formulate contingency plans for contact and mobilisation. The Winter Manager and Duty Manager will be kept informed of all additional resources mobilised by local management.

8. SALT, ETC.

8.1 Provision of Salt

8.1.1 Salt or other de-icing materials will be supplied through the Operations Manager. An annual supply contract shall be let prior to the start of the winter season.

8.1.2 Onsite sampling and testing shall be carried out in each area as the Operations Manager deems necessary. The Operations Manager will ensure that sufficient stocks of Salt and Abrasive materials are maintained at each storage location.

8.2 Storage of Salt

8.2.1 Where practicable salt shall be stored under cover to prevent leaching, improve handling and to reduce treatment times. A programme of upgrading salt stores with permanent roofs will be undertaken as quickly as practicable and as financial, planning and operational considerations allow.

8.2.2 Storage facilities will be loaded out prior to the commencement of operations and stock levels will be monitored weekly to assure optimum supplies are available throughout the season. Stores will be kept as full as practicable as protection from the weather allows and minimum stock levels will dictate optimum re-ordering procedures.

8.2.3 Weekly totals of all salt quantities delivered, transferred or issued as treatments will be collated for each storage location and e-mailed to HQ for central collation from 12:00hrs each Friday

8.2.4 Requests for additional salt will be included in these weekly e-mails and calling forward of orders will be co-ordinated centrally through the Roads Procurement Officer, with the supply contractor to provide the most efficient means of optimising stock levels.

8.3 Use of Salt and Salt / Abrasive Mixtures

8.3.1 Preservation of salt or other de-icing materials for use where they are most effective should be a consideration when formulating a treatment plan. Service resilience must be taken into consideration at all times.

8.3.2 All routes will be pre-treated with pure rock salt, as the most effective method of preventing freezing of wet surfaces or melting of previously formed ice. However on predominantly rural routes affected by snow, grit may be added at 1:1 salt/grit mix to aid traction and break up compacted

layers. In severe conditions or when supplies are restricted, pure Sand / Grit will be employed to preserve de-icing stocks. In wholly urban areas, salt only should be applied to the carriageway at all times. Salt should be spread at the designated spread rates as determined by the Duty Manager.

- 8.3.3 The grading of salt and grit for mixtures shall be such that 100% will pass a 6.3mm sieve but less than 1% passing a 2mm sieve.
- 8.3.4 Grit bins should be filled with a 3:1 grit/salt mix, initially at the start of the season. Continued replenishment in times of persisting hazard will be purely of Sand / Grit to preserve de-icing materials and only when resources permit.
- 8.3.5 Provision of Salt to other departments of the Council or other Contractors will be restricted to maintain the resilience of the Roads and Footways Winter Service within the terms of the Salt preservation Protocol.

8.4 Calibration and control of Salt Rates of Spread

- 8.4.1 The Operations Manager will ensure, through the Fleet Manager that all spreaders, permanent and demountable, are maintained in such a manner as to optimise the salt feed and regular checks of the calibration shall be carried out. Records of all tests and alterations to the calibration shall be maintained for inspection.
- 8.4.2 All spreaders shall have limiting devices fitted such that spread rates cannot exceed 60g/m². The device may be fitted in such a manner as to allow it to be temporarily disconnected to assist the clearance of blockages.

8.5 Grit Bins and Grit Heaps

- 8.5.1 Grit heaps and grit bins are normally placed on routes not included on the Priority 1 – 3 pre-treatment network, or on sections of these routes where additional self help facilities are considered advantageous. They are provided to allow the public to use the salt/grit mix to treat localised hazards on carriageways and footways on the public adopted network.
- 8.5.2 Grit heaps will be situated on rural road verges predominantly on bends, junctions or steep sections. They shall be placed at distances which provide a reasonable volume of material over the extent of any problem area as, if material has to be carried too far, it is unlikely to be used. Consideration will be given to the environmental impact associated with tree roots, hedges and watercourses.
- 8.5.3 Grit Bins will normally be situated in urban areas or where leaching from grit heaps in rural areas is likely to have an environmental impact. They are placed similarly to rural grit heaps to provide an additional self help facility in streets such as at bends, junctions, steep sections of carriageway or footway or close to schools and other public buildings

where delays in planned treatments may result in persisting hazards. Care must be taken in locating bins to avoid impeding sight impaired pedestrians or access to public utilities or roads authority apparatus. Generally where practicable, grit bin sites will allow material to be carried downhill to treat sections of the public network

8.5.4 Replenishment of material to grit heaps or bins will be carried out as regularly as conditions of use require, within the confines of available resources. Sites in regular use may require more frequent visits and the mix of material may vary as operational resources and stocks of available materials permit. This may depend on the overall salt resilience capability of the Council in times of prolonged severe weather conditions.

8.5.5 Requests for the locating of additional grit heaps or grit bins in urban areas will be considered using the following criteria.

- Is the request relevant to the Council asset of adopted roads and footway network?
- Is there a genuine need for an additional facility, based on local knowledge, the type of hazard of concern and any accident history? The criteria for locations in 8.5.2 & 3 above will apply.
- The proximity of similar facilities will be considered, as provision of bins and heaps often leads to further requests in similar locations.
- The overall volume of bins and heaps will have an impact on the ability to provide an effective replenishment operation.

8.5.6 A register of grit bins shall be maintained by the Operations Manager and their location and suitability will be reviewed annually. Grit bins will be serviced and all debris and litter removed prior to the start of the winter season. Initial replenishment of heaps and bins will be carried out prior to the start of the formal standby period, where practicable.

9. PLANT RESOURCES AND SERVICING PRACTICES

9.1 All winter maintenance plant will be serviced, overhauled and made ready for use, at least two weeks before the designated start of the winter period. All servicing and maintenance of specialist winter maintenance plant will be the responsibility of the Operations Manager. The Council's Fleet Services section, maintain all plant and equipment for the user departments. The Fleet Manager will inform the Operations Manager of any deterioration in the effectiveness of any items of Winter Maintenance Plant.

9.2 Any short fall in resources caused by the removal of plant from service, during the winter period, should be reported to the Operations Manager by the Duty Supervisor. The Operations Manager will then seek ways to address the problem. Where additional fleet vehicles are available, these will be prepared as back-up units, either in advance of operations or as soon as practicable whenever a shortfall in vehicles arises..

- 9.3 The Operations Manager will ensure that all major items of plant are made operational by the start of the standby period. A programme of trial runs will be drawn up, to allow all items of plant to be tested and have all their accessories fitted to ensure readiness for the winter period. The trial runs will be carried out on a depot by depot basis during normal working hours.

10. WEATHER FORECASTING AND MONITORING

- 10.1 MeteoGroup Ltd , Vauxhall Bridge , London have been contracted to provide the road forecast for the period 1st October to 15th May each winter period. Access to forecast information will be gained via the local area networks at Council offices during office hours, or by a broadband router link from Duty Manager's homes. Information is available on a bespoke website for weather information and partially backed up by e-mail. In the event of a system failure it will be possible to obtain the forecast information by fax to the Duty Manager's Office or verbally out of hours to their home.
- 10.2 The contract with MeteoGroup provides for a twenty-four hours consultancy arrangement. Forecasters are available throughout the winter period by telephone, to discuss weather matters and clarify details with department staff.
- 10.3 The text forecast is augmented by other services as necessary, including the use of RADAR and satellite images to study precipitation patterns. There are fourteen Road Sensor stations, owned by the Council and maintained by MeteoGroup's partner Vaisala Ltd, giving atmospheric and surface conditions, situated throughout the Argyll and Bute road network.

11. OPERATIONAL COMMUNICATIONS

- 11.1 Vehicle / Duty Supervisor / Depot Communications
- 11.1.1 Winter maintenance vehicles are provided with a cellular telephone, such that contact may be maintained with the Duty Supervisor or depot at all times. When it is considered safe to do so, manning of vehicles fitted with effective communications facilities, will be limited to the driver only.
- 11.1.2 The fleet of 30nr frontline, route specifically allocated and 2nr back-up, winter maintenance vehicles are fitted with satellite tracking and data-logging equipment, provided by Trackyou Ltd. Vehicles can be monitored through web access, in real time during operations and their actions are recorded and archived for future reference. One other private contractor owned vehicle is employed on pre-treatment operations on the Isle of Jura where in-house resources are limited.
- 11.1.3 Throughout the period of winter standby, the Operations Manager will ensure that staff is available to receive calls from the Police and other appropriate agencies. Call out rotas will be provided to the Operations Manager, adjacent authorities, management agents and the Police.
- 11.2 Communications with Police Scotland, Roads Policing Section

- 11.2.1 It is important that the strong partnership, formed with the Police, is maintained. Information relating to severe weather conditions will be communicated to the Police at the earliest possible opportunity. The Duty Manager will consult fully with the Police when it becomes necessary to arrange road closures and when there is a need to move abandoned vehicles.
 - 11.2.2 The “out of hours” emergency rota will be issued to the Police by the Operations Manager. This will be confirmed to the Police Area Control Room at Helen Street, Glasgow on the Friday start to each weekly duty shift.
 - 11.2.3 The Duty Manager will arrange for the daily action plan to be e-mailed to the four main local Police offices each day. This will also include a confirmation of the Area Supervisors’ and Duty Manager’s out of hours contact telephone numbers.
 - 11.2.4 The Duty Manager will take due regard of all reports received from the Police, concerning dangerous road conditions and give consideration to them, in line with the Council Policy, in deciding the action to be taken.
- 11.3 Communications with other Agencies and Motoring Organisations
- 11.3.1 BEAR Scotland, the North West Trunk Roads term contract operator will be sent the daily action plan and out of hours contact information, each day throughout the winter period.
 - 11.3.2 The Duty Manager will inform Glasgow City Council ; Roads and Lighting Faults Call Centre , R.A.L.F. , of the out of hours contact numbers for the following weeks shift and any amendments necessary thereafter. Contacts with Scottish Fire and Rescue and Scottish Ambulance Service, control rooms are included in this transmittal process.
 - 11.3.3 The Winter Manager will inform Traffic Scotland when severe weather conditions are causing delays to traffic movement.
- 11.4 Communications with the Public
- 11.4.1 Enquiries from the public will normally be dealt with by the Customer Access Centre during normal working hours.
 - 11.4.2 Consideration will be given to the placing of warning signs, alerting drivers to the possibility that road surface hazards may develop outwith treatment times will be placed at the interface of Priority 1 to Priority 2 & 3 routes
 - 11.4.3 Leaflets explaining the extent of treatment routes, their priority and hours of operation will be prepared and where necessary updated, in

advance of each season. These will be distributed by electronic means or to all local area Council premises and other public access buildings and establishments, such as filling stations and shops. Further copies may be issued as mail-drops or inserts to local newspapers.

11.5 Media

11.5.1 National radio, television and national press enquiries should be dealt with by the Director or the Head of Service or through the Council's Press and Media Relations Office.

11.5.2 Local radio and press should be dealt with by the Head of Service or by the Operations Manager.

11.5.3 The Head of Service, Operations Manager will be advised as soon as practicable if conditions deteriorate such that major routes have to be closed.

12. INSTRUCTION AND RECORD KEEPING.

- 12.1 The management of the Instruction, Recording and Archiving of daily winter Action plans is automated, by use of a bespoke winter maintenance management tool provided by Vaisala Ltd.
- 12.2 Vaisala – Road DSS Manager is the web based system which allows access by managers and supervisors simultaneously, to post instructions and record actual activities on each specific pre-treatment route as operations progress. Details will include some or all of the following:-
- a) Details of the routes treated.
 - b) The start and completion of treatment on a specific route.
 - c) Type of treatment carried out.
 - d) Driver and other operator details
 - e) Quantity of materials used
 - f) The prevailing weather conditions.
 - g) Any contacts by Police regarding reactive requirements
 - h) Details of any plant breakdowns, accidents or incidents.
 - i) Any other problems
- 12.3 In parallel to the above recording system, vehicle activities are recorded on the “Trackyou” - vehicle tracking system. Reports and map based graphical records can be run to confirm and clarify in more detail, the recorded activities.
- 12.4 All records are archived in separate remote servers and can be retrieved through web access by any authorised user, at any time after a plan has been completed.
- 12.5 Additional records of all telephone calls related to winter operations are kept by all duty supervisors and managers. These are completed at the end of each shift, collated and filed centrally for future reference.

End – Winter Policy Document

Appendix 3 – Advisory signing, routes unsuitable in severe conditions

In specific locations additional information and diversion signing will be erected to further inform drivers of the hazardous conditions on some routes and advise them of alternative routes where available resources will concentrate on maintaining treatments. There are three roads where signing to indicate specific alternative routes are available.

1. A817 “Haul Rd” , Lomond.
Snow gates at A82 and A814 “central” roundabout
Diversion via A818 Arden - A814 Garelochhead
2. C46 Glen Aros / Glenbellart road , Mull
Signs at Aros Bridge and Dervaig Primary School
Diversion via A848 Tobermory
3. C9 Glenfinart Road (The Larach) , Cowal
Signs at Whistlefield Hotel and Sligrachan Bus turning head;
Diversion via A880 Cot House
4. C11 Otter Hill road (Bealach an Drain) , Cowal
Signs at Glendaruel A886 and Otter Ferry B8000;
Diversion via A8003 Tighnabruich and Kames.

Example of typical information sign



Sign on permanent display during Winter Season.

road closure in conjunction with temporary signs when conditions dictate.



Appendix 4 - Salt Use Reduction and Preservation of Stocks Protocol.

Argyll and Bute Council WINTER SERVICE – OPERATIONS 2018/19

Protocols for the reduction in use of salt and preservation of remaining stocks. Storage Capacity, Stock Transfers and replenishment times

Storage capacity in all 15 “Operational” salt stores has been increased by 3,500tonnes to approximately 14,000tonnes, since 2009, through phase 1 of the covered tunnel construction programme. The 3,000tonne Dome in Helensburgh, although an operational store, has an element of strategic storage.

For national salt resilience purposes, daily usage is calculated on 2 Priority WRC1-3 network treatments and one WRC4 “other routes” treatment in each 24hr period. This equates to 375tonnes/day at normal use levels, 600tonnes/day for heavy snow.

The West of Scotland Co-ordination Group, Roads sub-group agreed that Roads Authorities should achieve a minimum storage capacity of equivalent to 70% of the average total salt usage of the last three severe winters. This equates to a minimum 11,650tonnes for Argyll and Bute.

However the target tonnage for the start of this season, 2nd November, is 10,970tonnes. This equates to 28 continuous days supply at Winter Policy treatment levels.

As the national salt supply contract has an allowance of 21days to fulfil delivery from point of order, the minimum resilience required in normal conditions equates to four weeks operations or approximately 60% of the new capacity, at 10,000tonnes. In practice, reduced quantities of 6,000tonnes before replenishment are acceptable. This equates to a resilience of 16 days operations, at normal treatment levels.

Within this total quantity, material may require to be moved between stores to preserve a degree of individual resilience in each of the operational stockpiles around the network. Internal transfers between stores ensure adequate stocks are available as much as practicable to maintain a consistent treatment regime throughout the network. In this way the hierarchy of route treatments can be preserved as per the policy, for as long as practicable within any delivery shortage period.

Operational Decision techniques to Manage Salt use.

Winter Service Policy already recognises the need to preserve salt primarily for the prevention or treatment of ice on higher speed carriageways. 3Grit:1Salt mixes are already utilised in Grit Heaps and Bins and in the reactive treatment of footways.

Salt preservation techniques can be instigated on carriageway treatments where forecasts or conditions indicate that a mixture of salt and grit will provide the best treatment to aid traction. The winter operations decision to use 50/50 mixes should only be for this purpose, rather than to preserve supplies.

In periods of falling snow, Grit only should be used on “return” ploughing legs until such time as snowfall ceases and there is an expectation that salt will melt any residual snow after ploughing.

In settled constant dry conditions Residual Salt levels on carriageways allow the curtailment of further treatments, as part of the daily operational plan.

Reduction in Salt use in treatments, to preserve remaining stocks.

Where salt stock levels reduce and replenishment quantities are doubtful in either quantity or timescale, the use of salt will be curtailed under the following procedures.

Salt Preservation level Circumstances Authorised by.

SP1 Total Operational Stocks reduce to 6,000tonnes Winter Manager

This level will be reached in conditions of reasonably prolonged hazardous conditions or where extreme conditions reduce the effectiveness of salt. The supply chain for salt replenishment may become of national importance and Transport Scotland and Strathclyde Emergency Co-Ordination Group advice may be received.

First Operation:- Activate replenishment from Strategic Stockpile (+ 4,400 tonnes)

Depending on the likely delay in replenishment, part or all of the Strategic stockpile may be moved to operational stores and the permanent sheeting replaced. The quantity will be determined by the potential delivery date for shipping. The total stock will provide a further 12days resilience within the operational stores, at normal use rates.

Resilience:- 27days at normal use levels 375t/day : 16days heavy snow 600t/day

Second Operation:- Activate Salt Preservation Measures.

Salt treatments will be reduced. Spread rates adjusted from 40g/m² to 20g/m², or 20g/m² to 10g/m². Further reductions in the salt content of all carriageway treatments will be achieved by mixing Grit and Salt together, firstly at 1Grit:1Salt then 2Grit:1Salt.

In extreme frosts where RSTs remain below -5C all day, and salt is considered to be ineffective, additional treatments of pure Grit on all routes can be instructed to aid traction. Grit heaps, bins and footway treatments will remain at 3grit:1Salt.

Resilience:- 32days at reduced use SP1 = 188t/day : 20days heavy snow

SP2 Total stocks reduce to 4,000tonnes Head of Service

Salting treatments will be curtailed to Priority 1&2 pre-treatment routes only (1205 km)
The SP1 salt mixing techniques will be used in all further SP levels.

All other treatments will be of pure Grit including replenishment of grit bins / heaps.

Resilience:- 25 days at reduced use SP2 = 156t/day : 15 days heavy snow

SP3 Total Stocks reduce to 2,000tonnes Executive Director

Salting will be reduced to one treatment per 24hr forecast period, of the Priority 1&2 network, usually 06:00hrs mornings, in advance of the majority of traffic movements.

All other treatments will be of pure Grit including replenishment of grit bins / heaps

Resilience:- 25 days at reduced use SP3 = 78t/day : 15 days heavy snow

SP4 Total stocks reduce to 1,000tonnes Chief Executive

Salting reduced to Priority 1 and Priority 2 "A" class routes only 06:00hrs. (492km)

All other roads and mobilisation times, Grit only.

Resilience:- 32 days at reduced use SP4 = 31t/day : 20 days heavy snow

SP5 Total Stocks reduce to 700 tonnes Chief Executive

Effectively **2 days resilience at original policy normal use.** The trigger point for application to Scottish Executive Emergency Salt stockpile. Release of salt, allowing replenishment out with the normal constraints of the national salt supply contract.

Resilience:- 22 days at reduced use SP5 = 31t/day : 13 days heavy snow

Total resilience: SP1 (2nd Op) > SP5 (end) = 68 days : 41 days heavy snow.