

WINTER SERVICE POLICY 2022/23

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 2022/23 remains similar to that of the 2021/22 Policy.
- 1.2 The policy sets out priorities for treatment and routes, which 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 remain clear of any recurring hazards).
- 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 which 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 when national salt supplies were interrupted.
- 1.4 It is recommended that the Environment, Development and Infrastructure Committee:-
 - Approves the 2022/23 Winter Maintenance Policy Document at Appendix 1;
 - Approves the Salt Use Reduction and Preservation of Stocks Protocol at Appendix 2;
 - Notes the Advisory signing, routes unsuitable in severe conditions at Appendix 3;
 - Notes the Frontline Treatment Vehicle Fleet at Appendix 4;
 - Notes the Salt Stocks monitoring and resilience record at Appendix 5; and
 - Notes weather summary from 2021/22 at Appendix 6.

WINTER SERVICE POLICY 2022/23

2.0 INTRODUCTION

- 2.1 This report presents the Winter Service Policy 2022/23 which remains in a similar format and covers a similar network to the Policy approved by this Committee in previous years. 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 Environment, Development and Infrastructure Committee :-
- Approves the 2022/23 Winter Maintenance Policy Document at Appendix 1;
 - Approves the Salt Use Reduction & Preservation of Stock Protocol at Appendix 2;
 - Notes the Advisory signing, routes unsuitable in severe conditions at Appendix 3;
 - Notes the Frontline Treatment Vehicle Fleet at Appendix 4;
 - Notes the Salt Stocks monitoring and resilience record at Appendix 5; and
 - Notes weather summary from 2021/22 at Appendix 6.

4.0 DETAIL

Winter Maintenance Policy 2022/23

- 4.1 The proposed Winter Maintenance Policy for 2022/23, in terms of treatment standards and routes, remains largely unchanged from that approved by the Council in 2011. The number and category of pre-treatment salting routes remains the same including the amendments introduced to cater for the transfer of A83 Kennacraig – Campbeltown to the Trunk Road network in August 2014.
- 4.2 The current pre-treatment routes were reviewed, descriptions updated and distances re-measured as part of an operational procedures review in summer 2021. A further analysis of performance and accuracy of these updates, used in the winter operational period 2021/22 is part of pre-start preparations for Winter 2022/23. No direct changes to the category of routes, or length of treatments, is proposed at this time. The current level of treatments is based largely around the public service bus routes network.
- 4.3 The advisory signs for alternative routes in severe snow conditions remain similar to the four routes proposed in previous years. Details on sign configuration and locations are contained in Appendix 3 of this report.
- 4.4 Winter stand-by arrangements will commence on Friday 28th October 2022 and will continue until Friday 14th April 2023. There are a total of 31 treatment routes detailed in the policy operational planning web-based management tool. Should weather conditions

dictate, it may be necessary to bring forward the start date and/or push back the finish date. This would be determined operationally depending on forecasted weather conditions.

- 4.5 The Winter Treatment Fleet for 2022/23 will be similar to last winter. This will consist of 17 hired gritters from Econ Ltd. 8 of 26t 9cu.m capacity and 9 of 18t 6cu.m capacity. 1 contractor vehicle on Jura, one shared route assisted by 1 contractor vehicle in Lochgoilhead and 12 Council vehicles. The Council element consists of the updated frontline winter capable fleet of QCB demountable, multipurpose vehicles procured during 2021. This provides 31 main frontline vehicles with 3 spare 18t 6cu.m capacity multipurpose vehicles and 3 back-up 12t 3.5cu.m multipurpose vehicles to cover breakdowns. In addition, a further 4 x 7.5 tonne tippers can accommodate ploughs, giving a total of 10 extra vehicles that can be deployed together with tractors and 'V' ploughs if conditions demand.
- 4.6 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 across the operational teams (grounds, waste, roads) deliver 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 and other services being temporarily suspended in order to prioritise the clearing of ice and snow. Such measures are only likely in prolonged periods of extreme weather.
- 4.7 Steps are taken each year to increase the available driver "pool" by utilising other council drivers including grounds and waste disposal operatives. Discussions are ongoing to resource additional resilience 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, fallen trees etc) resources may need to be allocated based on a risk based priority.
- 4.8 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.

Appendix 6 to this report provides a summary of the 2021/22 winter conditions.

Winter Season	2017-18	2018-19	2019-20	2020-21	2021-22
Equiv Fleet Runs	110nr	62nr	78nr	79nr	65nr
Salt used tonnes	22,992t	13,059t	12,280t	15,753t	11,030t
Most turned - out run	A819 = 162nr	A819 = 109nr	A819 = 139nr	A819 = 114nr	A819 = 107nr

- 4.9 It is some considerable time since we have experienced a large scale snow event. Even the “Beast from the East” in 2017 only affected the Eastern domains of Lomond, Bute and Cowal with the rest of Argyll largely untouched. It is likely that should a longer spell of snow affect the whole of Argyll and Bute, a considerable escalation in resources and hence budget spend will be required to maintain lifeline accesses to communities.
- 4.10 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. Staffing levels are such that we generally do not have sufficient labour available to deal with footways and footpaths in parallel with treatments of the carriageway. The mobilisation of external resources to assist in footway treatments, is a balance of cost benefit against potential thaw conditions rendering treatments un-necessary. This winter maintenance policy applies to the public road network and a limited number of ‘emergency service and public transport routes. Public car parks, access to council offices, schools etc all being subject to local arrangements out with the scope of this policy.
- 4.11 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 four roads where signing to indicate specific alternative routes are available. The signs deployed for these road closures are detailed in Appendix 3.
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 Tighnabraich and Kames.
- 4.12 The Council’s Winter Maintenance budget was increased by £500k in Financial Year 2019/20 to an operational budget of £2.12M. This provided the capability to deliver the equivalent of approximately 62 full runs over the winter season, at previous unit costs. This was an increase in estimated runs from the previous 55 runs. 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, which are not predictable. The amount of salt used per year will vary, depending on the grams per sq.m instructed in the individual route plans, for each mobilisation.
- 4.13 Overall the financial cost for 2021/22 was £ 2.258 million against a budget of £2.122 million. With reference to the table above, despite a reduction in overall Fleet Runs and total tonnage of salt used, compared to winter 2020/21, the out-turn costs for the winter were similar, differing by only £28k. This indicates a general increase in the unit costs of winter and hence the average cost of a full fleet mobilisation.

- 4.14 For this reason, it will be necessary to re-evaluate the number of runs achievable within the current budget allocation of £2,119,974 for the coming season, winter 2022/23.
- 4.15 Various cost increases have occurred or are likely, which will affect the unit cost of a winter treatment. The removal of the “Red diesel” rebate on 1st April 2022, will mean that there will now be no fuel savings against the single use vehicle PMG fleet. This is estimated to add 57p / litre as at May 2022 although costs have continued to rise throughout the summer. Based on the calculated mileage of the PMG fleet for the treatments carried out last season, of 109,000 Km, this would add £20,710 to the equivalent fuel bill.
- 4.16 In addition to the above, revised Salt prices have been accepted through the Scotland Excel contract from our term supplier Irish Salt Mining and Exploration Ltd. Prices vary depending on delivery method and location but increases of between £7.76/t and £14.38/t have been accepted. At the average increase of £10.57/t and based on the average annual salt use volume over the past five seasons of 14,997 tonnes, this will add an additional £162,683 to the equivalent materials costs for winter treatments.
- 4.17 The current 2021-23 Gritter Hire Contract with Econ Ltd., estimated to cost £916,864.00 ex VAT, in total, is entering its second year. A review of current multipurpose fleet availability, potential for additional treatment routes to comply with current policy and overall efficiency of a mixed economy model for winter service vehicles will be undertaken in early 2023, towards assessing if an extension to the current contract or a revised model is pursued, for 2023-24 onwards.
- 4.18 Taking the above cost increases into consideration, it is likely that unit costs will increase by a minimum of **10%** over those attributable last season. The budget monitoring indicator of “Equivalent Full Fleet Runs” achievable within the budget is there for **reduced from 62 runs to 56 runs**, for winter 2022/23, monthly reporting.
- 4.19 As of July 2022, the Council held a stock of 6,083 tonnes of salt. Provisional replenishment orders are in place for 5,100 tonnes. Deliveries will be called forward for completion by mid-Oct. This replenishment order has an estimated value of £ 254,124 at the revised unit rates for salt, which now averages £50.09 / tonne delivered. This will top up capacity in storage facilities to the target starting stock of +11,000 tonnes. Salt deliveries will continue to be ordered throughout the winter period, to keep reserves stocked and preserve resilience. Weekly salt reserve stock lists are submitted to Scottish Government as part of a Scotland wide winter resilience plan.
- 4.20 The Salt Use Reduction and Preservation of Stocks protocol was introduced in December 2010 in light of severe shipping and material shortages. This was reviewed and updated in 2020 and is attached at Appendix 2.
- 4.21 The assessment of school routes subject to pre-treatment before 08:00hrs, is covered under Priority 3b of the route hierarchy, in section 4 of the Policy. This is reviewed each year once the pupil intake for August is confirmed. The levels of occupancy on school bus routes have been confirmed. The revised number of both pupil passengers and service bus users in the Lorn Arc area has necessitated the formation of another pre-treatment route out of Oban depot – L7 due to increases on completion times and vehicle capacity, to comply with current policy. No other amendments are necessary elsewhere on the network, this season.

Transport Scotland

- 4.22 Following the decision to trunk the southern section of the A83, Transport Scotland are now roads authority for this section of road Kennacraig – Campbeltown. The G6 trunk road contract for NW area has a commencement date of 16th August 2022 and has been retained by BEAR Scotland Ltd as Operating Company.
- 4.23 It is likely that Argyll and Bute Council will 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. This will be to a similar level as the previous contract, for the first season at least, subject to development of a Trunk road manned depot in the Campbeltown area during the development stages of the new contract, which has a potential 10 year duration.

Winter Review

- 4.24 We are in the process of appointing a Route Optimisation Programme provider, which we anticipate will be a fundamental part of a future Winter Review.

5.0 CONCLUSION

- 5.1 This report details the Council's Winter Maintenance Policy for 2022/23 and highlights the pressures on resources and operational effectiveness due to the constraints of future funding levels and best practice advice.
- 5.2 Committee is asked to approve the Winter Service Policy 2022/23 and note the details in Appendices 1 – 6.

6.0 IMPLICATIONS

- 6.1 Policy - It is considered to be good practice for Committee to confirm policy for winter maintenance activity on an annual basis. This report seeks to achieve the above.
- 6.2 Financial - The Council's Winter Maintenance budget was increased to £2.12M in financial year 2019/20. This provides the capability to deliver the equivalent of approximately 56 full runs of the treatment fleet over the coming 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 to weather events that are not predictable. Should the criteria for school bus routes change this will affect the budget required.
- 6.3 Legal - The Winter Maintenance Policy sets out the Council's level of service provision for winter maintenance, with reference to Section 34 of Roads (Scotland) Act 1984.
- 6.4 HR - Staffing levels have reduced over recent years, this can make it challenging to have sufficient staff to deal with a severe winter event. Processes are in place for external suppliers to assist in geographic specific locations with additional support called forward through framework contracts should severe weather persist.
- 6.5 Fairer Scotland Duty
- 6.5.1 Equalities – protected characteristics – None.
- 6.5.2 Socio-Economic Duty – None.
- 6.5.3 Islands – Island road network hierarchy assessed and included in this policy.

- 6.6 Climate Change - In recent years, weather patterns are trending to intermittent storm events with shorter duration periods of traditional “winter” hazards of snow and ice. Frequent thaws / wash-off events result in an increase of repeat salting treatments in marginal conditions. Therefor increasing cost and resource commitments, rather than reducing them.
- 6.7 Risk - The proposed policy, is designed to reduce the exposure of the Council to risk.
- 6.8 Customer Service - The winter policy has been designed to maintain access to the Council’s Strategic Road network and other “lifeline” routes within the confines of the available resources.

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August 2022

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APPENDICES

1. 2022/23 Winter Service Policy Document
2. Salt Use Reduction and Preservation of Stocks Protocol (2020 revised)
3. Advisory Signing – Road Closures in Severe Conditions.
4. Frontline Fleet 2022/23
5. Current Salt stocks – August 2022 – monitoring and resilience record.
6. Summary of 2020/21 weather conditions

APPENDIX 1 – 2022/23 WINTER SERVICE POLICY



WINTER SERVICE POLICY 2022-23

Author	Network and Standards Manager
Owner	Head of Roads & Infrastructure Services
Date	August 2022
Version	1.0

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1.0 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 Liaison 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.

2.0 OUTLINE PRINCIPLES

- 2.1 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.

3.0 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 Infrastructure 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 Infrastructure 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 in consultation with the Network and Standards 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 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 grit-log form and transmitted to their control room on completion.

4.0 POLICY ON TREATMENT PRIORITIES

4.1 Carriageway treatment

4.1.1 Prior to the commencement of each winter the Assistant Network and Standards 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 Ardentenny, A885 Sandbank, A886 Strachur– Colintraive, A8003 Tighnabruaich, 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 3a	Mon-Fri	Pre-treat as required	Pre-treat in advance (if possible) + reactive	No treatment unless stable conditions forecast a.m.	No Treatment
Service Route		+ reactive			
	W/E	Pre treat in advance of journey, if possible, but no guarantee. Timetabled days only.			
Priority 3b 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. Under standard conditions, pre-treatment routes are designed to be completed within 3 hours of mobilisation.

4.1.3 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 Assistant Network and Standards 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.

4.3 Resources

4.3.1 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.

4.3.2 Plant

Plant to assist with the clearance of snow and spreading of salt has been provided by Roads and Infrastructure 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.

4.4 Cycleways

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

5.0 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 3 hours of commencing treatment
- 5.2.3 On receipt of a weather forecast indicating medium to heavy snow, sufficient additional operatives 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.

6.0 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. Individual circumstances, such as access for emergency services or other lifeline service vehicles will normally take precedent over the above route priority arrangements.
- 6.1.9 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.
- 6.1.10 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 Tighnabraich and Kames.
- 6.1.11 Road closures will be reported to the Director, Head of Service, Operations and Network Standards 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.

7.0 ASSISTANCE FROM EXTERNAL CONTRACTORS

- 7.1 Roads and Infrastructure 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 areas of the network remote from the main depots, sub-contractors are engaged to provide the full winter service provision in parallel with the in house council resources.
- 7.3 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.

8.0 SALT ETC.

8.1 Provision of Salt

- 8.1.1 Salt or other de-icing materials will be supplied through the Network and Standards 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 Network and Standards Manager deems necessary. The Network and Standards 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 Network and Standards 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.

9.0 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.

10.0 WEATHER FORECASTING AND MONITORING

10.1 DTN Group , Antwerp, (formerly MeteoGroup, 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 DTN Group 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 DTN Group's partner Vaisala Ltd, giving atmospheric and surface conditions, situated throughout the Argyll and Bute road network.

11.0 OPERATIONAL COMMUNICATIONS

11.1 Vehicle / Duty Supervisor / Depot Communications

- 11.1.2 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.
- 11.1.3 The fleet of 31nr 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.
- 11.1.4 Throughout the period of winter standby, the Operations Manager will ensure that staff are 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 The Winter Manager will post details of the 24hour winter treatment plan each day no later than 1400hrs on the winter maintenance page of the council website.

11.4.2 Enquiries from the public will normally be dealt with by the Customer Access Centre during normal working hours.

11.4.3 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

11.4.4 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.

11.4.5 The Winter manager will ensure that any disruption to the network is reported through the internal service disruption noticeboard on the council website.

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 and Network and Standards Manager.

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

12.0 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.

APPENDIX 2 - SALT USE REDUCTION AND PRESERVATION OF STOCKS PROTOCOL.

Argyll and Bute Council WINTER SERVICE – OPERATIONS 2022/23

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 plus capacity 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 10,399 tonnes for Argyll and Bute for 2022.

However the target tonnage for the start of each season, 1st November may vary, as replenishment of some stores are related to shipping capacity and availability, however a minimum 11,000tonnes is considered reasonable. 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 activities are doubtful in either quantity or timescale, the use of salt will be curtailed under the following procedures.

<u>Salt Preservation level</u>	<u>Circumstances</u>	<u>Authorised by.</u>
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 West of Scotland Co-Ordination Group advice may be received.

First Operation:- Activate replenishment from Strategic Stockpile at Helensburgh Dome

Depending on the likely delay in replenishment, part of the Strategic stockpile may be moved to other operational stores. The quantity will be determined by the potential delivery date for shipping, to replenish the Helensburgh store from King George 5th Dock Glasgow and other western stockpiles, via Argyll ports. The transfer of each 1,000 tonnes of stock will provide a further 4 days resilience within the operational stores, at normal use rates.

Resilience:- 4 - 12days at normal use levels 375t/day : 2 - 6 days 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
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Salting treatments will be curtailed to Priority 1&2 pre-treatment routes only (1233km – rev 2021)
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
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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
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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
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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

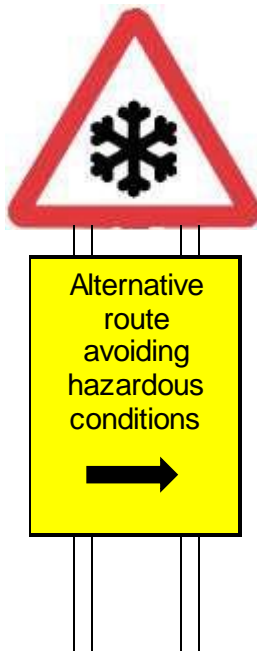
Total resilience: SP1 (2nd Op) > SP5 (end) = 68 days : 41 days heavy snow.

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. This advises them of alternative routes, where available resources will concentrate on maintaining treatments. There are four 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.

**ROAD
CLOSED
AHEAD**

**ROAD
CLOSED**

APPENDIX 4 - FRONTLINE TREATMENT VEHICLE FLEET 2022-23.

2022-23 WINTER POLICY , PRE-TREATMENT ROUTES						ALLOCATED VEHICLE - (inc 70&71 Reg replacing 19Reg vehicles #)				
Policy and Pre-Treatment Routes unchanged			31 Council pre-treatment routes , 30 Frontline Vehicles inc S/C assist plus 1 route, services to BEAR Scotland Ltd		.08/09/2021		HIRED FLEET - 18T GVM - 6cu.m. PMGs 2021/23 - VRNs Confirmed (Inc updates)			
					remeasured		HIRED FLEET - 26T GVM - 9cu.m PMGs 2021/23 - VRNs Confirmed			
					V		IN-HOUSE FLEET - Replacement QCB units - 18tGVM 6cu.m spreader			
DRAFT WINTER FLEET ALLOCATION - 7th JULY 2022				Volume @ 20g/m2 run		IN-HOUSE FLEET - Replacement Multispreads - 12t / 7.5 t GVM				
District	START DEPOT/ SALT STORE	code	Pre-treatment route Description	tonnes	cu.m	Vehicle Make	Reg No.	Vehicle Model	c/w Straight offset Plough blade	Gritter Capacity
BUTE	Rothesay - Union St	B 1	A886 Rubodach and Bute rural	5.64	4.34	DAF - LF260 FA	SJ21 LVM	Econ - QCB c/w 6cu.m ZERO C Demountable Spreader		6 cu.m.
	Rothesay - Union St	B 2	Rothesay town & Bus routes	4.00	3.08	DAF - LF230 FA	SJ21 LVO	7.5t ECON Multispread - demountable spinner		1.5cu.m.
COWAL	Dunoon - Victoria Rd	C 1 & C5	Dunoon A886/A815 & B839/B828 Hell's Glen / Glean Mor	6.17	4.75	Merc 2635	YJ 19 RWN	AROCS 6x4 - ECON spreader PMG - C/W Plough		9 cu.m.
	Dunoon - Victoria Rd	C 2	A815 Dunoon - Toward (& Loch Striven ; POL depot)	3.08	2.37	DAF - LF260 FA	SJ21 LVL	Econ - QCB c/w 6cu.m ZERO C Demountable Spreader		6 cu.m.
	Dunoon - Victoria Rd	C 3	Dunoon streets	1.43	1.10	DAF - LF230 FA	SJ21 LWG	12t ECON Multispread - demountable spinner		3.5cu.m.
	Dunoon - Victoria Rd	C 4	A886 Colintraive - Strachur & B836 Glen Lean	5.92	4.55	Merc 2635	YJ 19 RWU	AROCS 6x4 - ECON spreader PMG - C/W Plough		9 cu.m.
	Lettermay-Lochgoilhead -S/C	C5 South	B839 Pole - Lochgoilhead & Carrick Bus turning	0.87	0.67			Contractor assistance - Cowal Leisure Ltd - Vehicle tbc		3 cu.m.
	Dunoon - Victoria Rd - S/C	C 6	A8003 Tighnabruich and Portavadie Ferry	3.49	2.68	Merc 1827A	YJ 19 SWV	AROCS 4x4 - ECON spreader PMG - C/W Plough		6 cu.m.
	Dunoon - Victoria Rd	C 7	A880 Ardentinny	2.48	1.91	Merc 1827A	YJ 19 SWY	AROCS 4x4 - ECON spreader PMG - C/W Plough		6 cu.m.
LOMOND	Helensburgh - Blackhill	H 1	A818 - A817 - A814 South to Glen Mallon Jetty	6.44	4.95	Merc 2635	YJ 19 RWV	AROCS 6x4 - ECON spreader PMG - C/W Plough		9 cu.m.
	Helensburgh - Blackhill	H 2	B833 Peninsula & A814 North - Arrochar/Succoth	4.66	3.58	Merc 2635	YJ 19 RXL	AROCS 6x4 - ECON spreader PMG - C/W Plough		9 cu.m.
	Helensburgh - Blackhill	H 3	Helensburgh West & Rhu	2.91	2.24	DAF - LF230 FA	SJ21 LVT	7.5t ECON Multispread - demountable spinner		1.5cu.m.
	Helensburgh - Blackhill	H 4	East Helensburgh & Cardross	3.08	2.37	DAF - LF260 FA	SJ21 LVN	Econ - QCB c/w 6cu.m ZERO C Demountable Spreader		6 cu.m.
ISLAY	Bowmore - Springbank	I 1	A846 & B8016 Bridgend - Port Ellen (High & Low Roads)	5.15	3.96	Merc 1827A	YJ 19 RXO	AROCS 4x4 - ECON spreader PMG - C/W Plough		6 cu.m.
	Bowmore - Springbank	I 2	A846 Pt Askaig & A847 Portnahaven	4.18	3.22	DAF - LF260 FA	SJ21 LWU	Econ - QCB c/w 6cu.m ZERO C Demountable Spreader		6 cu.m.
KINTYRE	Machrihanish Depot	KTR	A83 Cambeltown - Kennacraig - for BEAR Scotland s/c	6.33	4.87	PMG (supplied)	SN13BVF	Trunk road Sub-Contract for BEAR		9 cu.m.
	Machrihanish Depot	K 1 > K3	B842 Campbeltown - Carradale	2.82	2.17	DAF - LF260 FA	SJ21 LWR	Econ - QCB c/w 6cu.m ZERO C Demountable Spreader		6 cu.m.
	Machrihanish Depot	K 2	B842/B843 Campeltown - Machrihanish - Southend	4.17	3.21	DAF - LF230 FA	SJ21 LYK	7.5t ECON Multispread - demountable spinner		1.5cu.m.
		. > K3	B842 Carradale - Clonaig & B8000 Skipness - Redhouse	2.14	1.65			Follow-on with K1 Vehicle , volume included above		
LORN East	Dalmally Depot	L 1	A819 Dalmally - Inveraray	3.02	2.32	Merc 2635	YK 71 JXL	AROCS 6x4 - ECON spreader PMG - C/W Plough		9 cu.m.
	Oban - Jackson's Quarry	L 2	B845 Kilchrennan - C29 Dalavich	4.84	3.72	Merc 1827A	YK 70 HRF	AROCS 4x4 - ECON spreader PMG - C/W Plough		6 cu.m.
LORN West	Oban - Jackson's Quarry	L 3	A816 Oban - Ardfern inc Village	3.38	2.60	Merc 2635	YJ 19 RXM	AROCS 6x4 - ECON spreader PMG - C/W Plough		9 cu.m.
	Oban - Jackson's Quarry	L 4	B844 Easdale & Cuan	1.72	1.32	DAF - LF260 FA	SJ21 LWW	Econ - QCB c/w 6cu.m ZERO C Demountable Spreader		6 cu.m.
	Oban - Jackson's Quarry	L 5	C27 Port Appin - B845 Bonawe	2.72	2.09	Merc 1827A	YK 70 HRP	AROCS 4x4 - ECON spreader PMG - C/W Plough		6 cu.m.
	Oban - Jackson's Quarry	L 6	Oban streets	2.60	2.00	DAF - LF230 FA	SJ21 LWV	12t ECON Multispread - demountable spinner		3.5cu.m.
MidARGYLL	Lochgilphead-Monydrain	MA 1	A816 Lochgilphead - Ardfern & B840 to Ford	3.57	2.75	Merc 3333k	YF 19 OVU	AROCS 6x4 - ECON spreader PMG - C/W Plough		9 cu.m.
	Lochgilphead-Monydrain	MA 2	B841 Acanamara - B8025 Tayvallich	2.58	1.98	Merc 1827A	YK 70 HRG	AROCS 4x4 - ECON spreader PMG - C/W Plough		6 cu.m.
	Lochgilphead-Monydrain	MA 3	B8024 Kilberry Loop	3.32	2.55	Merc 1827A	YK 70 HRL	AROCS 4x4 - ECON spreader PMG - C/W Plough		6 cu.m.
	Lochgilphead-Monydrain	MA 4	Lochgilphead /Ardrishaig/Tarbert Streets	1.22	0.94	DAF - LF260 FA	SJ21 LWT	Econ - QCB c/w 6cu.m ZERO C Demountable Spreader		6 cu.m.
MULL	Tobermory -Baliscate	MU 1	A848/A849 Tobermory - Craignure	4.92	3.78	Merc 1827A	YK 71 JWY	AROCS 4x4 - ECON spreader PMG - C/W Plough		6 cu.m.
	Tobermory -Baliscate	MU 2	Tobermory - Dervaig	2.68	2.06	Merc 1827A	YK 71 JXD	AROCS 4x4 - ECON spreader PMG - C/W Plough		6 cu.m.
	Pennygowan Depot	MU 3	A849 Craignure - Kinloch - Fionnphort	5.74	4.42	Merc 2635	YJ 19 RXY	AROCS 6x4 - ECON spreader PMG - C/W Plough		9 cu.m.
JURA	Craighouse Depot(MBC - S/C)	J 1	A846 Feolin - Ardlussa - Jura Sub-contractor vehicles	2.44	1.88	Merc 1318	OU 55 GCY	Mercedes Atego 1318 PMG - M Boyle S/C		6 cu.m.
	Kintyre/Mid-Argyll/Lorn		SPARE WEST (based in Lochgilphead)			FLH240 - Chassis Only	SF 14 JJK	Gully Vehicle - Demountable Gritter		6 cu.m.
	Bute/Cowal		SPARE EAST (based in DUNOON)			FLH240 - Chassis Only	SF 14 JKV	Gully Vehicle - Demountable Gritter		6 cu.m.
				full mobilisation run			YF 63 HVE	SPARE - BEAR BACK-UP A83 Campbeltown		9cu.m
				119.71						
				tonnes at 20g/m2						

APPENDIX 5 - SALT STOCK RECORDING AND RESILIENCE REPORTING.

ARGYLL & BUTE COUNCIL		WINTER MAINTENANCE OPERATIONS 2022 - 23			
SALT STOCK SUMMARY SHEET		09:00hrs on	31 July 2022		Operational Resilience
<u>All quantities in TONNES</u>		ROADS OPERATIONS UNIT			Resilience
TOTAL SALT TONNAGE IN OPERATIONAL DEPOTS AT DATE			6083	16.4	days
OPERATIONAL USAGE					
Salt quantity used from		to	(includes Grit bins & heaps)		tonnes
SALT STORES "IN STOCK" RECORDS			CONFIRMED AND ADJUSTED START TOTALS		
<u>LOMOND</u>	Helensburgh BLACKHILL (Including EAST Strategic capability)	1304	Lomond TOTAL	1304	22.9 days
<u>BUTE &</u>	Rothesay - UNION ST	158	Bute TOTAL	158	7.2 days
<u>COWAL</u>	Dunoon - VICTORIA RD.	526			
	MILLHOUSE (re-load only)	79			
	GLENDARUEL (re-load only)	62			
	Lochgoilhead-LETTERMAY	17	Cowal TOTAL	684	10.7 days
<u>MID-ARGYLL,</u>	Lochgilphead - MONYDRAIN	981			
<u>KINTYRE</u>	Campbeltown - MACHRIHANISH	706	M-A,K TOTAL	1687	18.7 days
<u>& ISLANDS</u>	Islay - SPRINGBANK	731			
	Jura - CRAIGHOUSE	16		747	19.2 days
<u>OBAN,</u>	Oban - JACKSON'S QUARRY	657			
<u>LORN</u>	DALMALLY	91	Lorn TOTAL	748	12.1 days
<u>and the</u>	Mull - PENNYGOWAN	494			
<u>ISLES</u>	Tobermory - BALISCATE	247			
	KINLOCH (re-load only)	14	Mull TOTAL	755	21.0 days
<u>STRATEGIC STOCKPILE</u>	CONNEL	0	Additional resilience available	0.0	days
Original location unavailable . New site to be obtained					
TOTAL TONNAGE - ALL SALT AVAILABLE		6083	Tonnes TOTAL RESILIENCE		16.4 days
	0 TONNES	Delivered to depots this week			
<u>ORDERS PLACED</u>	<u>DATE EXPECTED</u>	<u>LOCATIONS</u> (To be called fwd as req)			
IRISH SALT MINING AND EXPLORATION - Kilroot, NI			ex KG5 by Road , or direct to Ports		
1700 tonnes	October	by Road	Blackhill Dome - to "capacity"		
1000 tonnes	October	by Road	200t Rothesay , 800t Dunoon		
1200 tonnes	October	by Boat	300t Dalmally, 500t Oban - 400t Mull		
1200 tonnes	October	by Boat	600t Machrihanish - 600t Monydrain		

APPENDIX 6 - WEATHER SUMMARY - 2021-22

[Winter Season Summary 2021-22 and Monthly Reports](#)

A drier and milder winter, than in the recent past. Short term cold spells in November and December generated some wintry spells but conditions turned wet and mild after Christmas Day. The season was marked by the frequency of “named storms” throughout the core period, with events in each month culminating with three named storms in one week from the middle of February onwards. Periods of northerly airflows, bringing colder conditions, clear skies with frosts and occasional periods of wintry precipitation were few in number and interspersed with milder, wet conditions for periods of 1-2 weeks duration. There were few significant snow events, with lasting hazards only affecting high-level routes for more than 2-3 days at a time. March and April, were less “stormy” in comparison to the first 2/3 of the season. A dip in temperatures, in late March saw sub-zero temperatures carry over into April but with background temperatures improving, there were no lasting hazard in the forecasts, by the Easter weekend Fri 15th April onwards.

[November 2021](#)

Overall, it was a very mild and dry November. Compared to the 30 year average, the daily mean temperature was about 1.2C warmer for Western Scotland. The month was very dry with only 50% of the 30yr average rainfall. The sunshine amount averaged out at about normal for the month. The first week of November started off cool but relatively dry, although some showers did occur in the Monday-Wednesday time frame.

The coldest night of the week was Wednesday 3rd with RSTs below zero: A886 Leanach -1.6 DegC, A816 Blaran -0.4DegC, A817 Haul Road -0.4DegC, A85 Dalmally -0.3DegC, A819 Accurrach 0.0 DegC. Thursday a somewhat milder westerly flow developed, and it became increasingly mild and unsettled into the weekend. The second week of November had temperatures that were above average, and no sub-zero RSTs were recorded during the week. The third weekend of November was generally dry. There was a mix of cloud and clear spells. The mornings were cool but RSTs held above zero.

The third week of November started wet and mild. A cold front crossed the region late Tuesday ushering a cooler and blustery Wednesday with a few showers. Wet and milder conditions returned for the end of the week. RSTs were well above zero for most of the week. The one exception was Wednesday morning which was quite cool, but RSTs held above zero. The fourth weekend of November started very mild, but a strong cold front went through Saturday afternoon leading to a much cooler Saturday night. It was dry but cool and a few RSTs did fall below freezing. Sunday night continued fry and clear but was even colder with most RSTs falling below zero. Mild temperatures continued for the beginning of week 4. There were also a few showers. A strong cold front crossed the region late Wednesday 24th ushering in cooler conditions for Thursday. Later Thursday 25th **Storm Arwen** moved across the region with rain and high winds. As it deepened and moved just to the east of the UK, very strong winds developed, and it turned much colder with rain changing to snow for higher elevations. Significant snow accumulations were recorded for some higher sites. Saturday continued very windy and cold with snow showers even down to lower levels.

Storm Arwen was dubbed one of the worst UK storms in decades. Power was cut to a quarter of a million people; hundreds of trees were knocked down and three people were killed. A rare red wind warning was issued by the UK met office.

In Argyll, the strongest winds and most disruption due to fallen trees was confined to the Southwestern sector - Islay, Kintyre and Bute suffering from the worst effects, with other districts north and east, having comparatively lower impact. Sunday 28th saw calmer conditions but it continued cold with snow at higher elevations and rain or a wintry mix for lower routes. Many higher sites recorded minimum RSTs of -2 to -4C Saturday, Sunday and Monday morning. The last day of November was much milder with morning RSTs all well above freezing but there

was some rain

December 2021

December was another dry month with precipitation just 50% of the 30-year normal. It was cloudy, with only 50% of normal sunshine for the month. December came in as November had left, with heavy rain and blustery conditions. However, RSTs were above freezing. Skies cleared in the evening and the night of Dec 1st – 2nd was very cold with a brisk northerly flow. RSTs rose just above freezing during the day but some rain and snow during the evening of the 2nd caused RSTs to become erratic and fall to zero or marginal in places. RSTs rose above freezing everywhere overnight as it turned drier and milder everywhere. Friday December 3rd was a cloudy and mild day with all RSTs above freezing. Saturday started blustery and wet with showers that were wintry over high elevations. After a cold start where RSTs were largely below zero, a ridge of high pressure brought settled and bright weather for Sunday.

The first full week of December started wet. Most areas saw spells of rain as a front moved eastwards across the UK, bringing snow to hills and high ground. Blustery showers, wintry in places, followed behind this front. A cool and very breezy or windy day for all. Overnight, showers became isolated and clear breaks developed. RSTs fell below zero for most. **Storm Barra** arrived in the UK Tuesday morning Dec 7th. Snow fell down to lower levels to start, around 100m above sea level, with some accumulations reported but snow levels rose during the day. Winds were very strong, gusting 40-50mph inland, reaching up to 60-75mph over the Irish sea, resulting in coastal flooding on some routes. Overnight, showers continued for most, wintry at the higher levels but no additional snow accumulation. **Storm Barra** continued to dominate the weather, on Wed 8th. It was drier but a few showers did continue mixed with sleet and snow at high levels. Showers cleared away to the east late in the day. Wednesday night was dry and colder with clear spells, RSTs falling below zero. On Thursday another Atlantic frontal system moved in from the west. RSTs rose ahead of this system bringing rain at all levels. Behind the front it was blustery and colder with some scattered showers, wintry at higher levels. These became isolated near dawn as clear breaks developed. RSTs fell below zero for most weather station sites. Friday was variably cloudy with scattered showers that were wintry at higher elevations.

It turned drier later on Friday 10th and skies cleared allowing RSTs to fall widely below zero. Clouds from the next system moved in near dawn, with Saturday a milder day with RSTs rising allowing for rain to develop at almost all levels through the morning. Sunday was variably cloudy and dry and relatively mild. Sunday night turned very windy and wet with outbreaks of rain. The second week of December started dry with sunny spells. RSTs fell to marginal or below zero early Monday night before cloud from the next system moved in. This system brought some rain for Tuesday but also ushered in a very mild period for the region. RSTs remained above zero for the remainder of the week. The dry weather continued through the third weekend of December. RSTs were marginal to below zero across inland sites while areas closer to the sea remained above zero. The third week of December continued dry as high pressure dominated the weather. RSTs remained above zero through Wednesday morning as stubborn cloud lingered over western Scotland. Rain and milder temperatures arrived late Wednesday and Thursday 23rd. Christmas Eve day turned colder as arctic air moved across the region from the northeast. Christmas Day started clear and cold for most areas with RSTs below zero. Rain and snow moved north-eastwards into the region Christmas night – with accumulating snow above 200 metres. Snow occurred to quite low levels for a time on the leading edge - down to around 100m in places. A wintry mix of sleet and rain was reported on road surfaces early on the 26th. RSTs were below zero widely in the morning. Snow levels and RSTs rose later in the morning into the 26th as the precipitation became patchy and light.

The last week of December started cloudy, but it was milder with RSTs widely above zero. Rain developed across all levels Tuesday morning then diminished in the afternoon. It was dry and

cooler Tuesday night as a ridge of high pressure brought clear spells and light winds. RSTs fell below zero across elevated sites and became marginal even at low levels. A warm front associated with a band of rain moved across the region during the day Wednesday ushering in an unsettled but unseasonably mild period that lasted until the year end, Friday 31st December.

January 2022

January was unusually mild and dry overall. The new year came in wet and blustery but mild with RSTs well above zero. Sunday started cooler and drier, but RSTs held above zero. Showers developed late in the day with the approach of a cold front. Monday morning saw the passage of the front along with a band of rain as RSTs held above zero. It turned drier but colder in the afternoon. Monday night/Tuesday morning was clear and cold with RSTs below zero widely. Tuesday night and Wednesday morning continued cold, and blustery with the odd wintry shower around. RSTs fell below zero, widely, once again. Wednesday 5th was a dry and sunny day. Wednesday night/Thursday morning was clear and cold as winds diminished with RSTs below zero widely. Later Thursday a frontal system moved through with a band of rain that began as snow on the higher hills. Some sleet even occurred in the lower levels. Thursday night and Friday morning was blustery and colder with scattered snow showers that were locally heavy in places with accumulations in the hills. Snow occurred down to lowest levels. RSTs fell below zero widely Friday morning. Friday evening was clear and cold with RSTs falling below zero widely.

Overnight the next Atlantic system moved into the region associated with a band of rain. RSTs and snow levels rose as the system approached with rain everywhere by dawn Saturday 8th. The rain cleared off in the afternoon, but showers redeveloped in the cooler air behind the system Saturday night, wintry in spots. RSTs fell marginal to below zero by Sunday morning. RSTs and snow levels rose by mid-morning with rain showers continuing. The afternoon was drier with sunny spells. RSTs fell off Sunday evening but remained above zero in most areas except the higher sites. Clouds increased from the southwest overnight and RSTs rose. Monday was a milder day with showers developing in the afternoon. Skies cleared Monday night and it turned breezy and a little cooler. A few showers developed and RSTs fell marginal in most areas and below in some higher sites. The remainder of the week to Friday 14th was dry but generally cloudy with RSTs holding above zero.

The third week of January was another dry week with a series of weak frontal systems moving through from the west from time to time, however there was plenty of winter sunshine during the day and clear spells at night. A weak cold front went through late Saturday/early Sunday, and this resulted in somewhat cooler temperatures to start the next week. Monday morning saw a few higher sites fall marginal. It turned a little milder Tuesday but then the next cold front went through Tuesday night resulting in minimum RSTs falling widely below zero on the morning of Wednesday 19th, across the higher sites. Thursday was dry but not quite as cold and RSTs generally held above zero Thursday morning. Some cloud moved in Thursday night, and this kept RSTs from falling too low Friday morning although higher sites marginal to near zero.

The next frontal system pushed cloud across the region Friday evening 21st and RSTs remained above zero Friday night. Saturday turned milder as a southwesterly flow developed and this resulted in RSTs holding above zero into Sunday morning.

The last week of January continued the weather pattern established earlier in the month. It was a dry week, but it was even milder than the 3rd week. There were plenty of cloud through the middle of the week. RSTs were above zero through Thursday morning. Skies cleared briefly on the evening of Thursday 27th before cloud from the next system moved across the region. RSTs held widely above zero. A strong frontal system associated with **Named Storm Malik** (DMI) brought blustery rain across the region Friday night into Saturday morning. Saturday night skies cleared and winds diminished once again which resulted in RSTs falling widely near to, or below

zero Sunday morning. The end of the month turned wintry as a strong cold front crossed the region Sunday night 30th, associated with **Named Storm Corrie** (Met Office). It turned windy and colder Monday morning with showers, wintry at higher levels. RSTs fell widely near to, or below zero Deg C.

February 2022

Overall, the month of February was a wet month with precipitation at 175% of the 30-year average. It was a little milder with temperatures about 1C above the 30-year normal. It was a cloudy month with sunshine 50% of the 30-year average. The weather pattern of the previous month generally continued into the first part of February where a series of frontal systems crossed the region every 2 or 3 days. Temperatures rose ahead of the front then drop in the wake of the front. The week beginning on the 14th saw a major shift. The jet stream intensified and became situated directly over the UK. This allowed for deep areas of low pressure to form, and resulted in **Storms Dudley, Eunice, and Franklin** – the first time 3 storms have been named by the UK Met Office in the same week since the new storm naming system has been introduced.

The first week of February started blustery and mild. It continued until Thursday night when a cold front went through associated with a band of rain. Friday 4th turned colder with some showers that were wintry on higher routes. RSTs were well above zero Tuesday through Thursday morning then fell below zero at elevated sites Friday morning. RSTs fell widely below zero Friday night, early Saturday morning before the next system brought some rain and milder temperatures to the region Saturday. In behind this system, it turned windy and quite a bit colder for Sunday with showers that were wintry, even at lower levels. The second week of February started clear and cold with RSTs widely below zero Monday morning. A warm front brought cloud and some rain along with milder temperatures for Monday 7th with an associated cold front passing through Monday night bringing a band of rain along with breezy and cooler conditions for Tuesday. It turned even colder Wednesday along with snow showers at higher sites and wintry showers at lower levels. It turned briefly milder Wednesday night ahead of the next cold front. In the wake of this front, there was some blustery showers, wintry at higher sites. Thursday night saw skies clear and winds diminish. RSTs fell widely below zero Friday morning. Friday 11th turned breezy and milder with rain Friday night that tapered to showers Saturday. Sunday continued cloudy and mild with showers. RSTs were above zero during the weekend. The third week of February turned stormy. Monday 14th saw a colder northwest flow develop and there were a few showers, wintry in the hills. Skies cleared Monday night and winds diminished and RSTs fell widely below zero. They recovered overnight as the next frontal system pushed cloud and showers, wintry in places to start. Tuesday was a blustery day with a mix of sunshine and a few showers. The next low pressure moved in Tuesday evening with rain and RSTs held above zero into Wednesday morning. **Storm Dudley** moved in on Wednesday 16th associated with spells of rain. It turned colder and showers became wintry in the higher hills Wednesday night into Thursday. It was also very windy. Thursday was a blustery cold day with showers that were wintry in spots. **Storm Eunice** moved in late Thursday night and continued Friday 19th with strong winds and snow even at lower levels. Friday night turned drier with clear spells and RSTs fell widely below zero. Saturday was another generally dry day with dry spells. Rain and milder temperatures moved in for Saturday night and Sunday. Rain turned to snow Sunday night in higher elevations as it turned very windy and colder as **Storm Franklin** moved across the region. For the last week of February, Monday 21ST was dry with sunny spells. Cloud, showers, and milder temperatures moved in Monday night ahead of the next frontal system. Tuesday was generally dry, breezy, and mild and these conditions continued through Tuesday night. Showers redeveloped Wednesday morning and changed to snow showers even at low levels Wednesday night/Thursday morning, as it turned much colder. Snow showers continued through the day Thursday 24th, mixed with sleet even at low levels. Accumulating snow occurred in the hills. Thursday night turned drier with clear spells. However, it was very cold with RSTs widely below

zero. Friday was a sunny day as high pressure moved across the region. Friday night turned cloudy but was milder with RSTs holding above zero. Saturday was cloudy but dry. Saturday night continued dry, but some clear spells developed, and RSTs fell widely marginal to below zero. Sunday continued cloudy with a few spells of rain in places. Rain became heavier and more persistent Sunday night but clear away Monday 28th, morning leaving plenty of sunshine. The last night of February was clear and cold with RSTs falling below zero.

March 2022

March was an unusually quiet weather month with plenty of dry weather and sunshine. Precipitation amounts were almost 70% below the 30-year normal. Sunshine amounts were almost 170% above normal. This led to a wide difference in temperatures as the sunshine during the day led to warmer than normal temperatures and the clear skies and generally light winds at night led to colder temperatures.

Mean maximum daily temperatures averaged almost 2C above the 30-year average while mean daily minimum temperatures were almost 1.0 below the 30-year average. Overall, the mean temperature was ~1.0C above normal.

March started clear and cold under High Pressure. A frontal system moved in for the second day of March associated with cloud showers and milder temperatures. The third day turned drier late, but it continued partly cloudy. RSTs fell marginal to below zero in a few sites Friday morning. High pressure brought an extended period of dry and clear weather along with colder conditions through the weekend that continued into the second week of March. RSTs fell widely below zero during this period. A frontal system slowly approached the west of Scotland Tuesday night/Wednesday with cloud and rain. This resulted in RSTs above zero into Wednesday morning 9th. This was the beginning of a pattern change which continued for the remainder of the week and through the weekend with a series of disturbances bringing wet and mild conditions to the region with RSTs remaining above zero during the period.

The wet and mild conditions continued into the third week, w/c 14th March. RSTs held above zero. Skies cleared Wednesday night as a ridge of high pressure moved in and RSTs fell widely below zero Thursday morning. This ushered in an extended period of fine, dry weather with plenty of early spring sunshine that continued for the remainder of the week and through the weekend. RSTs fell marginal to below zero for most sites during this period. The bright and mild weather continued through the fourth week of March, but RSTs were not as cold and remained above zero most nights. The bright and mild weather continued into the last days of March. A cold front went through the region Wednesday 30th morning associated with rain showers that changed to snow showers later in the morning at higher levels. RSTs were above freezing through Wednesday morning. RSTs fell widely below zero the last night of March as skies cleared and a colder northerly flow moved in.

April 2022

The late season cold spell continued into the first week of April. Sub-zero RSTs continue to be recorded on most sensor sites, with minimum temperatures Minus 1.4 to 3.6 Deg C, becoming confined to high-level sites by Sunday 3rd, as cloud and heavy rain developed over the area. From Monday 4th onwards, temperatures increased to overnight minima in double figures in urban domains by Wednesday 6th April.

Sub-zero RSTs developed again, mainly on higher routes inland on 8th, lingering into the morning of 9th at North Eastern inland sites. This was the last period of sub-zero road temperatures, with conditions improving through to Easter, with RSTs generally Plus 5 to 9 Deg C overnight in mixed conditions with clear spells and frequent rain in showers or as weather fronts moved in from the Atlantic. Clearer conditions overnight Tuesday 19th allowed temperatures to drop to

Plus 1.5 to 2.5 Deg. C in Northern and Eastern districts by Wednesday morning, whilst in clear sunny conditions RSTs reached Plus 30 Deg C by early in the afternoons. The general seasonal improvement continued through the remainder of April, with overnight minimum RSTs in the range Plus 4 to Plus 8 Deg C through to 30th.