

2020/21

**Cheshire East Council
Adverse Weather Plan**



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Cheshire East Highways

Cheshire East Council Adverse Weather Plan

2020 - 2021

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Distribution List

Organisation	Name	Copy Type / Number	Comments
Cheshire East Highways	Chris Shields - Contract Director	Link to pdf	
Cheshire East Highways	Ian McLellan - Contract Manager	Link to pdf	
Cheshire East Highways	Gary Mallin – Contract Manager	Link to pdf	
Cheshire East Highways	Simon Davies - Operations Manager	Link to pdf	
Cheshire East Highways	John Tickle – Resilient Network Manager	P1	
Cheshire East Highways	Mike Evans - Depot Manager Wardle	Link to pdf	
Cheshire East Highways	Chris Barton - Depot Manager Brunswick Wharf	Link to pdf	
Cheshire East Highways	Out Of Hours Duty Officer x6	Link to pdf	
Cheshire East Highways	Duty Supervisor x4	Link to pdf	
Cheshire East Highways	Duty inspector x2	Link to pdf	
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1.0 General Arrangements

1.1 Introduction and Purpose

This document describes Cheshire East Council's strategy to prepare for, prevent and respond to the impact of adverse weather conditions on the highway network, particularly relating to ice and snow but also including storms, heavy rain, high winds and extreme heat. The strategy covers arrangements for roads that are the responsibility of Cheshire East Council. It specifically excludes arrangements for roads within Cheshire East that are the responsibility of Highways England, i.e.

- *M6 and the slip roads throughout the Borough.*
- *A556 Chester Road from Bowden to Junction 19 M6.*
- *M56 from junction 9 to Borough boundary*

Local self-help plays an important part in dealing with snow and other adverse weather conditions. Arrangements for work which may be carried out by Town and Parish Councils are included in this plan.

The Adverse Weather Plan will be reviewed annually. This plan is a live document and the Council reserves the right to update and amend it at any time.

The Adverse Weather Plan can be read as a standalone document but should be read in conjunction with:

- Cheshire East Council Winter Service Policy
- Well Managed Highway Infrastructure, A Code of Practice
- The Cheshire Health and Wellbeing (HWB) Major Emergency Response Update
- The Cheshire East Council Flood Mitigation Policy
- The Cheshire Severe Weather Plan

1.2 Definitions and Abbreviations

Table 1 - Definitions and Abbreviations

	Definition
Network Hierarchy	The classification of all roads based on use, resilience, local economic and social factors.
Treated Network	The defined roads in Cheshire East that will be pre-treated before the onset of ice or snow.
Minimum Winter Network	The Minimum Winter Network (MWN) provides a minimum essential service to the public, including links to the strategic network, access to key facilities and other transport needs.
Resilient Network	The category of roads to which priority is given for maintenance and other measures to maintain economic activity and access key services.
Resilient Network Manager(RNM)	The Resilient Network Manager coordinates winter service and emergency operations in accordance with the Adverse Weather Plan and is responsible for making daily weekday winter service decisions during normal working hours.
Winter Service Duty Officer (WSDO)	The Winter Service Duty Officer is responsible for making winter service decisions outside normal working hours during their period of duty.
Winter Service Verification Officer (WSVO)	The Winter Service Verification Officer supports the WSDO and verifies all decisions.
Duty Supervisor (DS)	The Duty Supervisor acts as the operational co-ordinator and ensures that instructions are carried out.
Lead Winter Service Operative (LWSO)	The Lead Winter Service Operative at each depot liaises with the Duty Supervisor and manages the operatives from that depot.
Strategic Manager (Gold)	Where a strategic level of management is required then the Strategic Manager will be a representative from the Cheshire East Borough Council management team.
Tactical Manager (Silver)	Where a tactical level of management is required then the Tactical Manager, from Cheshire East Highways, will provide operational management decisions and advice to the Strategic Manager where required.
Adverse Weather Desk (AWD)	Adverse Weather Desk – Operational procedures and central location for managing all adverse weather events.
CEH	Cheshire East Highways.
CFRS	Cheshire Fire and Rescue Service.
DEPO	Duty Emergency Planning Officer.
EPU	Emergency Planning Unit.
Climatic Domain	A geographical area that exhibits similar climatic properties. In Cheshire East there are three distinct climatic domains: East, Central and South.

	Definition
Freezing Rain	Freezing rain is a weather condition where rain falls and freezes on contact with the surface.
g/m ²	Grams per square metre is the common method of expressing salt spread rates.
Hoar Frost	Where the temperature is below the dew point and below zero a hoar frost may form where small ice crystals will form on the surface.
Ice	Where there is water on the surface and temperatures fall below zero this will form ice.
Pre Treatment	Treatment that may be carried out either before the on-set of ice or snow.
Post Treatment	Treatment that may be carried out after the formation of ice or snow has fallen.
Operational Area	A geographical area for the purposes of operational management.
RST	Road Surface Temperature.
Seepage	Water may be on the surface for reasons other than rainfall, such as through surface water run-off from verges and drainage systems.
Treatment	Includes salting, gritting, snow ploughing, the application of any salt or equivalent solution, or any other process or activity that the Council use in carrying out this function.
Wash Off	When it rains following a salting treatment much of the salt can be washed off. If temperatures are below zero then additional treatments may be required.

1.3 Service Arrangements

1.3.1 Statutory responsibility

The statutory basis for winter service in England and Wales is Section 41 (1A) of the Highways Act 1980, which was modified on 31st October 2003, by Section 111 of the Railways and Transport Act 2003. The first part of Section 41 now reads:

“a) The authority who are for the time being the highway authority for a highway maintainable at the public expense are under a duty to maintain the highway.

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

This duty is not absolute given its qualification of reasonableness and practicability. In addition, the Traffic Management Act 2004 placed a network management duty on all local traffic authorities in England. It requires Authorities to do all that is reasonably practicable to manage the network effectively to keep traffic moving. In meeting the duty, Authorities should establish contingency plans for dealing promptly and effectively with unplanned events, such as unforeseen weather conditions, as far as is reasonable and practicable.

1.3.2 National Guidance

Well Managed Highway Infrastructure: A Code of Practice 2016 (WMHI), although not statutory, provides guidance to Highway Authorities on highways management. It promotes the adoption of an integrated asset management approach and establishment of local levels of service through risk-based assessment.

Cheshire East Council (CEC) provides a robust adverse weather service, responding to winter and other adverse weather conditions. The extent of the service provided will vary depending upon the severity and nature of adverse weather conditions and availability of resources

In practice CEC aims to safeguard the travelling public from the hazardous effects of snow, ice or other adverse weather conditions so far as it is practicably able to with the resources available. Proactive winter maintenance and other emergency operations will normally be undertaken based upon available weather forecast information, knowledge of prevailing local weather conditions and resource availability.

1.3.3 Winter Maintenance Season

The core winter service season is from the 1st November to 31st March with the option to extend from October to April as required. Table 2 below highlights the relative risks at various points throughout the season.

Table 2 - Season Definitions

Season Period	Definition	Months	Likely Conditions
High	The period of the winter season when the frequency of freezing road conditions and/or snowfall is most likely.	December, January, February	Severe- Probable
Medium	The period of the winter season when the frequency of freezing road conditions and/or snowfall is expected but less likely.	November, March	Severe - May Occur
Low	The period of the winter season when the frequency of freezing road conditions and/or snowfall is least likely but still possible.	October, April	Severe - Not Expected

1.3.4 Winter Treatment Strategy

When icy road conditions are forecast precautionary salting will be carried out on routes detailed in the predefined treated road network. These routes have been developed in accordance with guidance provided in WMHI and are based on the Council's current Winter Service Policy.

In accordance with WMHI the Council has developed a Network Hierarchy in order to prioritise its resources in the most effective way allowing it to better address the various risks and issues associated with the management of the highway network. Each road is categorised in accordance with the criteria outlined in Table 3 below:

Table 3 Network Hierarchy

CATEGORY	CRITERIA
Resilient Network	The category of roads to which priority is given for maintenance and other measures to maintain economic activity and access key services
Strategic Routes	Trunk and some Principal 'A' class roads between Primary Destinations, routes for fast moving long distance traffic with little frontage access or pedestrian traffic. Speed limits are usually in excess of 40 mph and there are few junctions.
Main Distributors	Routes between Strategic Routes and linking urban centres to the Strategic Network with limited frontage access.
Secondary Distributors	B and C class roads and some unclassified urban routes carrying buses. In residential and other built up areas these roads have 20 or 30 mph speed limits and very high levels of pedestrian activity with some crossing facilities including zebra crossings.
Link Roads	Roads linking between the Main and Secondary Distributor Network with frontage access and frequent junctions. In urban areas these are residential or industrial interconnecting roads with 20 or 30 mph speed limits, random pedestrian movements and uncontrolled parking. In rural areas these roads link the smaller villages to the distributor roads.
Local Access Roads	Roads serving limited numbers of properties carrying only access traffic. In rural areas these roads serve small settlements and provide access to individual properties and land. They are often only single lane width and unsuitable for HGVs. In urban areas they are often residential loop roads or cul-de-sacs.

With reference to the Network Hierarchy, all roads categorised as Resilient Network, Strategic Routes and Main Distributors will be included on the precautionary salting routes. This will include all A class roads. All B class roads will also be included on the routes and are identified as Secondary Distributors. Other roads categorised as Secondary Distributors, Link Roads, Local Access Roads and Minor Roads will be risk-assessed for inclusion on the routes. Risk assessments are undertaken by CEH Winter Service staff to determine the inclusion of an element of the network into the Treated Network, with consideration to a number of factors, including but not limited to:

- Wider transport policy priorities
- The Resilient Network
- Safe and reliable access to emergency facilities such as Fire and Rescue, Police, Ambulance, hospitals and medical centres
- Public service and critical infrastructure where maintenance of access may be critical
- Public transport routes and access to railway stations, transport hubs, bus garages and depots
- Safe and reliable access to main industrial and business centres of key importance to the local and regional economy

- Any variations between summer and winter traffic
- Accessibility dependencies of remote communities, particularly in the High East Domain
- Special needs of disabled people or older people where these can be effectively targeted
- Known geographical problems such as significant gradients, exposed areas, low-lying roads at risk of frost etc.
- Climatic and thermal capacity differences within an area
- Coordination and cooperation with neighbouring authorities

CEC Treatment Network covers xxx km of its road network. Detailed route descriptions are defined in Section 2.

1.3.4.1 Severe Weather Conditions

It is recognised that during severe winter weather conditions, e.g. snowfall or prolonged freezing conditions, all available resources may be continuously employed in maintaining the predefined road network. During such periods, CEC will work in partnership with the Town and Parish Councils and supply chain partners to arrange for snow clearance work on local roads and in town centre areas.

1.3.4.2 Minimum Winter Network

During prolonged periods of snow or extremely low temperatures which in turn cause problems with salt deliveries, in consultation with senior managers of the Council, consideration will be given to reducing salt usage by limiting salting operations to the defined Minimum Winter Network, as per Table 4 below.

Table 4 - Minimum Winter Network

A51	A6	A5078
A49	A556	A54
A534	A500	A555
A50	A530	A538
A537	A525	A5102
A523	A5020	A34
A536	A532	A5011
A533	A5022	A529
A5015	A5016	A5024
A5033		

The Minimum Winter Network includes within it the roads identified in the Council's Resilient Network. In times of exceptional adverse winter conditions, the Council may consider reducing the Minimum Winter Network to the Resilient Network, along with any other roads which may be determined as part of any wider multi-agency emergency response.

In the event of the Treated Network being reduced to either the Minimum Winter Network or the Resilient Network, the additional roads identified in Table 4 will also be treated.

Table 5 - Additional Treatment Locations

Parish	Establishment	Road	Description
Macclesfield	Accident and Emergency	Victoria Road, Fallibroome Road	From B5087 through to Broken Cross roundabout
Leighton	Accident and Emergency	Smithy Lane	From A530 to Barrows Green Roundabout
Crewe	Ambulance Station	Badger Avenue	From Vernon Way to Broad Street Junction
Congleton	None A&E Hospital	Canal Road	From Biddulph Road traffic lights to Mountbatten Way
Sandbach	Ambulance/Fire Station	Congleton Road	A534 Old Mill Lane to A533 Middlewich Road
Alsager	Fire Station	Crewe Road	From Lawton Road Traffic Lights to Junction 16
Knutsford	Fire Station	Mobberley Road	From A537 Brook Street to A34 Pendleton Way
Styal	Prison / Rail / Airport	Styal Road	From A538 Alderley Road to Borough boundary

1.3.7 Footways

1.3.7.1 Treatment of Pedestrian Areas

In accordance with the Council's Winter Service Policy, routine pre-salting of footway and footway cycleways will **not** be undertaken. However, in the event of snow and subject to resources being available, CEC may clear and treat key footway routes in priority order within the first 24 – 48 hrs. Resources to treat footways will be allocated based on a number of factors including population, town centres, routes to transport hubs, hospitals, schools, medical facilities.

Footway treatment will be prioritized using an assessment of the risk presented by the conditions. The standard treatment is for a 2m wide path along the length of the footway to provide a safe corridor for pedestrians and other users.

1.4.2 Operational Management

Cheshire East is divided in two for normal non-winter operational purposes (North and South) with an operational depot in each area at Brunswick Wharf for the North and Wardle Depot for the South, each under the control of a Depot Manager.

There are two Winter Maintenance Depots within the Borough:

- North Depot located at London Road, Macclesfield. 6,500 tonnes rock salt is stored within a barn for operational use.
 - South Depot located at Green Lane, Wardle. 1,500 tonnes of rock salt is stored within a barn for operational use.
- Both depots have facilities for the storage of gritters and welfare for staff.

All weather related matters are managed by the Resilient Network Manager (RNM) who covers the whole Borough and is overseen by the Operations Manager.

1.4.2.1 Forecasting and Monitoring

A network of weather stations is installed across the Borough to monitor weather conditions. Information from the weather stations is made available via the Winter Manager System (Vaisala Manager or similar) and weather forecast information by the Weather Forecast Provider.

1.4.2.2 Decision Making

During office hours, treatment decisions will be made by the RNM, in liaison with the Winter Service Duty Officer (WSDO). If the RNM is absent, the WSDO will make the decision in consultation with the Winter Service Verification Officer (WSVO). During out of office hours, the WSDO will make or review decisions in accordance with the decision-making matrix and in liaison with the WSVO. During severe winter weather or other adverse weather conditions activities will be coordinated by the RNM, or the on call WSDO, by the establishment of the Adverse Weather Desk which will be normally based at Brunswick Wharf Depot, Brook Street, Congleton, CW12 1RG. Adverse Weather Response – see Appendix 2.

1.4.2.3 Cross Boundary Arrangements

The Council has a number of cross-boundary agreements to maximise efficiency and consistency of treatment with adjacent authorities on reciprocal treatment arrangements on certain roads.

Cheshire West and Chester Borough Council

TBC

Stockport Metropolitan Borough Council

TBC

Derbyshire County Council

TBC

1.4.2.4 Collaboration and Resilience

The resources in place to deal with severe weather events during the winter period are considered sufficient. However, to ensure the effectiveness of the Adverse Weather Plan, it is important to ensure that collaborative arrangements are in place, where these may aid or improve performance during severe weather events or unforeseen circumstances on the network. As a consequence we have reciprocal relationships with both supply chain partners and adjacent Local Authorities.

1.4.2.5 Other Carriageways

These will only be treated after all the Treated Network are treated and open to traffic and when snow or ice is likely to persist for a continuous period of 24 hours. This will also depend upon available resources.

Local accesses and minor highways serving isolated farms or houses where it is expected that residents could make their way with little difficulty in all but abnormal conditions, would not normally be treated unless for pressing or notified medical reasons relevant to a particular household conditions were severe enough to prevent the passage of emergency vehicles in response to a call.

1.4.2.6 Farmers Routes

In order to fulfil the requirement to consider accessibility dependencies of remote communities, additional resource may be provided to deliver winter service to roads in the High East Domain which do not meet the criteria for inclusion on the winter treatment network. Local farm contractors may be employed to treat defined routes when requested. Generally, treatment will only be requested for conditions requiring higher spread rates, typically where roads are wet following significant or prolonged rainfall, or during snow conditions.

1.5 Fleet, Depots and Plant

There are 2 winter depots available in Cheshire East, the details are as follows:

Table 7 - Depot/Plant Availability

Depot	Number of Routes / (Vehicles)	Loading Shovels
North Depot	9 (10)	1
South Depot	10 (11)	1

Table 8 - North Depot

Depot address	North Depot London Road Nr Macclesfield Cheshire SK11 OJX
Depot contact	John Tickle
Wash down facilities	High flow water attachment
Salt storage capacity	Barn - Max capacity: 6500 tonnes. Resilience -2000 sheeted Minimum operational stock requirement: 1500 tonnes
Salt specification	6mm Thawrox to BS 3247
Salt storage	Enclosed salt barn with sealed floor and dry store sheeting.

Table 9 - South Depot

	South Depot Green Lane Wardle Nantwich, Cheshire, CW5 6BN.
Depot contact	John Tickle
Wash down facilities	Yes
Salt storage capacity	Barn – Max capacity 1500 tonnes. Minimum operational stock requirement: 800 tonnes
Salt specification	6mm Thawrox to BS 3247
Salt storage	Enclosed salt barn with sealed floor and dry store sheeting

Figure 1 - Depot Locations



1.5.1 Salt Stock

Road salt complying with the requirements of British Standard BS 3247:1991 will be provided.

At the start of the winter period the maximum available stock level will be approximately 8000 tonnes distributed throughout the depots as shown in Table 10 below. Additional salt supplies will be ordered when stock levels fall below 80% of the maximum available stock level. Full stock levels will be maintained going in to the Christmas period.

Table 10 - Salt Stock Levels

Depot	Material	Actual Opening Balance
North Depot	6mm dry Rock salt	6500
South Depot	6mm dry Rock salt	1500
	Totals	8000

1.5.2 Public Self Help

Guidance to the public has been published by DfT detailing how they can assist with the clearance of snow and ice in their local communities

CEC will provide salt bins at locations not on the precautionary gritting routes where it can be demonstrated that snow or ice could present a hazard. Typically this will be at junctions and bends, particularly with steep gradients. These bins will be filled at the beginning of the winter season and replenished with salt as and when required

In addition, salt bins or small salt stocks can be provided to parish councils and other stakeholders in order to help them to keep local areas free from ice and snow. Local volunteer groups may also provide support clearing footways. Support and advice will be provided to ensure that suitable risk assessments and method statements are in place which ensure that such work is carried out safely

1.6 Performance Monitoring

Winter Service performance will be monitored by the Resilient Network Manager (RNM) throughout the winter months, and reflected in the subsequent updates of this plan. The following is a list of data and information that may be required in future reviews and reports

- Adequacy of response
- Accuracy of Winter Daily Record Sheets
- Response times
- Treatment times
- Level and justification of public complaints/compliments
- Number of winter related collisions
- Third Party Claims
- Treated Route Audit
- Salt usage

1.6.1 Performance Measures

The RNM will monitor and report the following:

1. % of routes treated before the onset of ice or snow
2. % of routes treated within the prescribed time (4 hrs)
3. Cumulative spend of the winter service budget

1.6.2 Lessons Learnt

Prior to the start of the winter maintenance activities or following a snow/adverse weather event, lessons learnt sessions will be held to ensure that all opportunities to learn/improve are taken and implemented where appropriate.

1.7 Weather forecasting & Climatic Domains

Weather forecasts are made available to CEH staff by the Weather Forecast Provider as follows:

- 24-hour forecast (generally provided at 1200hrs and updated at 1600hrs and 2200hrs)
- 2-5 day forecast (generally provided at 1200hrs)

A 24-hour consulting service is also provided by the Weather Forecast Provider to allow clarification of weather forecast information.

1.7.1 Location of weather stations shown

A networks of weather stations are installed across the Borough at the following locations:

- A537 Cat and Fiddle. Fitted with observation camera.
- A534 Fullers Moor. Fitted with observation camera.
- A34 Siddington
- A51 Bridgemere Observation Site.

These weather stations are shown in Figure 2 and in addition to those above located in Cheshire East, access to information from the following 'out of Borough' sites are also available:

- A494 Shotwick (Owned by Highways England)
- M6 Hassall Green (Owned by Highways England)
- A54 Salterwall Roundabout
- A533 Dones Green
- A56 Daresbury
- A53 Royal Green (Staffordshire County Council)

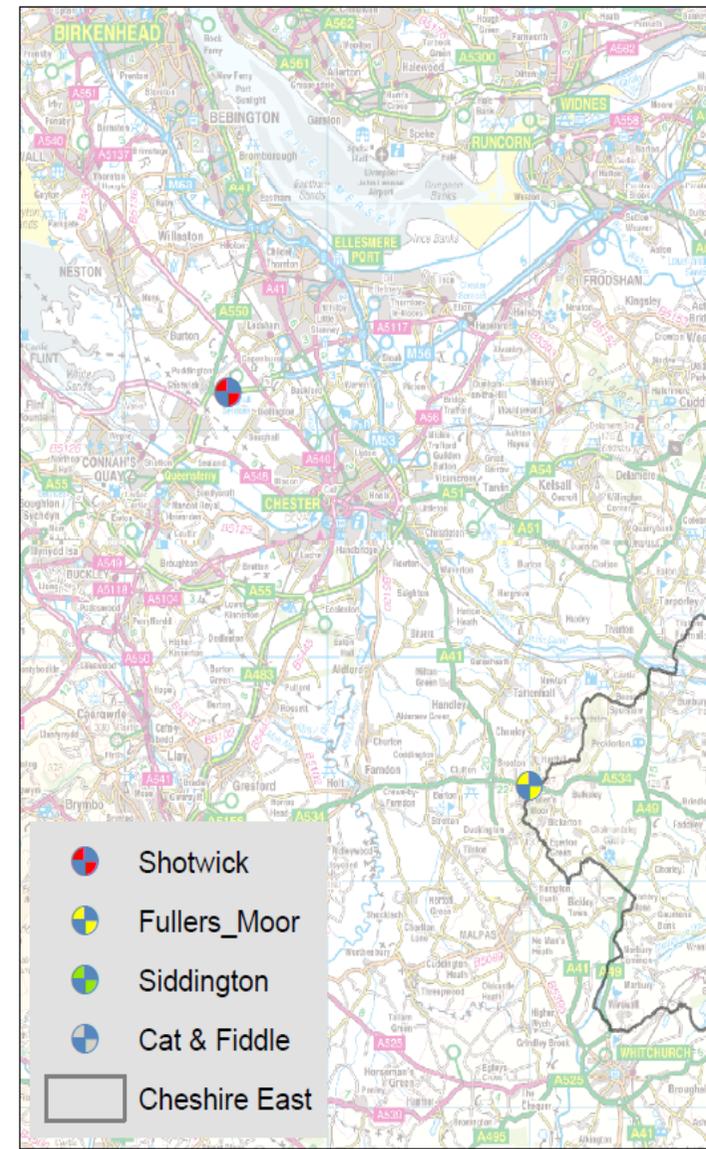
These measure road surface temperature, air temperature, residual salt, dew point and wind speed. The information from these sites is accessible to CEC staff via the Weather Monitoring System.

Forecasting

The 1200hrs weather forecast provided by the Weather Forecast Provider summarises the expected conditions for the Borough. In terms of forecasting the Borough is divided into 3 weather domains East, Central and South. This, on marginal nights allows CEH to treat zonally.

Cheshire East Council Adverse Weather Plan 2019-20

Figure 2 - Weather Station Locations



-  Shotwick
-  Fullers_Moor
-  Siddington
-  Cat & Fiddle
-  Cheshire East



Locat

1.7.2 Weather Warnings

Weather warnings are provided by the Weather Forecast Provider and other agencies using the National Severe Weather Warning System (NSWWS). There are two different types of notification:

- Warnings - issued up to 24hrs ahead
- Alerts - issued more than 24hrs ahead

The Resilient Network Manager (RNM), or their delegate, will ensure that weather forecasts are monitored on a daily basis and appropriate actions determined. Procedures for winter response decisions are shown in Appendix 1

If the weather conditions change from the forecast the Weather Forecast Provider will contact the RNM or the Winter Service Duty Officer (WSDO) out of hours via SMS and email and the RNM/WMDO will then take the decision for the whole Borough.

1.8 Decision Making

1.8.1 Appendix H – The National Winter Service Research Group (NWSRG) Practical Guidance for Winter Service

Appendix H recommendations taking into account wind speed and moisture content which influence the spread rates will continue to form part of the decision making process. App H Compliance register. This document is currently under review and will be replaced when published.

1.8.2 Decision Matrix

Decision making matrix below, Table 11 - Table HI - Decision Matrix, should be followed as part of the decision making process procedure for decision making on precautionary salting. This should be modified as necessary to suit local circumstances and the timing of operations should be mainly influenced by the timing of expected weather conditions rather than other considerations. The following notes relate to the letters on the table:

- a) Particular attention should be given to the possibility of water running across carriageways and other running surfaces e.g. off adjacent fields after heavy rains, washing off salt previously deposited. Such locations should be closely monitored and may require additional treating in the evening and morning and possible other occasions.
- b) When a weather warning contains reference to expected hoar frost considerable deposits of frost are likely to occur. Hoar frost usually occurs in the early morning and is difficult to cater for because of the probability that any salt deposited on a dry

road too soon before its onset may disperse before it can become effective. Close monitoring is required under this forecast condition which should ideally be treated just as the hoar frost is forming. Such action is usually not practicable and salt may have to be deposited on a dry road prior to and as close as possible to the expected time of the condition. Hoar frost may be forecast at other times in which case the timing of the salting operations should be adjusted accordingly.

- c) If, under these conditions, rain has not ceased by early morning, crews should be called out and action initiated as rain ceases.
- d) Under these circumstances rain may freeze on contact with running surfaces and full pre-treatment should be provided even on dry roads. This is a most serious condition and should be monitored closely and continuously throughout the danger period.
- e) Weather warnings are often qualified by altitudes in which case differing action may be required from each depot.

Table 11 - Table HI - Decision Matrix

Table H1 – Sample Decision Matrix Guide				
Road Surface Temperature	Precipitation	Predicted Road Conditions		
		Wet	Wet Patches	Dry
May fall below 1°C	<u>No</u> rain	Salt before frost	Salt before frost (see note a)	No action likely, monitor weather (see note a)
	<u>No</u> hoar frost			
	<u>No</u> fog	Salt before frost	Salt before frost (see note b)	
	<u>Expected</u> hoar frost			
Expected to fall below 1°C	Expected fog	Salt after rain stops (see note c)		
	<u>Expected</u> rain BEFORE freezing	Salt before frost, as required during rain and again after rain stops (see note d)		
	<u>Expected</u> rain DURING freezing	Salt before frost	Monitor weather conditions	
Possible rain				
	<u>Possible</u> hoar frost	Salt before frost	Monitor weather conditions	
	Possible fog			
Expected snow		Salt before snow fall		
<p>The decision to undertake precautionary treatments should be, if appropriate, adjusted to take account of residual salt or surface moisture.</p> <p>All decisions should be evidence based, recorded and require continuous monitoring and review.</p>				

A suggested treatment guide is given in Table 12. Rates of spread for Cheshire East are given for rock salt. The spread rates should be adjusted to take account of residual salt.

Table 12 - Table H2

Weather Conditions Road Surface Conditions Road Surface Temperature (RST)	Air Temperature	Dry Salting (g/m ²)	Ploughing
		Rock salt	
Frost or forecast frost RST at or above -2°C		10	No
Frost or forecast frost RST below -2°C and above -5°C		20	No
Frost or forecast frost RST at or below -5°C and above -10°C and dry or damp road conditions		20	No
Frost or forecast frost RST at or below -5°C and above -10°C and wet road conditions (existing or anticipated)		2 x 20	No
Light snow forecast (<10mm)		20	No
Medium/heavy snow forecast		2 x 20	No
Ice formed (minor accumulations)	above -5°C	20	No
Ice formed	at or below -5°C	2 x 20	No
Snow covering exceeding 30mm		20 – 40 successive	Yes (note b)
Hard packed snow/ice	above -8°C	20 – 40 successive	No
Hard packed snow/ice	at or below -8°C	salt/abrasive (successive) (note a)	No
Footways		30	No

1.9 Treatments for Snow and Ice

1.9.1 General

- It is impractical to spread sufficient salt to melt anything other than very thin layers of snow and ice.
- Ploughing is the only economical, efficient, effective and environmentally acceptable way to deal with all but very light snow.
- Ploughing down to the road surface is preferred. However, snow ploughs should be set to avoid risk of damage to the plough, the road surface, street furniture and level crossings.
- Ploughing to the road surface minimises salt usage and makes salt treatments more effective.
- Drainage should not be obstructed when ploughing. Windrows or piles of snow should be removed or be positioned to allow melt water to reach the drains. If necessary, piles of snow should be removed so that melted snow does not overload drainage systems or run back onto the road.
- Windrows should be removed or ploughed back when further periods of heavy snow are anticipated. This will provide space to plough further snowfalls.

1.9.2 Preparation before ice and snow

To prepare for and facilitate ice and snow treatments the following should be considered:

- When snow is forecast, ploughs and snow blowers should be prepared and positioned in order that snow clearance can start without delay as and when required.
- To facilitate the breakup and dispersal of ice and snow by trafficking, treatments must be made before snowfall or freezing rain so that sufficient de-icer is present on the surface to provide a de-bonding layer.
- Although it will increase salt usage, before snowfall and where practicable, consideration should be given to spreading salt on as much of the network as possible (i.e. beyond the normal precautionary salting network). This will provide a de-bonding layer and facilitate the break up and dispersal of snow by traffic in areas where subsequent treatments may not take place for some considerable time or at all.

1.9.3 Effectiveness of Salt

On a well-drained road during and after rain, the thickness of the water film typically varies between 0.08mm and 0.50mm. Once rain has ceased to fall, traffic quickly reduces the water film thickness. Thin films of ice formed by the freezing of water on road surfaces are usually less than 0.25mm thick.

Tables 13 and 14 below provide guidance on the effectiveness of precautionary salt treatments in preventing the water film freezing.

Table 13 considers the effect of a treatment of 10g/m² on the freezing point of the water/salt solution.

Table 13 - Effectiveness of 10g/m²

Water Film Thickness (mm)	Freezing Point
0.08	-8.6°C
0.1	-6.5°C
0.2	-3.0°C
0.25	-2.4°C
0.3	-2.0°C
0.5	-1.2°C

Table 14 considers the spread rate required to ensure treatment is effective down to a temperature of -5°C.

Table 14 - Effective Required Spread Rate

Water Film Thickness (mm)	Required Spread Rate
0.08	15g/m ²
0.1	15g/m ²
0.2	15g/m ²
0.25	20g/m ²

Assuming that the water film thickness will generally not be greater than 0.25mm when precautionary treatment is being considered, a spread rate of 10g/m² will thus prevent the formation of ice unless temperatures fall below -2.4°C. Should lower temperatures be anticipated, however, a rate of spread of 20g/m² will prevent freezing down to -5.0°C.

Salt is considerably less effective if applied after icy conditions have developed. If ice has formed, a spread rate of 10g/m² will not be sufficient to ensure rapid melt and restore skidding resistance to the road quickly.

1.9.4 Snow Ploughing

In prolonged heavy snowfall the priority will be to maintain a single lane open with clearance of other lanes as conditions improve. The aim is to clear all lanes as soon as conditions permit. Clearance work shall therefore proceed continuously without pause to prevent a build-up of snow. Speeds of snow ploughing vehicles will be regulated at particular features such as under bridges where snow could be thrown over the parapet and adjacent to central reserves where snow could be pushed onto opposing carriageway. Care will also be taken adjacent to temporary road works, traffic management and permanent safety barriers to prevent ramping of snow and decreasing the effective height of the safety barrier. Prompt snow ploughing is recommended on porous asphalt and ploughs will be fitted with rubber skirts to avoid surface damage.

1.9.5 Response and Treatment Times

The **response time** is defined as the time taken from the instruction to undertake the treatment being received by the Duty Supervisor, to the time at which gritters have received pre check, loaded, manned, and ready to leave the depots and travel from the depot gate to the start of their route where the first application of salt is applied. This applies within and outside of normal working hours.

The **treatment time** is defined as the time taken from arriving at the start of the route to be treated, to arrival back at the depot following completion of the treatment. Travel FROM the depot to the start of the treatment route is NOT included in the treatment time. In exceptional circumstances, this treatment time may be extended – usually in the case of extreme weather conditions, or if conditions dictate treatment is instructed during rush hour.

1.10 Treated Network Route Plans

To be included on completion of route review

1.11 Secondary Route details

1.12 Winter Stakeholder Communications

Daily Reports

Elected Members, Town and Parish Councils, schools and the public, shall be kept informed of winter operations via email.

Duty Officers will notify all proposed treatments to Highways England, Emergency Services and adjacent Highway Authorities, along with the contacts distribution list, once known. This will be no later than 13:00 each day.

Any other or subsequent actions, including changes to planned treatments, reactive treatments and snow clearance will be notified accordingly.

Web-based Information

Twitter will be used to provide real time information regarding winter actions. The highways pages of the CEC website will also display Treated Network Routes, vehicle tracking and a link to the Weather Forecast Provider weather alerts.

Winter Service Leaflet

A public advice and information leaflet, 'Travelling on our Roads in Winter', will be available via public libraries, CEC information centres, town and parish councils and via the [CEH website](#).

Engagement Events

Any engagement activities undertaken with Elected Members, Town and Parish Councils, schools and the public throughout the winter period will feature topical information regarding winter maintenance operations.

All our information directs the public to the Snow Code provided on the DfT website.

Liaison with Neighbouring Authorities

All adjacent Highway Authorities, stakeholders and designated organisations, will receive a copy of the Adverse Weather Plan prior to the start of the season.

All adjacent Highway Authorities will be advised by CEC of the daily network treatment decision via e-mail during the Winter Season. If adverse weather impacts upon the use of e-mail or landline telephone, then ad-hoc arrangements will be implemented and contact made with adjacent authorities by other means, including mobile telephone or other appropriate mechanisms.

Adverse Weather Communications / Weather Warning Communications

Weather warnings will be prepared by the RNM (where appropriate) and sent to the CEC Communications Officer, CEC Customer Contact Centre, members of the winter service distribution list and CEC Managers, who in turn, will distribute amongst operational managers and staff.

During normal conditions all out of hours emergency calls are received by Cheshire East Council's CCTV Centre **0300 123 5025** and redirected to the Duty Officer.

During periods of adverse weather the Adverse Weather Desk (AWD) will be activated where close coordination will be maintained with the police. A dedicated telephone number for the AWD will be made available to the police, who will be informed when the AWD is in operation. During these periods the CCTV out of hours control room/CEC Contact Centre are not used

Details of our planned operations will be shared with our neighbouring authorities to ensure we provide a consistent approach across boundaries.

Proactive Communications

The CEH Communications Team will actively seek out opportunities to promote both CEC and CEH and its various teams, particularly those involved in the winter service delivery, using the media. All press releases and other media contact must be approved and distributed via CEC Communication & CEH Communication Teams. Media communications are generally fronted by the CEC Portfolio Holder for Highways.

Reactive Communications

As indicated above, all media contact for CEH and CEC shall be directed to the Media Relations Officers, within the CEC Communications Team:

Tel: 01260 686577 or communications@cheshireeast.gov.uk or via the Media Hub on the CEC Website.

The CEC Communications Team will contact the CEH Communications Manager and the CEH Senior Management Team (SMT) regarding any media comments connected with CEH.

Crisis or Emergency Response

All incidents / events that could have a significant impact on the operation of the Cheshire East road network should immediately be shared with the CEH SMT and CEH Communications Manager. The procedure in the CEH Emergency Response Plan must be followed, in order to keep all interested parties informed.

1.13 Information Recording and Monitoring

Records of winter weather forecasts, treatment decisions and operations will be recorded on the Weather Management System.

When emergency operations occur, the Adverse Weather Desk will maintain a diary of each emergency, with a running record of all reports, times and action taken and will report appropriately to the RNM actions and road conditions.

Any severe weather event may result in an Adverse Weather Desk (AWD) being activated, this may occur proactively or reactively.

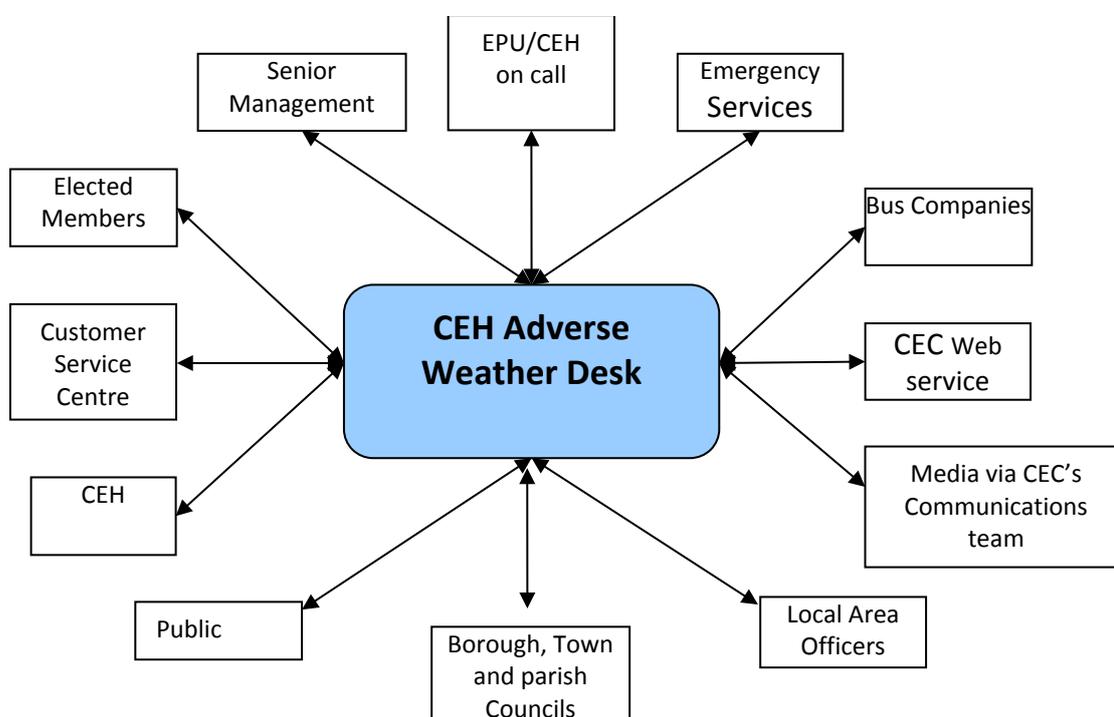
In the instance of forecast severe weather the RNM will arrange for suitable cover. This will be based on 2 staff members covering no more than an 8 hour period for as long as required, no members of staff will undertake more than one 8 hour shift in any 24 hour period.

During adverse winter weather supervisors will operate a similar shift pattern and will be called to man the adverse weather desk. This may also require an 'Emergency' situation to

be called thus enabling the operatives to work twelve hour shift. This situation will need to be approved by the Service Leader

In periods of non-winter related adverse weather, where out of hours call levels are likely to be high, the adverse weather desk will be staffed by a combination of duty officers and duty supervisors. The AWD will act as the communication hub with all calls relating to the event being managed by staff on the AWD. Figure 6 below shows the likely communication links.

Figure 3 - Adverse Weather Desk Hub



Following each severe weather event, hot and cold de-briefs will be undertaken with those relevant staff involved in the event, this will ensure that there is continual improvement in the process

1.14 Response to Police or public calls

Winter Treatment Network

If a call is received requesting salting or re-salting to a section of the treated network the following will need to be considered when making a decision.

1. Has the road been treated in the past 24 hrs
2. What are the prevailing and forecast weather conditions (improving or deteriorating)
3. Can the site conditions be confirmed as coming from a reliable source
4. Is it an isolated call

In general, if a request comes from a reliable source, an appropriate response will be made. If the source was unconfirmed then the site will need to be checked by the Incident Response Unit (IRU) or similar, prior to any treatment being arranged

Untreated Network

Any call relating to a request for treatment of a road not included on the Winter Treatment Network will be declined. The options available are:

1. Erect 'slippery road' signs (diag. 557, TSRGD) either side of affected area
2. Implement an emergency Temporary Road Closure (TTRO) if the situation is likely to be an on-going issue

1.15 Non Winter Adverse Weather

1.15.1 Adverse Weather Warnings

The Weather Service Provider will issue severe weather warnings and flash messages to the Borough Council's Emergency Planning Team, the RNM and operational managers. These are based on the descriptions and conditions below, other than for snow and ice. Motoring warnings will also be given when conditions are difficult but less severe than these described below:

1.15.2 Gales

- Severe gales with gusts of 70 mph or more
- Severe gales - storms with gusts over 80 mph

1.15.3 Heavy Rain

Heavy rain expected to persist for at least 2 hours and to give at least 15 mm within a 3-hour period.

1.15.4 Fog

- Thick fog - visibility generally less than 200 metres
- Dense fog - visibility generally less than 40 metres

1.15.5 Heat

The Heat-health watch system comprises four levels of response based upon threshold maximum daytime and minimum night-time temperatures. These thresholds vary by region, but an average threshold temperature is 30°C by day and 15°C overnight.

When emergency operations occur, the Adverse Weather Desk may be implemented and staff will maintain a diary of each emergency, with a running record of all reports, times and action taken and will report appropriately to the RNM on actions and road conditions.

1.15.6 Flooding from Rivers

The CEH EP has elected to receive flood guidance statements for situations of medium risk or higher affecting the following counties: Cheshire East, Cheshire West and Chester, Shropshire and Staffordshire.

The Environment Agency will normally issue flood warnings affecting Cheshire East to the Council's Emergency Planning Team. This information will be passed to the on call Duty Officer as it is known. These warnings take the form of:

- Flood watch
- Flood warning
- Severe flood warning
- All clear

The information is also available via the Environment Agency website:

<https://www.gov.uk/government/organisations/environment-agency>

For more information regarding river flooding and flood warning, please refer to the Multi Agency Flood Response Plan (Section 3.1).

The response to flooding situations and flood conditions will depend upon the circumstances but could include:

- Signing and maintaining diversions
- Inspection, clearance and maintenance of drainage systems
- Provision of sandbags
- General support to Emergency Services

All sites that have experienced greater than expected flooding will be logged onto a flood register will be investigated in liaison with Cheshire East Highways Flood Risk team.

In addition to this, the Environment Agency has installed flood warning devices in areas of Cheshire East.

1.16 Multi Agency Flood Response Plan

This flood management protocol has been agreed by the Environment Agency (EA) and Joint Cheshire Emergency Planning Team.

It outlines the steps to be taken by the EA and JCEPT when a predicted flood makes it necessary to close relevant roads.

A schedule of signs and barriers held at Brunswick Wharf and Wardle Depots plus maps showing where these signs and barriers are to be positioned

For further information refer to Cheshire East Multi Agency Flood Response Plan.

1.17 High Winds / Storms

Weather warnings for high winds will provide the following advice on circumstances and likely damage:

- 50 mph gusts - difficult driving conditions for high-sided vehicles, especially on exposed roads and bridges.
- 60 mph gusts - difficult driving conditions. Un-laden high-sided vehicles at risk of being overturned. Some damage to trees and falling branches.
- 70 mph gusts - hazardous driving conditions. Un-laden high-sided vehicles at risk of being overturned and motorists advised to drive with particular care. Damage to trees, falling branches with some being uprooted. Minor damage to some buildings, particularly to tiles, slates and chimneys.
- 80 mph gusts - dangerous driving conditions. High-sided vehicles at risk of being overturned and motorists advised to avoid driving if possible. Considerable damage to trees with significant tree uprooting. Extensive minor damage, particularly to tiles, slates and chimneys, with some structural damage to chimneys.
- 90 mph gusts - driving extremely dangerous, widespread uprooting of trees, widespread damage to buildings, with potential for severe structural damage. Public advised not to venture out of doors unless really necessary.

Subject to the extent and effect of the wind one or more of the following may be required:

- Signing and maintaining temporary closures and diversions .
- Clearance of fallen and potentially dangerous trees, this may be undertaken by specialist arboricultural contractors.
- Clearance and removal of debris.
- General support to emergency services.

Where these conditions persist and there is a possibility of high emergency call levels it may be necessary to instigate an adverse weather desk. This will either be preplanned or at the discretion of the on call Winter Duty Supervisor.

1.18 Subsidence, Heave and High Temperatures

The effect of high temperatures on running surfaces will be the main consideration for the Cheshire East highway maintenance section. High temperatures can damage bituminous surfaces both by reducing skid resistance and increasing susceptibility to rutting. This is commonly referred to as the road surface becoming 'fatted'.

Where required CEH will apply sand to surfaces which can mitigate the effects of the reduction of skid resistance, but structural damage may require more substantial work than just to the surfacing material.

Where road surfaces are subject to melt or deformation it may be necessary to apply an Emergency Temporary Road Closure (TTRO) to a section of road until the prevailing conditions have abated.

A log of all reported 'fatted' roads will be collated during periods of continued high temperatures and will be passed to the CEH Asset Management team who may use the information as part of the assessment process for works on a future highway maintenance programme.

1.19 Appendices

1.19.1 Appendix 1 - Winter Service Process (CM03)

CM03	Local Process	Core Maintenance
	Provide Winter Service	

1. RNM / WSDO review the daily Met Office forecast in liaison with WSVO using decision matrix. Marginal amber forecasts to be referred to the Operations Manager for confirmation.

RNM / WSDO / WSVO



Yes

3. Refer to Adverse Weather Process CM02.

No

4. WSDS is informed by phone and email of decision.

RNM / WSDO / WSVO

5. WSDS to notify workforce of decision and any action necessary.



WMDS

No



8. Send the operatives home to return in the evening if the decision requires.

WMDS

9. Treatment carried out and record of treatment collected.



No

11. Identify reasons and resolve.

WMDS

12. Retain operational records for Winter Manager and monthly review.

11. Identify reasons and resolve.

WMDS

WM

Related processes and documents

Decision Matrix

CM02 Adverse Weather

Winter Service Operational Plan

Reporting Sheets

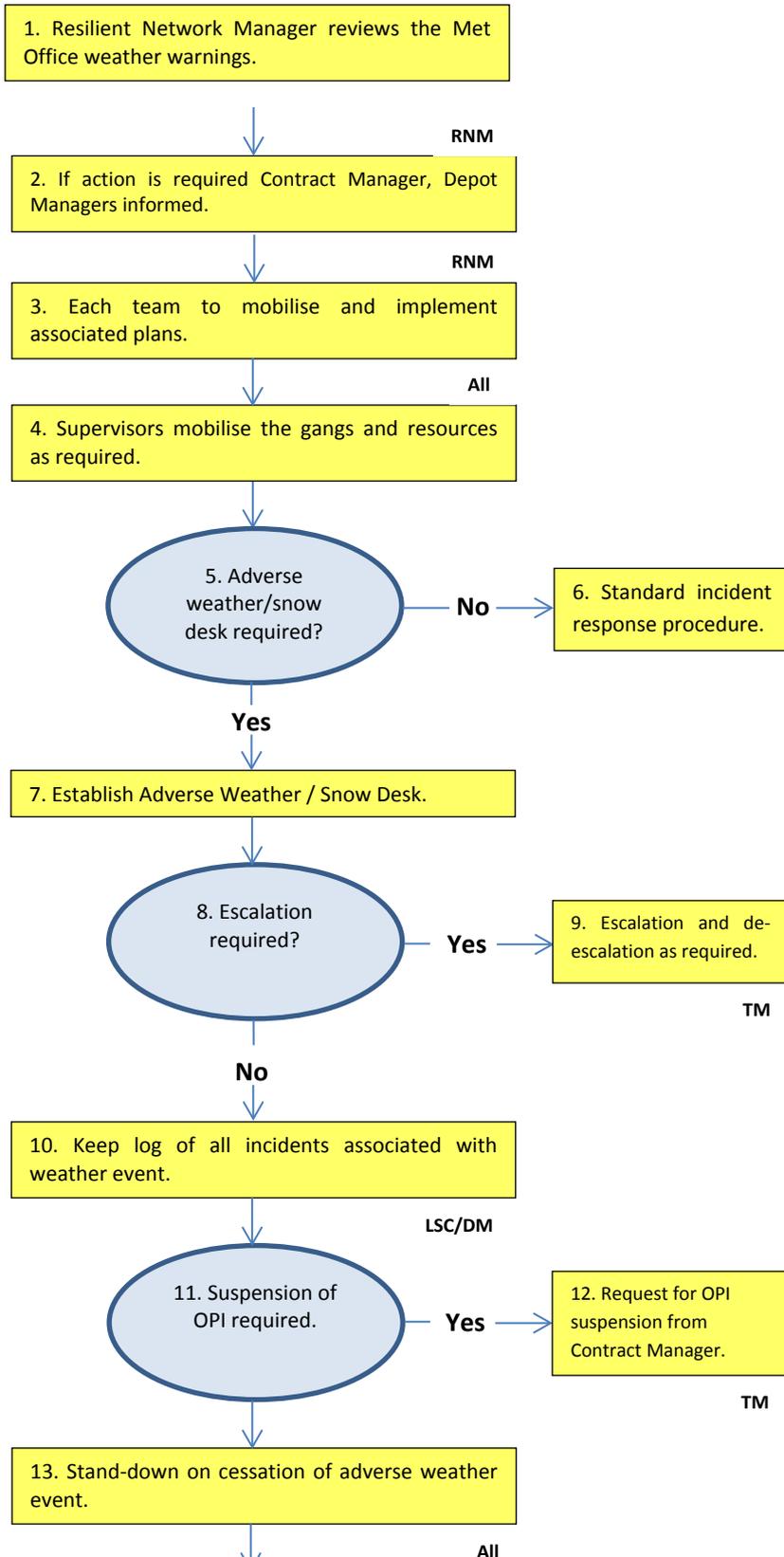
Responsibilities	
RNM	Resilient Network Manager
WSDO	Winter Service Duty Officer
WSVO	Winter Service Verification Officer
Local Owner	
Senior Owner	
V3.0	July 2015

1.19.2 Appendix 2 - Adverse Weather Incident Response (CM02)

CM02	Local Process	Core Maintenance
	Adverse Weather Incident Response	

Process

Related processes and documents



Incident Response - CM04

Winter / Adverse Weather Plan

Emergency Plan

Green Claim Process

Responsibilities	
AWM	Adverse Weather Manager
CM	Contract Manager
DM	Depot Manager
Local Owner	
Senior Owner	

1.19.3 Appendix 3 – DfT Snow Code

www.direct.gov.uk/en/NI1/Newsroom/DG_191868

Clearing Snow and Ice from Pavements Yourself

There's no law stopping you from clearing snow and ice on the pavement outside your home or from public spaces. It's unlikely you'll be sued or held legally responsible for any injuries on the path if you have cleared it carefully. Follow the snow code when clearing snow and ice safely.

The snow code – tips on clearing snow and ice from pavements or public spaces.

Prevent slips – pay extra attention to clear snow and ice from steps and steep pathways, you might need to use more salt on these areas.

If you clear snow and ice yourself, be careful - don't make the pathways more dangerous by causing them to refreeze. But don't be put off clearing paths because you're afraid someone will get injured.

Remember, people walking on snow and ice have responsibility to be careful themselves. Follow the advice below to make sure you clear the pathway safely and effectively.

Clear the snow or ice early in the day

It's easier to move fresh, loose snow rather than hard snow that has packed together from people walking on it. So if possible, start removing the snow and ice in the morning. If you remove the top layer of snow in the morning, any sunshine during the day will help melt any ice beneath. You can then cover the path with salt before nightfall to stop it refreezing overnight.

Use salt or sand - not water

If you use water to melt the snow, it may refreeze and turn to black ice. Black ice increases the risk of injuries as it is invisible and very slippery. You can prevent black ice by spreading some salt on the area you have cleared. You can use ordinary table or dishwasher salt - a tablespoon for each square metre you clear should work. Don't use the salt found in salting bins - this will be needed to keep the roads clear.

Be careful not to spread salt on plants or grass as it may cause them damage. If you don't have enough salt, you can also use sand or ash. These won't stop the path icing over as well as salt, but will provide good grip under foot.

Take care where you move the snow

When you're shovelling snow, take care where you put it so it doesn't block people's paths or drains. Make sure you make a path down the middle of the area to be cleared first, so you have a clear surface to walk on. Then shovel the snow from the centre of the path to the sides.

Offer to clear your neighbours' paths

If your neighbour will have difficulty getting in and out of their home, offer to clear snow and ice around their property as well. Check that any elderly or disabled neighbours are alright in the cold weather. If you're worried about them, contact your local council.