

HERTFORDSHIRE COUNTY COUNCIL

**ENVIRONMENT
SCRUTINY COMMITTEE**

TUESDAY 18 MARCH 2003 AT 10.30AM

Agenda Item No.

5

REVIEW OF WINTER MAINTENANCE – SALTING THE HIGHWAYS

Report of the Director of Environment

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Executive Member: Iris Tarry

1. Purpose of Report

This report has been requested by the Chairman to enable to committee to review the appropriateness or otherwise of the winter maintenance decisions taken during the adverse weather conditions in the period 29 – 31 January 2003.

2. Summary

2.1 The report provides details of the County Council's current winter maintenance policy. Against the policy background, the report sets out the information available and the action taken during the period 29 – 31 January 2003.

2.2 The basis for individual decisions is provided together with a description of the circumstances leading to the disruption experienced on the afternoon/evening of 30 January.

3. Conclusions

3.1 The report concludes that the decisions taken with respect to the County winter maintenance response were appropriate in light of the information available.

3.2 The Scrutiny Committee is invited to consider the information provided in this report and take a view regarding the conclusions reached.

Further scrutiny could be undertaken by:

- Requesting a further report or details;
- Hearing evidence from relevant third parties;
- Visiting the winter maintenance operation whilst in action.

4. Background

- 4.1 In order to provide a safe and predictable travelling environment the County Council provides a winter maintenance service based on National “Code of Practice for Maintenance Management – Delivering Best Value in Highway Maintenance” standards across a published pre-determined prioritised section of the total highway network. Legally, the County Council, in fulfilling its role as Highway Authority, does not have a duty to precautionary salt the highway.
- 4.2 All motorways and trunk roads are currently the responsibility of the Highways Agency. Consequently the County Council has no input into decisions affecting the winter maintenance service provided on this part of the network which passes through Hertfordshire.
- 4.3 A recent announcement by the Minister of Transport of his intention to make precautionary salting a duty at some time in the future is unlikely to materially change the way in which the service is delivered.

5. Winter Maintenance Policy

- 5.1 During the winter season October to April inclusive the County Council treats 42% of the road network, i.e. 2,500km or 1,553 miles. The selection of routes to be treated follows a priority criteria as set out in Para 5.2 of this report. The routes are arranged to include all major routes, bus routes and at least one link into rural villages. In total 58 individual routes are covered. In this way most people will live on or very close to a treated route.
- 5.2 The highway network is divided into four priorities. Only priority 1 and 2 roads are subject to precautionary salting.

Priority 1

- Primary roads

Priority 2

- Main Distributor Roads
- Secondary Distributor Roads
- Roads serving industrial and shopping centres
- Scheduled bus routes
- One road into each village
- Urban cycleways

Priority 3

- Other roads with steep gradients in urban/residential areas
- Rural roads with poor drainage or where running or standing water is a hazard

Priority 4

- The remainder of the road network

- 5.3 Targets for completion of precautionary saltings are defined as:
- Maximum response time (from time of decision to start of salt journey) – 1 Hour
 - Maximum treatment time (from start of salt journey to end of salt spreading) - 2½ Hours

5.4 The extensive footway network is not subject to precautionary salting due to practical considerations. In times of heavy or prolonged snowfall as soon as practical, arrangements are made to hand clear well used footways particularly in town centres, entrances to public transport interchanges including stations and other significant frequently accessed buildings.

6. Basis for Decision Making

6.1 County Council Duty Officers take responsibility for the decision on whether or not to salt. Based on their decision the contractor is instructed to take certain specified actions. The duty officer is on call 24 hours a day during their duty rota.

6.2 The primary County Council information used for that decision is the weather forecast. Hertfordshire have a contracted weather forecaster (currently provided by Press Association) who provides specific winter road weather forecasts for the county.

6.3 The forecaster uses current and historical information from eight roadside weather stations installed by the County Council which show air, road surface and ground temperatures, wind speed, dew point, and concentration of salt on the road. The decision is always made on the worst of these weather stations.

6.4 The coming night's weather forecast is usually received at 1.00 p.m., along with a 2 – 5 day preliminary forecast. The duty officer at that time uses available information to decide whether further decisions will be required and whether to put the salting contractor on 'standby'. Updated forecasts are received at 9.00 p.m. and 2.00 a.m. if necessary, and the duty officer can speak to the forecaster at any time 24 hours a day.

6.5 The duty officers have direct access to information at each of these roadside weather stations 24 hours a day via a laptop computer and a telephone line, as well as from the weather forecaster.

6.6 On the basis of the forecasts received and from examination of the roadside weather stations, the information available at key decision points were indicating the following pattern of events:

- On the evening of 29 January snow was forecast sometime in the ensuing 24 hours. A check on the County's carriageway salt monitoring stations prior to, and immediately after, the morning rush on 30 January showed significant salinity levels. At this stage our weather forecasters were still predicting light snow for Hertfordshire.

Light flurries during the morning caused little or no problem.

- At lunch time the forecast was revised to indicate the possibility of heavier concentrations of snow in the evening. Although monitors still showed high salt concentrations a further top-up was called in time for the evening rush-hour.
- In the event heavy precipitation occurred mid-afternoon in a very short time span. This deposited 150 – 210 mm accompanied by exceptionally low (for snow) temperatures. Far in excess of the volumes predicted.

6.7 Extracts from the relevant weather forecasts are included at Appendix A for information.

7. Actions Taken 29 – 31 January 2003

7.1 40g/m² of salt was spread on Hertfordshire's Priority 1 and 2 (precautionary) salting network during the night of 29 and 30 January in preparation for predicted snowfall on Thursday 30 January.

7.2 In addition to the existing salt already on the road, a further 20g/m² spread of salt was ordered at 13.00 hrs on Thursday, 30 January.

7.3 Under normal circumstance an instruction to salt at 13.30 hrs would mean Hertfordshire's precautionary salting road network would be fully treated by 17.00 hrs, before rush-hour.

7.4 The lunchtime decision also proposed a second salting action for 19.00 hrs, after rush-hour, with snowploughs fitted to vehicles.

7.5 Conditions affecting all Motorway and Trunk roads passing through or adjacent to Hertfordshire resulted in total gridlock by mid-afternoon over a large area of South East England Highways Agency (HA) managed network. This caused abnormal traffic to be diverted onto Hertfordshire's already busy roads causing gridlock on significant elements of the County network.

7.6 By mid-afternoon (earlier than predicated) heavy snow was falling over much of Mid, North and East Hertfordshire causing rapid accumulation. This prompted large numbers of the public to leave work early joining the school run traffic.

7.7 In addition to the gridlock preventing the mixing of salt and snow, the vehicles were also trapped in traffic and unable to spread further salt.

7.8 Local farmers, who have access to Hertfordshire Highways snow ploughs and who have a contract to assist during snow clearing operations, were instructed to assist.

7.9 The planned additional 20g/m² spread of salt with snowploughs fitted at 19.00 hrs could not occur as planned.

- 7.10 In order to assist the HA in its attempts to re-open the motorway network Hertfordshire Highways depot supplied salt until such time that their vehicles could re-establish contact with their own depots.
- 7.11 Throughout the night of 30 – 31 salt spreading vehicles and farmers carried out salting and snow clearing as best they could amongst the unusual traffic volumes and abandoned vehicles.
- 7.12 Salting action was undertaken on a local need basis using the available Hertfordshire Highways vehicles and the farmers. Feedback from the salting crews on road conditions enabled the Duty Officer and salting contractor to co-ordinate actions throughout the night.
- 7.13 By the start of the normal working day on Friday 31 January additional resources were being used to treat Priority 3 (post salting) roads and high usage footways.
- 7.14 Local control of salting operations, with the added resources, continued throughout Friday, 31 January, with the primary resources working on the Priority 1 and 2 (precautionary salting) road network, and additional resources working on the Priority 3 (post salting) roads and high priority footways. In total around 250 staff were mobilised.
- 7.15 By mid-day on Friday, 31 January, around 95% of the Priority 1 and 2 routes were clear, with only areas where large drifts had occurred still causing some problems.
- 7.16 Precautionary salting of the main salting routes, and clearance of local snow and ice continued around the clock during Saturday and Sunday.
- 7.17 During the three days of the operation approximately 5,000T of salt were spread on the network. Salting lorries travelled the equivalent of 60,000kms.

8. Commentary

- 8.1 Despite pre-planning and preparation for adverse weather conditions, the events and circumstances that actually occur are unpredictable.
- 8.2 Certain combinations of heavy snow and freezing temperatures as occurred on the afternoon of 30 January will result in snow accumulating on top of pre-salted surfaces. In normal circumstances the mixing action of traffic movement and the removal of snow by maintenance vehicles fitted with snowploughs is sufficient to ensure mobility.
- 8.3 The coincidental failure of all motorways affecting Hertfordshire resulted in vehicles diverting onto the County network at a time that the public decided to leave work early and the snow was at its heaviest. The County network rapidly became grid-locked.

- 8.4 It is worth reflecting that the highway system in Hertfordshire is subject to a fragile balance. Traffic volumes are such that an incident on any one of the four motorways affecting our County can bring routes through the County to a standstill irrespective of weather conditions.
- 8.5 As an example, Members may recall an unfortunate accident involving an overturned articulated lorry closing the M1 at Redbourn earlier in the same week. The traffic chaos caused on County roads around the St Albans area resulted in gridlock for several hours.

9. Financial Implications

- 9.1 The exact cost of a winter maintenance operation is always difficult to predict. On average, the County Council would expect to respond to 40 precautionary salting calls. Each normal precautionary salt costs in the region of £35k. Consequently, £1.5m is allowed in the Environment budget to cover Winter Maintenance including costs associated with maintaining equipment and support systems.
- 9.2 In times of snowfall, the Department reacts as appropriate without restricting operations due to budgetary constraints. The Department then seeks to balance the costs of the snow clearing operations against delays in work programmes.

10. Conclusions

- 10.1 The report concludes that the decisions taken with respect to the County winter maintenance response were appropriate in light of the information available.
- 10.2 The Scrutiny Committee is invited to consider the information provided in this report and take a view regarding the conclusions reached.

Further scrutiny could be undertaken by:

- Requesting a further report or details;
- Hearing evidence from relevant third parties;
- Visiting the winter maintenance operation whilst in action.

Background papers used by the author when preparing this report

Hertfordshire Highways Winter Maintenance Plan
Code of Practice for Maintenance Management – Delivering Best Value in Highway Maintenance
Weather Reports issued by Press Association

Appendix A

Contents

1. Long-term forecast issued Sunday 26.1.2003
2. Long-term forecast issued Wednesday 29.1.2003
3. Relevant 24 hour forecast issued Wednesday 29.1.2003
4. Morning summary and preliminary forecast for Thursday 30.1.2003.
Issued Thursday 30.1.2003 at 7.38am.
5. Relevant 24 hour forecast issued Thursday 30.1.2003 at 12.53pm
6. Relevant Evening Update issued Thursday 30.1.2002 at 17.53pm

SUMMARY FOR 12:00 27/1/03 TO 12:00 31/1/03
 2-5 SUMMARY FORECAST FOR AMEY LAFARGE (HERTFORDSHIRE)

GENERAL SYNOPSIS

Monday will be mostly dry with bright or sunny spells. Becoming windy overnight and increasingly cloudy with a few showers but Road Surface Temperatures (RSTs) should stay above zero. Tuesday will be windy and cold with blustery showers and RSTs may just touch zero. Wednesday will become increasingly cloudy with a band of rain or sleet moving through overnight and strong north-westerly winds may allow RSTs to fall below zero. Thursday will be very cold with the rain clearing leaving a mostly dry night with RSTs well below zero.

Day	Readiness	Min Air	Min Road	Hoar Frost	Ice	Snow	Drift	Rain	Fog	Conf
Mon/ Tue	A	PS3	PS2	N	N	N	N	N	N	M
Tue/ Wed	A	PS1	ZERO	N	N	N	N	Y	N	M
Wed/ Thu	R	ZERO	MS1	N	Y	N	N	Y	N	L
Thu/ Fri	R	MS3	MS4	N	Y	N	N	N	N	L

FORECASTER: Nicola Robertson
 PRODUCED AT: 10:38 26 January 2003
 TEL: 0845 603 0563 FAX: 020 7963 7579
 PA WEATHERCENTRE LTD.

SUMMARY FOR 12:00 30/1/03 TO 12:00 3/2/03
 2-5 SUMMARY FORECAST FOR AMEY LAFARGE (HERTFORDSHIRE)

GENERAL SYNOPSIS

Strong northerly winds will bring along some snow showers during Thursday but these will die away on Thursday night. Friday should be dry, but rain will move in from the west on Friday night, possibly preceded by snow. During the weekend, less cold westerly winds will bring along the occasional shower. RSTs will be below zero on Thursday night and Friday night with icy patches, but they should stay above zero on Saturday night and Sunday night.

Day	Readiness	Min Air	Min Road	Hoar Frost	Ice	Snow	Drift	Rain	Fog	Conf
Thu/ Fri	R	MS3	MS3	Y	Y	Y	N	N	N	H
Fri/ Sat	R	MS2	MS1	Y	Y	Y	N	Y	N	M
Sat/ Sun	A	PS2	PS2	N	N	N	N	Y	N	M
Sun/ Mon	A	PS2	PS2	N	N	N	N	Y	N	M

FORECASTER: Neil Talboys
 PRODUCED AT: 09:41 29 January 2003
 TEL: 0845 603 0563 FAX: 020 7963 7579
 PA WEATHERCENTRE LTD.

SUMMARY FOR 12:00 29/1/03 TO 12:00 30/1/03
 24 HOUR SUMMARY FORECAST FOR AMEY LAFARGE
 (HERTFORDSHIRE)

HEADLINE: RSTS DROPPING BELOW ZERO WITH SNOW AND ICE
 READINESS COLOUR: RED
 CONFIDENCE: LOW
 THERMAL MAP TYPE: INTERMEDIATE

HAZARDOUS	YES/NO	TIMING	CONFIDENCE
HOAR FROST	N	N/A	L
ICE	Y	21-1000	H
SNOW	N	02-1200	H
SNOW LEVEL (M)	FALLING TO SEA LEVEL		
DRIFTING	N	N/A	L
HEAVY RAIN	N	N/A	H
FOG	N	N/A	H
OTHER	N	N/A	H

GENERAL SYNOPSIS

Blustery northwest winds will bring a few rain or sleet showers this afternoon, but they will be moving away and the evening should be dry. During the night, snow is likely to move in from the west and then clear away to the south in the morning with snow showers to follow during the day. RSTs will fall below zero with icy patches this evening and then widespread ice after midnight and into the morning.

LOW CONFIDENCE ALERT

The snow forecast for tonight may well remain just to the west, and consequently confidence is low with regards to any amounts. However, confidence is high with regards to the snow showers moving in during Thursday.

MINIMUM TEMPERATURES AND TIME OF OCCURRENCE

	MIN TEMP	TIMING
AIR	MS2.0C	06-0800
URBAN ROAD	MS1.0C	06-0800
RURAL ROAD	MS2.0C	06-0800
BRIDGE DECK	MS2.5C	06-0800

FORECASTER: Neil Talboys
 PRODUCED AT: 11:50 29 January 2003
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 PA WEATHERCENTRE LTD.

SUMMARY FOR 8:00 29/1/03 TO 8:00 30/1/03
MORNING SUMMARY FOR AMEY LAFARGE (HERTFORDSHIRE)

Wednesday afternoon was largely dry. Overnight, it remained mostly dry until later when some snow spread into the west of the county. RSTs fell below zero in places.

MIN ROAD SURFACE TEMPERATURE : MS1C
TIME OF OCCURENCE : 04:00
LOCATION : Hay Street

PRELIMINARY FORECAST FOR 0800 Thu 30/01/03 TO 0800 Fri 31/01/03

HEADLINE: RSTs BELOW ZERO...RISK OF SNOW SHOWERS
READINESS COLOUR: RED
HAZARDS: SNOW, ICE, STRONG WINDS
CONFIDENCE: HIGH
MIN AIR TEMP: MS3.0C
MIN ROAD TEMP: MS4.0C

GENERAL SYNOPSIS

Thursday will start cloudy with outbreaks of snow which could give a few cm in places. This will quickly clear leaving sunny spells but a few snow showers are possible. Winds will pick up from the north becoming fairly strong and gusty. Overnight, RSTs will fall below zero. A few snow showers are also possible although many places should become dry.

Sensor failure/problems: none

FORECASTER: Gareth Harvey

PRODUCED AT: 07:38 30 January 2003
TEL: 0845 603 0563 FAX: 020 7963 7579
PA WEATHERCENTRE LTD.

SUMMARY FOR 12:00 30/1/03 TO 12:00 31/1/03
 24 HOUR SUMMARY FORECAST FOR AMEY LAFARGE
 (HERTFORDSHIRE)

EVENING UPDATE: SNOW, SOME OF IT HEAVY, WILL AFFECT THE COUNTY THIS EVENING, BUT IT WILL MOVE AWAY TO THE SOUTH LEAVING JUST THE ODD LIGHT SNOW SHOWER BY MIDNIGHT. RSTS WILL DROP WELL BELOW ZERO WITH WIDESPREAD ICE.

HEADLINE: RSTS BELOW ZERO WITH SNOW SHOWERS OR A SPELL OF SNOW
 READINESS COLOUR: RED
 CONFIDENCE: HIGH
 THERMAL MAP TYPE: INTERMEDIATE

HAZARDOUS	YES/NO	TIMING	CONFIDENCE
HOAR FROST	N	N/A	L
ICE	Y	15-1000	H
SNOW	Y	15-0300	H
SNOW LEVEL (M)	SEA LEVEL		
DRIFTING	N	N/A	L
HEAVY RAIN	N	N/A	H
FOG	N	N/A	H
OTHER	N	N/A	H

GENERAL SYNOPSIS

 Blustery northerly winds will bring snow showers or even a spell of snow during the rest of the day. Overnight, any snow showers should disappear with clearing skies. RSTs will drop to zero in the snow and will fall well below after dark with widespread ice.

LOW CONFIDENCE ALERT

 N/A

MINIMUM TEMPERATURES AND TIME OF OCCURRENCE

	MIN TEMP	TIMING
AIR	MS3.5C	06-0800
URBAN ROAD	MS2.0C	06-0800
RURAL ROAD	MS3.0C	06-0800
BRIDGE DECK	MS3.5C	06-0800

FORECASTER: Neil Talboys
 PRODUCED AT: 17:52 30 January 2003
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