

# Bradford Spread Rates

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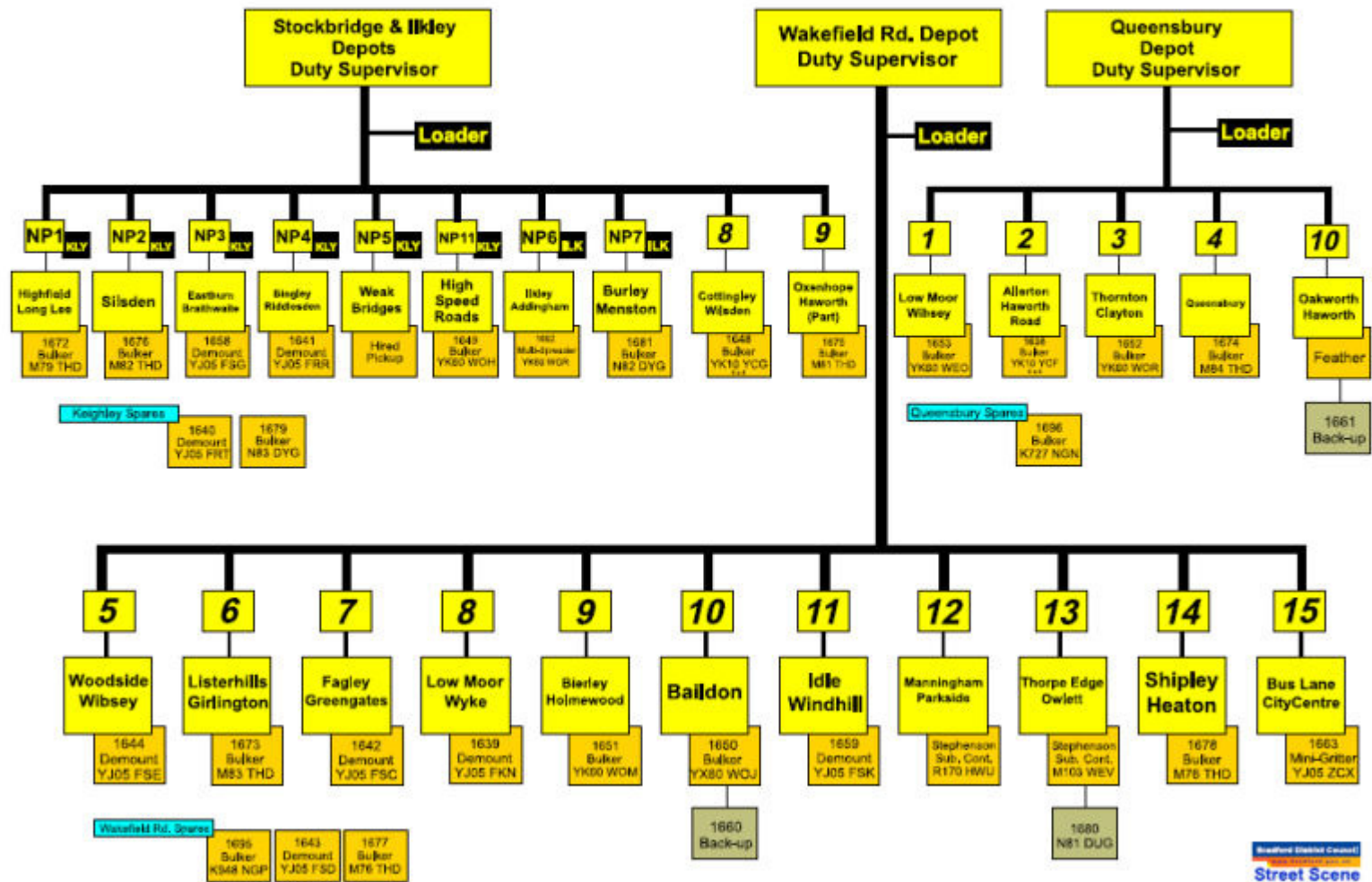
Highway Maintenance

Winter 2010/ 2011

# Winter Maintenance 2010/2011

- Stock of Rock salt increased to 25,000 Ton
- 5 new Gritters/Ploughs arrived October
- December 2010 worst winter in over 100 years
- Coldest December ever
- Minus 8 in the morning
- Grid Lock for 4 hours on 1<sup>st</sup> December 2010
- Gritting Operation again first class
- New Gritters made life easier

# Winter Maintenance Operation



- Quarmby interim report published July 2010 and final report in October 2010
- Bradford concentrated on several issues from report
- Improve communication via Bradnet and twitter to the public
- Meetings with Bus Companies
- Presentations with Transport Groups
- Improve precautionary footway gritting
- Improve stock management of Salt
- Good report but great deal of advice from Cambridgeshire

- During summer 2010
- Attended various seminars with DFT, Salt Suppliers and Cold Comfort
- Test of spreading rates undertaken under cover
- Salt was dry under tests

- Dft Report issued December re salt Spread Rates
- Winter Service Guidance for Local Authority Practitioners
- Very good relevant information
- Reduce Salt Usage and improve resilience
- Precautionary Treatment is essential to provide a de-bonding layer so that
- Snow is more readily removed by ploughing
- Compacted snow and ice are more easily dispersed by traffic

# Precautionary Treatment – Decision Matrix

Table H4 – Precautionary Treatment Decision Matrix				
Road Surface Temperature	Precipitation	Predicted Road Conditions		
		Wet/Damp	Wet Patches	Dry
May fall below 1°C	<u>No</u> rain <u>No</u> hoar frost <u>No</u> fog	Salt before Frost	Salt before frost (see note a)	No action likely, monitor weather (see note a)
Expected to fall below 1°C	<u>No</u> rain <u>No</u> hoar frost <u>No</u> fog			
	<u>Expected</u> hoar frost <u>Expected</u> fog	Salt before frost (see note b)		
	<u>Expected</u> rain <u>BEFORE</u> freezing	Salt after rain stops (see note c)		
	<u>Expected</u> rain <u>DURING</u> freezing	Salt before frost, as required during rain and after rain stops (see note d)		
	<u>Possible</u> rain <u>Possible</u> hoar frost <u>Possible</u> fog	Salt before frost		Monitor weather conditions

- Decision making process in Bradford can be difficult
- Archaic system of Client/Contractor
- Weather warnings qualified by altitudes
- Any hint of moisture being present, a pessimistic view of the forecast must be taken



- |                   |                    |
|-------------------|--------------------|
| 1 Haworth         | 14 Bingley         |
| 2 Oxenhope        | 15 Keighley Centre |
| 3 Denholme        | 16 Steeton         |
| 4 Queensbury      | 17 Silsden         |
| 5 Clayton         | 18 Silsden Moor    |
| 6 Halifax Road    | 19 Addingham       |
| 7 Odsal           | 20 Ilkley          |
| 8 Bfd City Centre | 21 Burley          |
| 9 Undercliffe     | 22 Menston         |
| 10 Greengates     | 23 Ilkley Moor     |
| 11 Thackley       |                    |
| 12 Shipley        |                    |
| 13 Lower Baildon  |                    |

## Bradford District Elevation Profile



- DFT Report - detailed spreading capability
- Bradford has Modest capability
- 4,000 Ton Safecote (6mm Thawrox Plus) under sheeting
- 19,000 Ton 10mm Rock salt (Thawrox 10 Bulk) outside
- Spread rates of salt for precautionary treatment
- Ranged from 8 gms/2 to 27gms/2

**Table H6 - Spread Rates For Modest Spreading Capability  
(De-icer Spread Rates in g/m<sup>2</sup>)**

<b>Frost or forecast frost Road Surface Temperature (RST) and Road Surface Wetness</b>	<b>Dry salting</b>	<b>Pre-wetted salting (see Note 1)</b>	<b>Treated salting (see Note 2)</b>
RST at or above -2°C and dry or damp road conditions	8	8 (de-icer) 6 (salt)	7
RST at or above -2°C and wet road conditions	11	9 (de-icer) 7 (salt)	8
RST below -2°C and above -5°C and dry or damp road conditions	15	13 (de-icer) 10 (salt)	10
RST below -2°C and above -5°C and wet road conditions	27	25 (de-icer) 19 (salt)	19
RST at or below -5°C and above -10°C and dry or damp road conditions	27	25 (de-icer) 19 (salt)	19
RST at or below -5°C and above -10°C and wet road conditions	2 x 25	2 x 24 (de-icer) 2 x 18 (salt)	36 or 2 x 18

Note 1: Spread rates for pre-wetted salting are the combined weight of dry salt and brine combined in proportion 70:30 by weight with brine of concentration 20 to 23%.

Note 2: Weight of salt and additive (approx 3% by weight).

# Gritting Action 2010/2011

<u>Gritting Action 2010/2011</u>		Full Grit = 27 Routes			High Level = 13 Routes	
Types of Action	Nov	Dec	Jan	Feb	Mar	Apr
Night Patrol	34	59	30	15	0	0
High Level	0	0	0	1	0	0
High Speed Routes	28	36	20	10	0	0
Full Grit: 05:00hrs to 07:30hrs	9	13	1	2	0	0
Full Grit: 18:00hrs to 21:30hrs	15	13	16	7	0	0
Emergency Action	4	4	3	1	0	0
City Centre Precautionary	10	15	3	1	0	0
Kubotas	7	15	2	1	0	0
Footway Clearance	4	15	3	0	0	0
Totals:	111	170	78	38	0	0

# Spread rates used in 2010/2011

- 76 Full Grits
- 12 Emergency Grits
- Spread at 15 gms/m<sup>2</sup> , 20gms/m<sup>2</sup> or 25gms/m<sup>2</sup>
- Tonnage used on the network at 15gms/m<sup>2</sup> = 110 ton
- Tonnage used @ 20gms/m<sup>2</sup> = 165 Ton
- Night patrol
- Tonnage used @ 25gms/m<sup>2</sup> = 200 Ton

# Precautionary Grit- Snow Conditions

**Table H7 - Precautionary Treatments Before Snow Or Freezing Rain**

Weather conditions	Light or medium traffic (Category 3)	Heavy traffic (Categories 1 and 2)
Light snow forecast	Spread: <ul style="list-style-type: none"> <li>• 40g/m<sup>2</sup> of dry salt, or</li> <li>• 40g/m<sup>2</sup> of pre-wetted salt, or</li> <li>• 30g/m<sup>2</sup> of treated salt</li> </ul>	Spread: <ul style="list-style-type: none"> <li>• 20g/m<sup>2</sup> of dry salt, or</li> <li>• 20g/m<sup>2</sup> of pre-wetted salt, or</li> <li>• 15g/m<sup>2</sup> of treated salt</li> </ul>
Moderate/Heavy snow forecast	Spread: <ul style="list-style-type: none"> <li>• 20-40g/m<sup>2</sup> of dry salt</li> <li>• 20-40 g/m<sup>2</sup> of pre-wetted salt</li> <li>• 15-30 g/m<sup>2</sup> of treated salt (see Note 1)</li> </ul>	Spread: <ul style="list-style-type: none"> <li>• 40g/m<sup>2</sup> of dry salt, or</li> <li>• 40g/m<sup>2</sup> of pre-wetted salt, or</li> <li>• 30g/m<sup>2</sup> of treated salt</li> </ul>
Freezing rain forecast	<ul style="list-style-type: none"> <li>• 40 or 2x20g/m<sup>2</sup> of dry salt, or</li> <li>• 40 or 2x20g/m<sup>2</sup> of pre-wetted salt, or</li> <li>• 30 or 2x15g/m<sup>2</sup> of treated salt</li> </ul>	

Note 1: The lower rates (e.g. 20g/m<sup>2</sup> for dry salt) can be used if the snow is likely to settle quickly, e.g. when the road surface temperature is below zero, the road surface is not wet and the snow is not wet, and/or there is little traffic after snowfall begins and settles.

# Actual Spread Rates Used

- 56 grits @ 15gms/m<sup>2</sup>
- 15 grits @ 20gms/m<sup>2</sup>
- 12 grits @ 25gms/m<sup>2</sup>
- 5 grits @ 10gms/m<sup>2</sup>
- Night Patrol on average went at 10gms/m<sup>2</sup>

# What did we Learn from 2010/2011

- Dry and Cold weather = 15gms/m<sup>2</sup>
- Snow/damp/moisture/ Ice = 20 gms to 25 gms/m<sup>2</sup>
- Safecote only used in Dry and Cold conditions
- Any hint of moisture 10mm Rock salt used.
- Ploughing as the report says is crucial
- The worst week in the winter was w/c 5<sup>th</sup> December - Tonnage used 3,384 Ton
- 2 depots in operation at highest altitude stocked with 10mm only



















# Footway Kubota







