

HIGHWAY MAINTENANCE WINTER SERVICE OPERATIONAL PLAN

A GUIDE TO HIGHWAY POLICIES AND PROCEDURES



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WINTER SERVICE OPERATIONAL PLAN

1. WINTER RISK PERIOD

The Winter Risk Period runs from the 1st October until 31st March with a low risk period from 1st October until mid November and mid March to the end of April with monitoring of weather information and data throughout the whole period.

1.1 Bradford MDC operates one of the largest Winter Maintenance operations in the UK for a Metropolitan District Council. On a normal gritting run there are 23 routes driven over a total of approximately 626 miles, which accounts for 50% of the Highway Network.

All the drivers are in-house, the largest percentages of drivers are from the Highway Maintenance Section and also several drivers are from the Parks and Cleansing Division and supported by two contractors. Teams operate from four depots; Wakefield Road, Queensbury, Keighley and Ilkley.

Winter Maintenance is an expensive operation and the Director of Regeneration and Culture will continue to investigate new methods /systems that may offer opportunities to reduce costs. More details are shown in the attached gritting tree. **SEE APPENDIX 1**

1.2 The geography and topography of the district makes the winter maintenance operation challenging.

Bradford is situated in a very hilly and highly populated location.

The range of heights above sea level goes from over 1100 feet above sea level at Queensbury traffic Lights to 325 feet at City Hall. Odsal Top lies at 696 ft, Buttershaw 867 ft, Woodside 760 ft, Wyke 600 ft, Clayton 700 ft,

Allerton 750 ft, Oakworth 800 ft, Denholme 984 ft, Haworth 750 ft, Keighley 271 ft Cringles at Silsden 760 ft,

Shipley is down at 250 ft with Baildon up to 525 ft and Baildon Moor 800ft, Ilkley Town Centre 311 ft and Ilkley Moor 820 ft.

Back in Bradford, Dudley Hill 650 ft, Eccleshill 690 ft, Thornbury 560 ft.
SEE APPENDIX 2

The Pennine side of Bradford which includes Oxenhope, Denholme and back to the Queensbury area are the most problematic in severe weather.

1.3 In the wake of the severe winters, between 2009 and 2010 the Government commissioned a report named the Quarmby Review. The key focus of the recommendation from the review was to develop:-

- Greater resilience in Salt stocks.
In periods of extreme weather the relevant authorities (LHAs) are not constrained in its use of Rock Salt.
- Establishment of data Collection Systems.
Improve co-ordination and dissemination of research and specifically a review of technical standard and guidance, which would lead to more effective and efficient use of salt.
- LHAs to review Winter Service Plan.
Ensure links with wider resilience planning; consultation on improving information about these plans.
- Improve communications during periods of bad weather.
- Work with other Councils and the community to improve responses to snow events

This Winter Service Plan will show where all the areas for continuous improvement have been made and seek approval of this council.

1.3 HISTORY OF GRITTING – LAST 5 YEARS

YEAR	NO. OF GRITTING RUNS	TOTAL OF SALT USED
2009- 2010	106	21,000 TONNES
2010-2011	85	13,300 TONNES
2011-2012	73	12,500 TONNES
2012-2013	117	22,000 TONNES
2013-2014	45	6,300 TONNES
2014-2015	68	14,800 TONNES
2015-2016	36	7,700 TONNES

1.4 The Law

The Highway Act 1980 Sections 41 and 58 states that the Highway Authorities have a statutory duty to maintain the highway and must at all times take reasonable care to ensure that the Highway is not dangerous. Section 150 of the Highways Act 1980 imposes a duty upon authorities to remove any obstruction on the highway resulting from “*accumulation of snow or from the falling down of banks on the side of the highway or from any other cause*” The railways and Transport Safety Act 2003 (section 111) has inserted an additional section (41(1)) to the Highways Act 1980 which places a duty on Highway Authorities in respect of winter conditions.

In particular, it states ***‘a Highway Authority is under a duty to ensure, so far as is reasonably practicable, that safe passage along a highway is not endangered by snow or ice’.***

Note that this is not an absolute duty given the qualification of ‘reasonable practicability’.

The actual level of what is considered reasonably practicable has not yet been fully tested in the higher courts although we have recently won a case in the County Court where the claimant blamed the presence of snow for the slip and subsequent injury.

Note also that the description ‘Highway’ applies to both carriageway and footways.

2. ROUTE PLANNING for CARRIAGEWAYS and FOOTWAYS

2.1 Carriageway Routes for Pre-Treatment

Priority 1- MAIN ROADS **SEE APPENDIX 3**

The salting network identified for precautionary treatment are designed either to prevent the formation of ice in frost conditions or prevent snow or freezing rain from bonding to the road surface.

This includes all classified roads (A B and C roads) heavily trafficked routes, bus routes, roads connecting isolated communities, Strategic residential / estate link roads, access to hospitals, schools, police, stations ambulance stations, fire stations and known trouble spots e.g. Steep gradients, tight bends, exposed areas and wet spots. (I.E. before road temperatures reach 0° centigrade freezing).

Under the priority 1 plan the gritting operation treats 26 routes over a total distance of 712 miles which is 62% of the Highway network. Each route accounts for approximately 30 miles and is completed within 2 hours 50 minutes depending on traffic flow.

Priority 2- SIDE ROADS **SEE APPENDIX 4**

These routes include minor estate roads, other bus and school routes that are of a varied width and not always capable of carrying two way traffic and are generally in built up residential areas with a high population. These roads are only treated once the operational managers are confident that the priority 1 network has been attended too.

Priority 3- RAPID RESPONSE / PLOUGHING ROUTES **SEE APPENDIX 5**

These routes are treated under a Rapid response plan / ploughing routes when there is a possibility of a severe weather forecast which includes the threat of sudden ice conditions or imminent snow fall. These routes are shorter than the priority 1 routes and should be treated within 1 hour of commencement.

All carriageways and footways have been assessed against objective criteria recommended in the Well-maintained Highways - Code of Practice for Maintenance to ensure, so far as is reasonably practicable, that safe passage along a highway is not endangered by snow or ice

Priority 4- NIGHT PATROL OR ICE PATROL FUNCTION **SEE APPENDIX 6**

From the start of the winter maintenance season the operation has 1 or 2 Gritters on standby everyday, available from 22:00 pm until 07:00am to patrol the network when the temperature and weather forecast is marginal.

They travel over the high ground of the network usually above 500 feet and will also treat prescribed wet spots where water has the potential to run off fields and freeze, causing ice patches on the carriageway. They also attend emergency water leaks where there is a risk of icy patches.

2.2 Footway Routes Including Footbridges and Other High Risk Pedestrian

Priority 1 – F **SEE APPENDIX 7**

Footway Gritting - consists of 7 dedicated routes covering the city centre in Bradford, town centres in Shipley, Baildon, Bingley, Keighley and Ilkley.

The footways treated in the city and town centre are pedestrian areas, busy urban shopping and business areas, transport interchanges, public buildings and outside St Lukes, BRI in Bradford and Airedale hospital at Keighley.

These footways are treated during periods of prolonged frost and ice or snow events.

SEE FOOTWAY DRAWINGS

Staff from the Parks and Landscapes section carries out footway treatment in the City/Town centres using a white marine salt.

They operate only over a 12 week period, usually from the start of December to the end of February. However, they will mobilise during periods of prolonged frost and snow events.

Priority 2 - F

These footways are of medium usage routes through local areas, used by the public to access local shopping areas, post offices, medical centres and school routes in busy residential areas and villages.

Priority 2 footway gritting routes will be gritted after all priority 1-F routes are completed and resources are available.

Hand gritting of all other priority areas will be carried out when resources become available.

2.3 Response and treatment times for carriageway treatments

The response time is the period between decisions being taken to commencement treatment and the vehicles leaving the winter service depots.

The response time for the treatment of carriageway routes is 1 hour.

The treatment time is the period between vehicles leaving the winter service depot and the completion of the treatment of all priority carriageway routes.

The individual treatment time for priority 1 routes is on average 2 hours 50 minutes.

Priority 2 Routes should be completed within 6 hours.

Priority 3 Routes are treated within approximately 1 hour and 30 minutes.

2.4 Response of treatment times for Footway Routes

The response time for Priority 1 Footway Gritting Route is 1 hour.
The treatment for Priority 1 Footway route is 2 hours per route.
Priority 2 Footway Gritting Routes will commence at the discretion of the Winter Operations Manager and only when the Priority 1-F routes are completed.
There are no specific targets for these routes.

2.5 Allocation of Plant, Vehicles, Equipment and Materials to Routes

The Priority 1 Network covering 26 routes are gritted by:

NO OF VEHICLES	TYPE OF VEHICLE
1	20 TONNE BULKER (FIXED GRITTER BODY WITH PLOUGH)
13	17 TONNE BULKERS WITH PLOUGH
10	17 TONNE WITH DEMOUNTABLE GRITTER BACKS AND PLOUGH ATTACHMENTS
2	TRACTOR / TRAILER GRITTERS WITH PLOUGH
9	7.5 TONNE MULTI SPREADER

All the above vehicles are fitted with G.P.S Tracking systems which include information relating to spread rates and spread patterns.

The fleet also has 8 No x 7.5 tonne Multi spreaders which are deployed on Priority 2 Routes in severe weather.

Priority 1 Footway Routes are gritted by 9 No x Kubota (small tractor) with spreaders and are owned by and operated by staff from the Parks and Landscape Section in The Environment & Sports Department.

Priority 4 networks are patrolled by 2 x 18 Tonne Bulklers from The Stockbridge Depot and Wakefield Road Depot.

2.6 Allocation of Plant, Vehicles, Equipment and materials during periods of Severe Weather

The Winter Service Operations Team will call in addition Plant Labour Vehicles from the Private Sector. The list is as follows:

NO. OF VEHICLES	TYPE OF VEHICLE/ DRIVERS
2	SNOW BLOWERS
12	TRACTORS WITH SNOW PLOUGHS
2	BOB CATS
10	JCBs
7	FOOTWAY KUBOTA / TRACTORS
5	BULK GRITTERS
23	GRITTER DRIVERS
41	OPERATIVES – HAND GRITTING – SNOW CLEARANCE

The above contractors are local to the District and will be called in to support the operation in severe weather.

2.7 Location and Maintenance of Grit Bins

Over 500 Grit Bins are placed out on the Highways network in Bradford.

Below is the list, broken down into the 5 constituency areas.

AREA	NUMBER OF GRIT BINS
Bradford West	46
Bradford South	80
Bradford East	90
Keighley	141
Shipley	161

The list was compiled back in early 2012 and some grit bins may have been removed or in some cases stolen.

A more detailed audit will take place before the winter season commences 2014/2015.

In the past the criteria for a grit bin to be placed in situ was quite brief i.e.

- The street must be at a minimum gradient of 1:10
- The street must not be on a gritting route
- Usually, only mean of access.

The Group Operations Manager has now drawn up a more detailed assessment form for the provision of a salt bin.

SEE APPENDIX 8

The replenishment of the grit bins are carried out before the end of October and on a regular basis, which is increased during periods of prolonged severe weather requests from the public.

The request service is available through the public web site or City Of Bradford MDC call centre.

Replenishment of grit bins will only take place when all Priority 1 and Priority 2 Routes have been treated.

Extra resources in prolonged severe weather will be called in from, The Street Cleansing Section to replenish the grit bins.

3 WEATHER PREDICTION and INFORMATION SEE APPENDIX 9

3.1 Road Weather Information Bureau Services

The Metrological Office and Viasala Weather Bureau provides weather information and forecasting to the authority on a daily basis during the winter risk period from the middle of October to mid April. The forecast is updated or confirmed on a regular basis during the 24 hour period.

The weather information is web based and password protected.

3.2 Road Weather Stations

Weather forecasting for the district is monitored from 2 weather situations located at Queensbury and Silsden which feeds Road surface temperatures to the Viasala Weather Bureau. Weather information for the Metrological Office is also gathered from these 2 Stations.

3.3 The Decision Making Process

The decision to carry out Winter Service Operations and the type of operation to be carried out e.g. pre-gritting of all routes or to run off and wet spot gritting is made by the Winter Service Officer along with the Winter Operations Manager on duty after consulting the 24-hour Road Weather Information supplied by Viasala and the Met Office and any additional information from the West Yorkshire Authorities.

See Decision Matrix Guide, Appendix 11

It should be noted that the Decision Matrix Guide is for guidance only. Decisions will be taken using the metrological forecasts along with knowledge and experience of the topography and known conditions experienced on the priority gritting routes.

3.4 Information to be provided

The information provided to make a decision on Winter Service Operations is provided by the Visalia Weather Bureau based on information gathered from the weather stations at Queensbury and Silsden.

Also:

24-Hour Met Office Forecast for Bradford, Kirklees and Calderdale.

2-5 Day Met Office Forecast for Bradford, Kirklees and Calderdale.

The Met Office Morning Summary for Bradford, Kirklees and Calderdale.

Road Temperature Dew Point and Road State Graph Queens Road Weather Station. Road Temperature Dew Point and Road State Graph.

3.5 Night Patrol Function and Ice Patrol Function

At the discretion of the Winter Service Officer, a Night Patrol function will be carried out by, an emergency Call out Officer working alongside the Winter Operations Manager to verify or amend the forecast temperatures.

3.6 Timing and Circulation of Information

The Weather Forecast is available at 11:30hrs daily on the Met Office Web Site.

A further update is issued by the Met Office at 18:00hrs

The decision on the Winter Service Operations to be carried out over the next 24 hours is made by 14:00 hrs (any amendments in the 18:00hrs update will be considered by the Winter Service officer)

The Winter Service Officer will then discuss the Weather Information and Winter Service Operations that are to be carried out with the Winter Operations Manager during the working week.

The Winter Operations Manager will be responsible for making decisions during the week 07:00am to 18:00pm in severe conditions on allocation of plant and resources.

4 ORGANISATIONAL ARRANGEMENTS and PERSONNEL

4.1 Employee Roles and Responsibilities

The Head of Technical Services holds overall responsibility for the Winter Maintenance Service.

The Winter Service Officer and Winter Operations Manager hold overall responsibility for decision-making.

The Winter Operations Manager holds responsibility for supervising operatives and effective utilisation of vehicles and plant during Winter Service Operations including decision-making during out of hours and weekends or when the Winter Service Officer is not available.

Gritter Drivers holds responsibility for ensuring that –

- The gritting vehicle is in good working order and all defects are reported.

- The gate settings are set to the pre-determined spread rate.

- The allocated gritting route is followed correctly.

Footway Gritter Drivers as above

4.2 Employee Duty Schedules, Rotas and Standby Arrangements

Winter Operations Officer/ Winter Operations Manager- These Officers will be on standby from Monday at 07:00hrs and will terminate the following Monday at 07:00hrs.

Gritter Drivers

The Gritting week will commence on Monday at 07:00hrs and will terminate the following Monday at 07:00hrs.

Footpath Gritter Drivers - As Above

5 STANDARD OPERATING PROCEDURES AND DECISION MAKING

5.1 Good communication between the Winter Service Officer and the Winter Operations Manager is crucial. Mobile telephones and Laptops are used by officers.

The decisions on the gritting operations for 24/7 from Mid- October to Mid- April will be made by the Winter Service Officer after consulting the weather information providers.

Once the decision from the weather forecast is made the Winter Service Officer will contact the Winter Operation Manager. Who will then instruct his depot supervisor, who is responsible for the gritters at the depot to take the necessary action.

The Depot Supervisors will contact the Gritter drivers on standby for deployment of the Gritters.

The Winter Operations Manager will be regularly updated as the operation proceeds and when the action is complete.

Constant liaising between the Winter Service Officer and the Winter Operations Manager will occur If the weather pattern changes, also if certain roads on the network. (In particular, High Ground) is causing concern.

5.2 During severe snow or Ice conditions the Emergency Management Team will coordinate and facilitate the Councils resources in liaison with partners (Emergency Services, Health Community etc) through a multi agency approach to the weather emergency to prioritise with the Operations Manager where resources are to be deployed.

The Emergency Planning Manager, Winter Service Officer and the Winter Operations Manager will meet daily if severe weather persists across the district.

5.3 Throughout any weather event the Winter Service Officer will interrogate Vaisala and Met Office Websites and contact Met Office call centres, to speak with the duty forecaster to make further decisions or amendments regularly for the gritting operations.

All information received electronically must be saved, any verbal information received during phone calls with a Met Office Forecaster must be logged in the Gritting Diary.

5.4 Dependant on the weather forecast, pre-gritting operations should commence early evening (usually commencing at 18:30hrs and be fully completed by 21:00hrs). An early pre-grit will commence at 05:00hrs and be completed by 08:00hrs.

All routes should be completed before road surface temperatures reach 0 Degrees Celsius.

Once the pre-grit operation is complete, the standby team of drivers and supervisors will stand-down. However, dependant on any forecast updates and weather conditions the Winter Service Officer will discuss with the Winter Operations Manager the need to keep 1 or 2 gritters on the network under (PRIORITY 4) Night & Ice Patrol function, to monitor any change in temperature and weather conditions.

Priority 2 action is determined by the Winter Operations Manager once the Priority 1 network is clear.

Priority 3 gritting action is again at the discretion of the Winter Service Officer and the Winter Operations Manager.

Priority 1 and 2 Footway treatment is at the discretion of the Winter Operations Manager who will liaise with the Parks and Landscape Officers on stand-by duty.

5.5 A DAILY RECORD SHEET MUST BE FILLED IN BY THE SUPERVISORS AT THE DEPOT FOR EVERY CALL OUT OCCASION. THIS INCLUDES NIGHT PATROL OR ICE PATROL OPERATIONS.

ANY INSTRUCTION GIVEN, OR CHANGES TO PLANNED ARRANGEMENTS MUST BE ACCURATELY RECORDED. **SEE APPENDIX 10**

5.6 It is the responsibility of the Winter Operations Manager with Supervisors (Assistant Managers) To ensure that there are sufficient vehicles and equipment that is maintained by Fleet Services available at any time.

5.7 The Operations team must ensure all Weather Forecasts, daily record sheet and the archiving of information for future reference i.e. any claims or litigation and complaints are kept at the Wakefield Road Depot, Bradford.

5.8 DRIVERS HOURS REGULATIONS POLICY

The Driver's Hours Regulations, which is a legal requirement, determines the total hours a driver can work during the day, the minimum length of break between shifts and the weekly rest periods.

The Bradford Winter Maintenance Operation for driver's hours are governed by the GB Domestic Rules.

GB Domestic Rules apply if:

The maximum permissible weight of your vehicle is over 3.5 Tonnes.

All Gritters are over this weight.

GOODS VEHICLES (GRITTERS)

Daily Driving limit

You must not drive for more than 10 hours in a day. The daily driving limit applies to time spent at the wheel actually driving on a public road. Off – road driving counts as duty time.

Duty Time

If you work as a driver for a company, duty time is any working time. If you're self-employed, duty time is only time you spend driving the vehicles or doing other work related to the vehicle or its load.

Daily duty Limit

You must not be on duty for more than 11 hours in any working day. The limit doesn't apply on any working day when you don't drive.

1. The minimum driver's rest period when driving under UK Domestic Rules is 30 minutes in duty time over 6 hours, 45 minutes between 6 hours and 9 hours and 60 minutes for over 9 hours with a maximum 11 hour duty period. Breaks are to be split evenly over the working day with the last period taken **before** the 10th hour. Breaks are not included in total duty time.
2. A schedule of work/ breaks in accordance with their specific or likely service operations
3. The hours, breaks and rest days of drivers who work overtime, provide emergency cover.
4. Call out provision and/or work outside the Authority must be recorded and accounted for.
5. For services which provide an emergency provision (e.g. gritting), to be considered an emergency event should be both "unforeseeable and unforeseen". Even if utilising emergency provision managers must provide sufficient breaks and rest between shifts to ensure safety.
6. Drivers are not to drive for more than 6 days in one continuous period.

In setting winter gritting policy regard has been taken of policy advice issued by Bradford Fleet Service Action Group.

Previous winter work records and demand have been reviewed in order to set a policy which provides resources to match demand in so far as that can be predicted.

In the event of weather events which are unusually severe or sustained it may be necessary to ask drivers to work additional hours or days. It is anticipated that where this falls on rest day that the drivers will work a further three hours and then have a sustained break before working a further three hours.

Therefore driver fatigue will be mitigated. Where this takes place managers will monitor the situation and provide compensatory rest at the first opportunity.

If there is a weather pattern or event that can not be reasonably be foreseen then managers may consider utilising the "emergency" provision to ensure public safety.

This policy has been created with the aim of ensuring driver and public safety while complying with the "adequate rest" provision contained in UK Domestic driving rules.

The Winter Operations Manager and his team are responsible for the drivers' hours so they are not exceeded and will ensure that the records are accurate. Rest time for drivers will be paramount in all decisions made on gritting, during severe weather at all times.

All timesheets are audited on a weekly basis by the Technical Enforcement Coordinator, Fleet Transport Services.

6. SALT STORAGE

The Rock Salt for the district is stored at 5 locations across the district.

6.1

LOCATION	MAX STOCK Tonnes	MIN STOCK Tonnes	COVERED Tonnes	UNCOVERED Tonnes
Wakefield Road Depot	19,800	12,300	4,000	15,800
Queensbury Depot	600	100	600	N/A
Stockbridge Depot	6,000	2000	2,000	4,000
Ilkley Depot	600	100	600	N/A
Stubden	1,500	500	NO	NO
TOTALS	28, 500	15,000	7,200	19,800

6.2 Marine Salt for City and Town Centres are stored at The Wakefield Road Depot and also at the Stockbridge Depot.

1,500 Tonnes are stored at the Wakefield Road Depot and 400 Tonne at the Stockbridge Depot, Keighley

The total Rock Salt stock for the network is 28,500 tonnes.

Salt Stock Management is controlled by Salt Union from their Winsford Depot.

6.3.1 Resilience

The City of Bradford MDC Resilience level is determined as:

- Overall Winter Period 1st October to 30th April
- Core Winter Period 1st December to 28th February
- Days Resilience (Overall Winter Period) 15 Days
- Days Resilience (Core Winter Period) 20 Days

Minimum Salt Stocks					
ROUTE PRIORITIES	MINIMUM WINTER NETWORK (TONNES/RUN)	MINIMUM WINTER NETWORK (TONNES/DAY)	Minimum Stock		
			OVERALL WINTER PERIOD 15 DAYS RESILIENCE	CORE WINTER PERIOD 20 DAYS RESILIENCE	30 DAYS RESILIENCE
PRIORITY 1	130 X 2	260	7,200	9,600	14,400
PRIORITY 2	100	100	1,500	2,000	3,000
PRIORITY 3	80	80	1,200	1,600	2,400
PRIORITY 4	30	30	450	600	900
FOOTWAYS	20	20	300	400	600
TOTALS		480	10,650	14,200	21,300

On the basis of recent winters experience, the Salt Stock levels at the commencement of winter has been maximised to the revised maximum storage capacity available across the district.

The total stock level of 28,500 is more than sufficient for an average winter.

Resilience within the country is managed through the Civil Contingencies Act 2004 and the Local Resilience Forums. These forums are Police Force area based, e.g. West Yorkshire.

The members of this forum give Strategic Direction through the Strategic Coordination Group (GOLD) to the Tactical Coordination Group (SILVER). They in turn liaise with each Local Authority to ensure the coordination of the emergency for both supplies and other Resources.

Within Bradford the Coordination is managed through a Local Silver group whose members Include Emergency Services, Health and Local Authority Officers. Feeding into this group would be work of a smaller group that continually review the gritting issues for the council. This group is made up of:

Winter Operations Manager
 Winter Service Officer
 Highway Asset Manager
 Emergency Planning Manager

They will meet to collectively agree to reduce the lengths of roads gritted and bring their review back to the Local Silver Group for discussion with the greater partner meeting in order to ensure that their options are suitable for partners and the resilience of the Bradford District

The Salt Stock figure to trigger this point will be 10, 650 Tonnes which would give 15 days resilience.

At this point the network gritted would reduce from 704 miles per gritting run to 412 miles (Priority 3)

6.4 Mutual Aid

Mutual Aid in Salt Supply and contingency arrangements in advance, are in place through a Salt Cell Group arranged by the DFT (Department for Transport) in London. The other 5 Local Authorities in West Yorkshire; Leeds, Calderdale, Kirklees and Wakefield are represented on this group. Salt Cell monitors and communicates with the Winter Operations Manager weekly during the winter season.

The DFT also maintain a substantial national emergency salt reserve and have a robust distribution process in place, if for any reason, this salt of last resort is needed to be allocated.

Bradford has over the last 3 out of 5 years provided Rock Salt to Leeds and Calderdale who did reimburse the costs.

7. Treatment requirements including Spread Rates

7.1 The Precautionary salting of the network is carried out at 15-20 g/m²

On specific locations, of ice and snow already at the road and on steep hills, the drivers are instructed to increase the spread rate ranging between 20-30g/m²

All the gritters on the network are monitored by a real time G.P.S device that reports the location and spread rates.

7.2 The decision of spread rates are based on The Best Practice Guide for Spreading Salt, produced by the NWSRG (National Winter Service Research Group)

This group is funded from the Local Authorities and UK national governments, this provides guidance to practitioners with a “what you need to do and how to do it safely, sustainably and cost effectively

“The NWSRG offer the best practice guidance training and support to authorities, in order to improve the national understanding and delivery of the Highways Service, guidance has been provided on:

Spreader Calibration and performance monitoring

Treatment for snow and Ice

Treatments for extreme cold”

The Decision Matrix Guide of The Well Maintained Highways Code of Practice drawn up by the NWSRG is seen in detail in **APPENDIX 11**

8. Operational Communications

8.1 Daily Winter service operations will be posted on the City of Bradford Metropolitan District Council Web Site.

8.2 During the Winter Season the Operational plan of action is communicated to members and Senior Officers and the Customer Contact Centre of the Council. Daily briefings will be arranged with Officers and C.M.T during periods of severe weather with a particular focus on salt stocks and level of resilience.

8.3 All Operatives driving vehicles involved in the gritting operations are supplied with a mobile phone.

8.4 Since 2010 improvements to the Winter Service Communications have improved by using the Council Website and Social Media.

The website pages are regularly up-dated and contain information about the service. All the routes treated, are now identified on plans for all The Carriageways and Footways across the Highway Network.

Also available on the site is advice and guidance on what to do during Winter Conditions. There is also a form on the website for the public to request gritting on the website which is managed by our Customer Services Section and this is sent to the operations team on a daily basis.

There is also a new Bradford App which has been launched this year where residents can request services via Smart phones and other devices e.g. i-Pads. Social media has developed into an important communication method and we use twitter to give out operational information.

We currently have more than 4,300 followers on our twitter account that can pick up our winter messages and re-tweet .

8.5 Community Self Help and Resilience

In 2011 a pilot scheme to introduce “Snow Teams” within Bradford district was introduced. This scheme assisted groups within communities to carry out winter treatment of footpaths.

Community self help and the snow team scheme enables communities to provide an enhanced service over and above that which the council provides.

The Snow Team scheme provides groups with snow shovels and rock salt to spread on public roads and footpaths.

Resources and guidance are provided before the start of the winter season, further rock salt supplies will be provided in severe weather but only once all Priority 1, 2, 3, and 4 are complete.

Since the scheme was set up in 2011 around 70 groups have been provided with resources.

The Council is proposing to develop and further enhance snow warden schemes through the Neighbourhoods and Environment Area Co-ordinators Officers.

We work closely with the MET Office and the Government to promote advice about self help in winter, including their "Get Ready for Winter" campaign. This includes promoting Government guidance such as the Snow Code (a self help guide published in 2010) this guidance is available on our web pages along with other guidance which is updated on a regular basis.

The link to our winter weather pages is here:

http://www.bradford.gov.uk/bmdc/transport_and_infrastructure/winter_maintenance

8.6 The Snow Code

Advice issued by the Department for Transport on clearing snow and ice from the pavement outside your home or public spaces to prevent slips and falls. Follow the snow code to clear snow and ice safely.

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

Don't be put off clearing paths because you're afraid someone will get injured. Remember, people walking on snow and ice have a responsibility to be careful themselves.

Follow the advice below to make sure you clear the pathway safely and effectively.

And don't believe the myths - it's unlikely you'll be sued or held legally responsible for any injuries if you have cleared the path carefully.

Clear the snow and 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.

Preventing slips

- Pay extra attention to clearing snow and ice from steps and steep pathways - you might need to use more salt on these areas
- Use salt or sand - not water
- Don't make the pathways more dangerous by causing them to refreeze. 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 melt snow or 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 unless your council advises otherwise. Please contact your local council for more advice.
- Be careful not to spread salt on plants or grass as it may damage them.
- If you don't have enough salt, you can also use sand or ash. These won't stop the path icing over as effectively as salt, but will provide good grip underfoot.

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, try contacting their relatives or friends, or if necessary the local council

APPENDICES

Appendix 1

Gritting Tree – Operation of Depots and Routes

Appendix 2

Altitude in the City of Bradford MDC

Appendix 3

Gritting Route Maps – Priority 1

Appendix 4

Gritting Route Maps – Priority 2

Appendix 5

Gritting Route Maps – Priority 3

Appendix 6

Gritting Route Maps – Priority 4

Appendix 7

Footway Gritting – Priority 1 F

Appendix 8

Assessment form for Provision of Grit Bins

Appendix 9

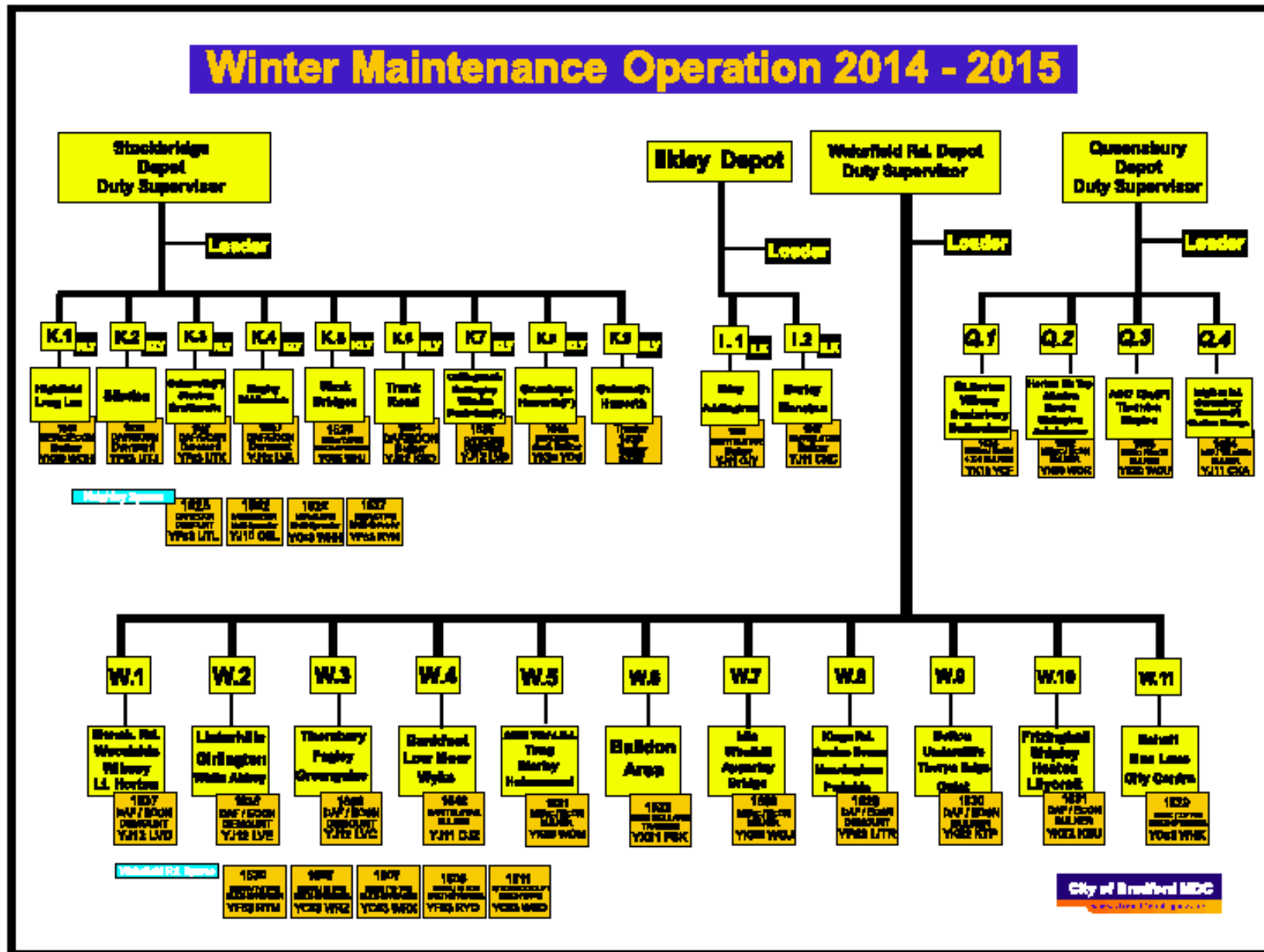
Copy of Weather the Metrological Office forecast

Appendix 10

Copy of Daily Record Sheet

Appendix 11

Decision Matrix Guide of the Well Maintained Highway Code of Practice



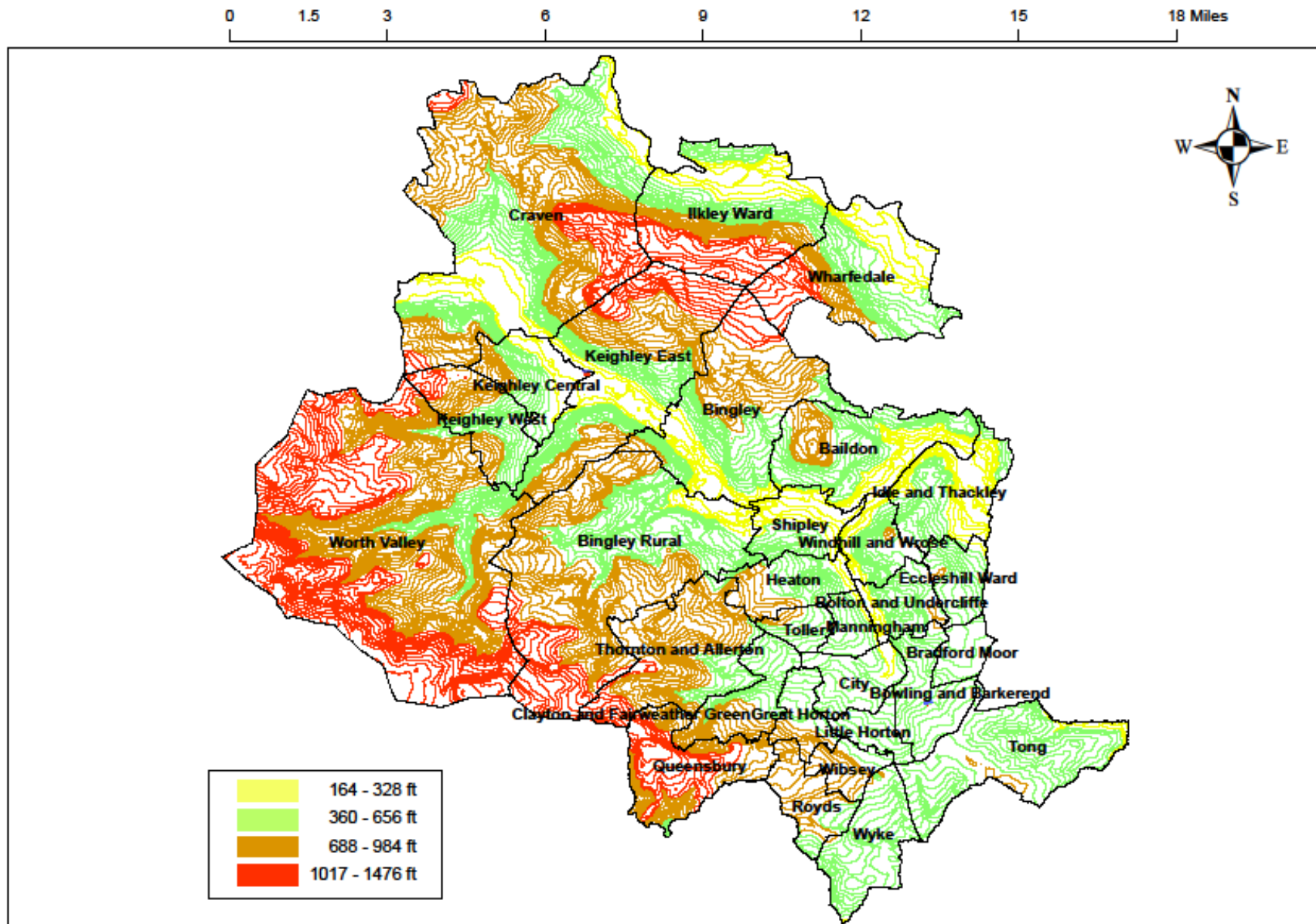
Appendix 2 ALTITUDE IN BRADFORD MDC

AREA / LOCATION	FEET ABOVE SEA LEVEL
Queensbury	1100
Buttershaw	867
Wibsey	810
Woodside	760
Odsal Top	696
Wyke	600
City Hall	325
St. Lukes	465
B.R.I	623
Toller Lane - Roundabout	601
Thornton Road , Girlington	428
Allerton	750
Sandy Lane - Traffic Lights	706
Haworth Road Y.W.A Treatment Plant	815
Lingbob, Wilsden	736
Crossroads, Cullingworth	654
Mini-roundabout Harden	460
Shipley	250
Bradford Road , Branch	350
Emm Lane	651
Moorhead Lane , Saltaire	490 - 623
Main Street , Bingley	266
Haworth	750
Bus Terminus , Eldwick	703
Village , Oxenhope	672
Stanbury	826
Lynfield Mount , Daisy Hill	776
Five Lane End	649
Wrose Road - Top	585
Eccleshill	690
Thackley Corner	426
Baildon Moor	800
Baildon Centre	525
Keighley	271
Oakworth	800
Denholme	984
Silsden	760
Thornbury	560
Dudley Hill	650
Ilkley Town Centre	311
Ilkley Moor	820

- | | |
|-------------------|--------------------|
| 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





Priority 1 Routes

Wakefield Road Depot

W1 Priority 1 Route

Manchester Rd, Woodside, Wibsey (part), Little Horton.

W2 Priority 1 Route

Listerhills, Girlington, White Abbey, Manningham, Heaton.

W3 Priority 1 Route

Laisterdyke, Bfd Moor, Undercliffe, Thorpe Edge, Thornbury, Fagley, Greengates.

W4 Priority 1 Route

Ring Road (part), East Bowling, Oakenshaw, Bankfoot, Low Moor, Wyke.

W5 Priority 1 Route

Ring Road (part), East Bowling, Oakenshaw, Bankfoot, Low Moor, Wyke.

W6 Priority 1 Route

Baildon Area.

W7 Priority 1 Route

Shipley, Saltaire, Thackley, Idle, Windhill, Apperley Bridge.

W8 Priority 1 Route

West Bowling, East Bowling, Barkerend, Kings Road, Swaine House, Manningham (part).

W9 Priority 1 Route

Bolton, Undercliffe, Thorpe Edge, Owllet.

W10 Priority 1 Route

A650, Nab Wood, Frizinghall, Heaton, Manningham.

W11 Priority 1 Route

Esholt, Bus Lane, City Centre.

Queensbury Depot

Q1 Priority 1 Route

A647, Great Horton, Moore Avenue, Canterbury, Buttershaw, Little Horton, Wibsey.

Q2 Priority 1 Route

A647, Queensbury (part), Clayton, Schoolmoor, Horton Bank Top, Allerton, Heaton, Girlington.

Q3 Priority 1 Route

A644 Queensbury, School Green, Clayton, Thornton.

Q4 Priority 1 Route

A644 Brighouse & Denholme Road, Queensbury, Thornton, Chellow Grange.

Keighley Depot

K1 Priority Route

Keighley Centre, Guard House, Holy Croft, Highfield, Long Lee.

K2 Priority Route

Steeton, Silsden.

K3 Priority Route

Oakworth (part), Steeton, Braithwaite, Laycock.

K4 Priority Route

Bingley, Riddlesden, Eldwick.

K5 Priority Route

Weak bridges.

K6 Priority Route

Aire Valley, A629, A650, Trunk Roads.

K7 Priority Route

Cullingworth, Harden, Cottingley, Wilsden, Denholme.

K8 Priority Route

Oxenhope, Haworth (part), Bracken Bank, Woodside.

K9 Priority Route

Oakworth, Haworth

Ilkley Depot

ILK 1 Priority Route

Ilkley, Addingham.

ILK 2 Priority Route

Burley, Menston.

Appendix 8**Assessment form for Provision of Grit Bins**

LOCATION OF SALT BIN	DATE OF ASSESSMENT	ASSESSED BY	
CHARACTERISTIC	SEVERITY	POINT	ASSESSED ACTUAL SCORE
1) Carriageway Gradient	Greater than 1 in 10 1 in 10 to 1 in 30 Less than 1 in 30	75 40 NIL	
2) Altitude	Land over 700ft Land over 500ft Land between 250ft and 500ft	75 50 25	
3) Distance to next Grit Bin	Less than 200m 200m to 400m More than 400m	0 15 20	
4) Close proximity to and falling towards and away from junctions	Heavily trafficked Road Moderately trafficked Road Lightly trafficked Road Not falling	80 60 30 NIL	
5) Number of premises for which this is the only access	Over 100 50-100 20-50 0-20	30 20 10 NIL	
6) High Traffic / Strategic General location and High pedestrian movements	School/Community centres Designated old persons Accommodation Clinics/Doctors Surgeries	25 25 25	
7) Road Priority	On Priority 1 Main Road Gritting Route On Priority 2 Side Road Gritting Route	-50 -50	
		TOTAL	This needs to be over 125 to pass

Appendix 9 Example of Weather Forecast faxed from the Meteorological Office

24 Hour Domain Forecast for West Yorkshire Consortium

Valid from noon on Thursday 23 Jan 2014 to noon on Friday 24 Jan 2014

Forecaster Commentary: Assessment of RBF and Site-Specific Data

Good guidance given by the graphical output, though I suspect that the minimum RST will be a fraction lower tonight.

Minimum Temperature and Hazard Summary

Domain	Readiness Colour	Min RST	Time Below Zero	Min Air	Ice	Hoar Frost	Snow	Fog	Strong Wind	Rain
Bradford	RED	MS02	1700-0400	MS01	Y/H	Y/H	Y/L	N/H	Y/H	Y/H
Calderdale	RED	MS02	1700-0400	MS01	Y/H	Y/H	Y/L	N/H	Y/H	Y/H
Kirklees	RED	MS02	1700-0400	MS01	Y/H	Y/H	Y/L	N/H	Y/H	Y/H

Rain	>=2mm/hr for any hours over the 24 hours.
Strong Wind	>=25mph gusts.
Fog	Visibility less than 200 metres.

Details

Wind (mph)	A stiff northwesterly breeze, gusting 25-35; becoming light and southwesterly later this evening. The breeze strengthening again from the southeast later tonight and into tomorrow morning.
Ice / Hoar Frost	Hoar frost expected to form on untreated surfaces later tonight. Icy patches expected during the sub-zero period, following recent rain.
Snow	Isolated snow showers above 300 metres in west today. Tomorrow morning's rain initially falling as snow above 400 metres. No accumulations expected.

24 Hour Weather Summary

Bradford	Mainly dry with broken cloud this afternoon and evening, although isolated showers (falling briefly as sleet/snow above 300 metres) will affect the west of the county until around 2100. Thickening cloud spreading from the west during the early hours, will then be followed by outbreaks of rain from around 0600 onwards. The rain initially falling as snow above 400 metres, though quickly reverting to rain tomorrow morning.
Calderdale	As Bradford
Kirklees	As Bradford

Appendix 10

Example of Daily Record Sheet

<u>WINTER MAINTENANCE</u> <u>DAILY GRITTING RECORD SHEET 2014 / 15</u>					<u>Priority 1 Grit</u>	
Depot: WAKEFIELD RD	Conditions: _____			Assistant Manager: _____		
Date _____		_____				
Time..... To.....		Action: _____		Signature: _____		
Route No	Fleet No or Vehicle Reg	Time Out	Time In	10mm	Route Completed Driver Signature	Comments
1						
2						
3						
4						
5						
6						
7						
Loading Shovel						

Appendix 11**Decision Matrix Guide of the Well Maintained
Highway Code of Practice****Table H4****Table H5 - Spread Rates For Reasonable Spreading Capability****(De-icer Spread Rates in g/m²)**

		Predicted Road Conditions				
Road Surface Temperature	Precipitation	Wet	Wet Patches	Dry		
May fall below 1C	No Rain	Salt before frost	Salt before freezing (see note a)	No action likely, monitor weather (see note a)		
	No Hoar Frost					
	No Fog					
Expected to fall below 1C	No Rain		Salt before freezing (see note b)			
	No Hoar Frost					
	No Fog		Salt before freezing (see note b)			
	Expected Hoar Frost					
	Expected Fog					
	<u>Expected rain BEFORE</u> freezing	Salt after rain stops (see note c)				
	<u>Expected rain DURING</u> freezing	Salt before freezing, as required during rain and again after rain stops (see				
	Possible rain	Salt before frost				
	Possible hoar frost					
Possible fog	Monitor weather conditions					
Expected snow		Salt before snowfall				

Notes:

(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 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 be dispersed 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 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 will freeze on contact with running surfaces and full precautionary 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.

(f) Where there is any hint of moisture being present, a pessimistic view of the forecast should be taken when considering treatment to negatively textured surfaces.

Frost or forecast salting (frost Road(see Note 1) Surface Temperature (RST) and Road Surface Wetness	Dry salting (see Note 2)	Pre-wetted salting (see Note 2)	Treated
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	8	8 (de-icer) 6 (salt)	7
RST below - 2°C and above -5°C and dry or damp road conditions	12	12 (de-icer) 9 (salt)	9
RST below - 2°C and above -5°C and wet road conditions	20	21 (de-icer) 16 (salt)	16
RST at or below - 5°C and above - 10°C and dry or damp road conditions	20	21 (de-icer) 16 (salt)	16
RST at or below - 5°C and above - 10°C and wet road conditions	2 x 20	2 x 21 (de-icer) 2 x 16 (salt)	32 or 2 x 16

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).

**Table H6 - Spread Rates For Modest Spreading Capability
(De-icer Spread Rates in gms/m2)**

Frost or forecast frost Road 2) Surface Temperature (RST) and Road Surface Wetness	Dry salting	Pre-wetted salting (see Note1)	Treated salting (see Note Note
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).

Table H7 - Precautionary Treatments before Snow Or Freezing Rain

Weather conditions	Light or medium traffic (Category 3)	Heavy traffic (Category 1 and 2)
Light snow forecast	Spread: 40g/m ² of dry salt, or 40g/m ² of pre-wetted salt, or 30g/m ² of treated salt	Spread: 20g/m ² of dry salt, or 20g/m ² of pre-wetted salt, or 15g/m ² of treated salt
Moderate/Heavy snow Forecast	Spread: 20-40g/m ² of dry salt 20-40 g/m ² of pre- wetted salt 15-30 g/m ² of treated (see Note 1)	Spread: 40g/m ² of dry salt, or 40g/m ² of pre-wetted salt, or 30g/m ² of treated salt
Freezing rain forecast	40 or 2x20g/m ² of dry salt, or 40 or 2x20g/m ² of pre-wetted salt, or 30 or 2x15g/m ² of treated salt	

Note 1: The lower rates (e.g. 20g/m² 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.

Table H8 - Treatments During Snowfall

Plough to remove as much material as possible (e.g. slush, snow, compacted snow)
(ploughing should be as near as possible to the level of the road surface)

**No ice or compacted snow on
(see surface**

To provide a de-bonding layer, spread:

subsequent

20g/m² of dry salt, or

18g/m² of treated salt or

24g/m² of pre-wetted salt (See Note 1)

(See Note 1)

YES

To provide a de-bonding layer, spread:

20g/m² of dry salt, or

18g/m² of treated salt, or

24g/m² of pre-wetted salt

(See Note 1)

**Ice or compacted snow on surface
Note 2)**

Is traffic likely to compact

**snowfall before further ploughing is
possible?**

NO

No de-icer should be spread

Note 1: During and after snowfall, only the ploughed lane should be treated if other lanes have still to be ploughed. The spread width settings should be adjusted accordingly.

Note 2: A de-icer should not be spread alone without abrasives to anything other than a thin layer of ice or compacted snow when snowfall has ceased or future snowfall will be less than 10mm. Applying salt alone to compacted snow and ice can produce dangerously slippery conditions if a weak brine film is formed on top of the ice/snow layer.

Table H9 - Treatment For Slush When Freezing Conditions Are Forecast

Plough to remove as much slush as possible (ploughing should be as near as possible to the level of the road surface).

After removing slush, spread:

40g/m² of dry salt, or

36g/m² of treated salt, or

48g/m² of pre-wetted salt

(See Note 1)

Note 1: After snowfall, and when there will be no further ploughing but some slush remains on the road surface, it may be necessary to change the settings normally used for precautionary treatment to ensure a satisfactory distribution is achieved over the target spread width.

Table H10 - Treatment For Thin Layers Of Ice (Less Than 1mm Thick)

Forecast weather and road surface conditions

Lower of air or road surface temperature higher than -5°C

Medium/Light Traffic

Spread:
40g/m² of dry salt, or
36g/m² of treated salt
or
48g/m² of pre-wetted salt
40g/m² of salt/abrasive mix

(see Notes 1 and 2)

Heavy traffic

Spread:
20g/m² of dry salt, or
18g/m² of treated salt or
24g/m² of pre-wetted salt

Lower of air or road surface temperature less than -5°C

Spread:
40g/m² of
salt/abrasive mix (50:50)
(see Notes 1 and 2)

Spread:
40g/m² of salt/abrasive mix
(50:50) (see Notes 1 and 2)

Note 1: Abrasives should ideally be 5-6mm and angular, but gradings down to 1-5mm should be reasonably effective. After abrasives have been used, drainage systems should be checked and cleared if necessary. Recovered material, which will be contaminated with road oil, must be disposed of safely.

Note 2: Care is needed when salt is mixed with abrasives with a high moisture content. Checks should be made that the mixture remains free flowing, does not clump and can be spread effectively.

Treatment For Layers Of Compacted Snow And Ice

Plough to remove as much material (e.g. slush, snow, compacted snow) as possible from the top of the compacted layer

Medium Layer Thickness (1 to 5mm)

For initial treatment, spread: 40g/m² of salt/abrasive mix (50:50) (see Notes 1, 3, 4 and 5)

For successive treatments, spread: 20g/m² of salt/abrasive mix (50:50)
(see Notes 1, 3, 4 and 5)

High Layer Thickness (greater than 5mm)

For initial treatment, spread:

40g/m² of abrasives only (see Notes 2, 3, 5)

For successive treatments, spread: 20g/m² of abrasives only
(see Notes 2, 3, 5)

After traffic has started breaking up the layer, spread: 20g/m² of salt/abrasive mix (50:50) so salt can penetrate the layer and reach the road surface (see Notes 1, 3, 4 and 5) Note 1: For medium thicknesses of compacted snow and ice, treatments without abrasives should only be used when earlier precautionary treatments have successfully established a de-bonding layer, and there is sufficient traffic to break up the layer of ice quickly.

Note 1: For medium thickness of compacted snow and ice, treatments without abrasives should only be used when earlier precautionary treatments have successfully established a de-bonding layer and there is sufficient traffic to break up the layer of ice quickly.

Note 2: For high thickness of compacted snow and ice (greater than 5mm), treatments with a significant amount of salt should not be considered because they may leave the surface uneven. Any brine formed on the surface may collect in hollows and deepen them further, which can lead to a very uneven surface.

Note 3: Abrasives should ideally be 5-6mm and angular, but gradings down to 1-5mm should be reasonably effective. After abrasives have been used, drainage systems should be checked and cleared if necessary. Recovered material, which will be contaminated with road oil, must be disposed of safely.

Note 4: Care is needed when salt is mixed with abrasives with high moisture content. Checks should be made that the mixture remains free flowing, does not clump and can be spread effectively.

Note 5: When there are layers of snow, compacted snow, or ice of medium or high thickness on the road surface, it may be necessary to change the settings normally used for precautionary treatment to ensure a satisfactory distribution is achieved over the target spread width.