

# **Scottish Trunk Road Network Management Contract**

## **Schedule 2 - Scope - Appendix 6 Winter Service**

### **Attachments**

#### **North East Unit**

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Attachment 6.1 Appendices for Winter Service Plan

Table 6.1.1 - Winter Service Patrol Record

Winter Service Patrol start and end time	Weather conditions for Winter		Assessed road condition (by driver) (X)				Assessed residual salt level (by driver) (X)			Action implemented (use symbols provided below)*						Route salted prior to patrol (X)		
	Air (°C)	Road Surface temperature (°C)	Snow	Icy	Wet	Dry	High	Medium	Low	Action code	Treatment Type	Spread rate (g/m <sup>2</sup> )	Approximate location of salting or other action	Start Time	End Time	Yes	No	Time of salting

\*Action symbols:

1 Spot treatment as instructed by the Winter Service Duty Officer.

2 Spot treatment as determined by driver.

3 Route treatment as advised by the Winter Service Duty Officer.

4 Route treatment as determined by driver.

5 Attend to runoff or seepage on surface.

6 Remove obstruction (e.g. dead dog, fallen tree, and other obstructions.) from surface.

7 Pre-wetted Salt

8 Dry Salt

9 Potassium Acetate

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Table 6.1.2 - Precautionary Treatment Routes determined by the Operating Company 2 Carriageway Route, 1 Footpath route

Table 6.1.2 – Precautionary Treatment Routes determined by the Operating Company (20 and 40 gram routes) – Carriageway Route

Route No.	Depot	Description	Depot to Route (km)	Time to Route (mins)	Total Route Length (km)	De-icing Length (km)	Salting Length (km)	Aver Speed (kph)	Route Time (mins)	Route to Depot (km)	Route Efficiency	Average Width of Route	Alternative Access	Route Tonnage @20g/m2	Route Tonnage at 40 g/sq m pre-wet (tonne)	Treatment Type
W1	Aberdeen	A90 Fraserburgh-Ellon Dual	29.5	27	85.5	53	53	48	107	29.5	36%	6.5	Huntly	6.89	13.8	Pre-Wet Salt
W2	Aberdeen	A96 Blackhall R/B – A96 Craibstone R/B Haudagain	14.8	16	51.2	39	39	41	50	24.5	43%	7	Huntly	5.46	10.92	Pre-Wet Salt
W3	Huntly	A96/A95 Jcn – A96 Blackhall R/B Inverurie	19	21	50	50	50	48	60	33.5	48%	6.5	Aberdeen	6.5	13	Pre-Wet Salt
W4	Huntly	A95 Aberlour – A96 Elgin Dr Grays R/B	32.5	24	47	47	47	48	60	46	37%	6.5	Aberdeen	6.11	12.22	Pre-Wet Salt
W5	Inverness	A95 Aberlour – A95 Granish	46	34	52	52	52	48	66	84	29%	6	Aberdeen	6.24	12.48	Pre-Wet Salt
W6	Inverness	A96 Inverness – A96 Elgin Dr Grays R/B	3	3	60	58	58	48	73	60	47%	6.5	Aberdeen	7.54	15.08	Pre-Wet Salt
W7	Aberdeen	A92 Findon, Aberdeen – A90 Glasslaw, Stonehaven	6	8	76.9	41	41	54	73	6	46%	7	Forfar	5.74	11.54	Pre-Wet Salt
W8	Aberdeen	A90 B974 Jcn – A90 Stonehaven Glasslaw	52	50	91	48	48	64	54	52	25%	7	Forfar	6.72	13.44	Pre-Wet Salt
W9	Forfar	A90 Parkford Jcn – A90 B974 Jcn	7.2	6	91	51	51	64	85	5.5	49%	7	Dundee	7.14	14.28	Pre-Wet Salt
W10	Forfar	A90 Fintry Dr R/B - A90 Parkford Jcn	7.2	6	86	52	52	64	81	5.5	53%	7	Dundee	7.28	14.56	Pre-Wet Salt
W11	Dundee	A90 Fintry Drive R/B – Kingsway – Inchmichael	5.7	6	58	47	47	64	57	5.7	68%	7	Forfar	6.58	13.1	Pre-Wet Salt
W12	Dundee	A90 Inchtute – Perth	11.7	16	121.5	49	49	64	57	19.2	31%	7	Perth	6.86	7	Pre-Wet Salt
W13	Dundee	A92 Redhouse –	7	7	63	48	48	55	69	47.8	41%	7	Kinross	6.72	13.44	Pre-Wet Salt

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		A92 Tay Bridge														
W14	Perth	A9 Loaninghead to Keir R/B	26	26	86	47	47	64	81	26	34%	7	Kinross	6.58	13.16	Pre-Wet Salt
W15	Perth	A9 Loaninghead to Inveralmond	2	2	59	48	48	60	60	2	76%	7	Kinross	6.72	13.44	Pre-Wet Salt
W16	Kinross	Broxden to Milnathort	18	17	78	40	40	64	72	18	35%	9	Perth	7.2	14.4	Pre-Wet Salt
W17	Kinross	Halbeath – Milnathort	11	12	84.1	45	45	64	79	11	42%	7	Perth	6.3	12.6	Pre-Wet Salt
W18	Kinross	Halbeath – Redhouse	11	12	73	42	42	60	53	11	44%	7	Dundee	5.88	11.76	Pre-Wet Salt
W19	Kinross	Friarton – Milnathort	18	17	38	22	22	64	36	18	30%	9.5	Perth	4.18	8.4	Pre-Wet Salt

**Table 6.1.2 – Precautionary Treatment Routes determined by the Operating Company (20 and 40 gram routes) – Footway Route**

Route No.	Depot	Description	Depot to Route (km)	Time to Route (mins)	Total Route Length (km)	De-icing Length (km)	Salting Length (km)	Aver Speed (kph)	Route Time (mins)	Route to Depot (km)	Route Efficiency	Average Width of Route	Alternative Access	Route Tonnage @20g/m <sup>2</sup>	Route Tonnage at 40 g/sq m (tonne)	Treatment type
1	Aberdeen	Crimmond, Fraserburgh	62.5	58	28	13.84	13.84	40	26	74	9	2	Huntly	0.23	0.46	Brine
2	Dundee	Forfar Rd, East Dock St, Broughty Ferry Rd, Greendykes Rd, Kingsway East	3.7	4	9.7	26.48	26.48	10	37	4.5	145	2	Forfar	0.65	1.30	Brine
3	Kinross	Glenrothes, Freuchie	19	18	6.9	6.72	6.72	40	26	24	13.5	2	Dundee	0.17	0.34	Brine
4	Huntly	Aberlour, Craigellachie, Cromdale, Keith	32	30	50.5	19.78	19.78	40	103	17.5	20	2	Aberdeen	0.49	0.98	Brine
5	Huntly	Keith, Elgin	17.5	16	27.4	17.35	17.35	40	75	46	19	2	Inverness	0.43	0.86	Brine

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6	Inverness	Nairn, Alves	26	24	26.9	11	11	40	57	53	10.4	2	Huntly	0.41	0.82	Brine
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Note\* – All routes must be capable of being Provided up to 40G/m2

Route efficiency is calculated as per the example below:

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**Route Efficiency Calculation**

Route efficiency in tables in attachment 6.1.2 is calculated as per the below:

- **A** = Distance from 1. *depot* to 2. *start of route* (km) - (i.e dead time)
- **B** = Distance from 2. *start of route* to 3. *end of route* (km) – (i.e including any dead time from start to end of route for junctions etc hence optimisation)
- **C** = Total Distance treated from 2. *start of route* to 3. *end of route* (km)
- **D** = Distance from 3. *end of route* to 1. *depot*
- **C = 100 / (A + B + D) x C**

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Example:

Route	Depot	Description	Depot to Route (km) A	Time to Route (mins)	Total route length (km) B	Total route length treated (km) C	Average Speed (km/hr)	Route Time (mins)	Route to Depot (km) D	Route efficiency 100 / (A + B + D) x C	Average Width of Route (m)	Alternative Access	Route Tonnage at 20 g/sq m (tonne)	Route Tonnage at 40 g/sq m pre-wet (tonne)	Treatment Type
1-20	Hawick (SBC)	A7 Hawick - Selkirk, Hawick A7 Hawick - National Boundary	1.8	2.5	67.5	60	48	110	62.6	<b>45%</b>	7.7	Eagles field	7.28		<b>Pre- Wet</b>

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Table 6.1.3 Ploughing Routes Determined by Operating Company

Route No.	Depot	Description	Depot to Route (km)	Time to Route (mins)	Salting Length (km)	Aver Speed (kph)	Route Time (mins)	Route to Depot (km)	Alternative Access	Average Width of Route	Route Tonnage @40g/m2	Treatment type
1	Aberdeen	A90 Fraserburgh to Ellen Dual	29.5	27	53	48	107	29.5	Huntly	6.5	13.8	Pre-wet salt
2	Aberdeen	A96 Blackhall Rdnt – A96 Craibstone Rdbt Haudagain	14.8	16	39	41	50	24.5	Huntly	7	10.6	Pre-wet salt
3	Huntly	A96/A95 Jcn – A96 Blackhall R/B Inverurie	20	22	50	48	60	33.5	Aberdeen	6.5	13.0	Pre-wet salt
4	Huntly	A95 Aberlour – A96 Elgin Dr Grays R/B	32.5	35	47	48	60	46	Aberdeen	6.5	12.2	Pre-wet salt
5	Inverness	A95 Aberlour – A95 Granish	46	50	52	48	66	84	Aberdeen	6	12.5	Pre-wet salt
6	Inverness	A96 Inverness – A96 Elgin Dr Grays R/B	3	3	58	48	73	60	Aberdeen	6.5	15.0	Pre-wet salt
7	Aberdeen	A92 Findon, Aberdeen – A90 Glasslaw, Stonehaven	6	8	41	54	73	6	Aberdeen	7	11.6	Pre-wet salt

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8	Forfar	A90 B974 Jcn – A90 Stonehaven Glasslaw	52	50	48	64	54	52	Forfar	7	13.5	Pre-wet Salt
9	Forfar	A90 Parkford Jcn – A90 B974 Jcn	7.2	6	51	64	85	5.5	Dundee	7	14.2	Pre-wet Salt
10	Forfar	A90 Fintry Dr R/B – A90 Parkford Jcn	7.2	6	52	64	85	5.5	Dundee	7	14.6	Pre-wet Salt
11	Dundee	A90 Fintry Drive R/B – Kingsway – Inchmichael	5.7	6	47	64	57	5.7	Forfar	7	13.2	Pre-wet Salt
12	Dundee	A90 Inchtute – Perth	11.7	18	49	64	57	19.2	Perth	7	13.8	Pre-wet Salt
13	Dundee	A92 Redhouse – A92 Tay Bridge	7	7	48	55	69	47.8	Kinross	7	13.4	Pre-wet Salt
14	Perth	A9 Loaninghead to Keir R/B	26	26	47	64	81	26	Kinross	7	13.2	Pre-wet Salt
15	Perth	A9 Loaninghead to Inveralmond	2	2	48	60	60	2	Kinross	7	13.4	Pre-wet Salt
16	Kinross	Broxden to Milnathort	18	20	40	64	72	18	Perth	9	14.4	Pre-wet Salt
17	Kinross	Halbeath – Milnathort	11	12	45	64	79	11	Perth	7	12.6	Pre-wet Salt

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18	Kinross	Halbeath – Redhouse	11	12	42	60	53	11	Dundee	7	11.8	Pre-wet Salt
19	Kinross	Friarton – Milnathort	18	20	22	64	36	18	Perth	9.5	8.4	Pre-wet Salt

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Table 6.1.4a Operational Salt Stock Levels

De-icing Material (i.e. Dry salt / ABP)	Location	Structure Type	Min (tonnes) 1st Oct
Dry Salt			35000T
Dry salt 6.3mm	Huntley	Covered structure	3,000
Dry salt 6.3mm	Aberdeen	Covered structure	3,000
Dry salt 6.3mm	Dundee	Covered structure	3,000
Dry salt 6.3mm	Forfar	Covered structure	3,000
Dry salt 6.3mm	Kinross	Covered structure	6,000
Dry salt 6.3mm	Perth	Dome	2,000
Dry salt 6.3mm	Inverness	Covered structure	7,000
Dry salt 6.3mm	Errol	Covered structure	8,000
Potassium Acetate			50,000L
Potassium Acetate	Perth	Tank	50,000 lit
Alternative de-icer			50,000L
	Perth	IBC	10,000 lit
	Huntly	IBC	20,000 lit
	Inverness	IBC	10,000 lit
	Aberdeen	IBC	10,000 lit

De-icing Material (i.e. Dry salt / ABP)	Location	Type	Min (tonnes) 1st Oct
Dry Salt for Brine			
	Huntly	Covered structure	56
	Aberdeen	Covered structure	56
	Dundee	Covered structure	56
	Forfar	Covered structure	56
	Kinross	Covered structure	56
	Perth	Dome	56
	Inverness	Covered structure	56
<b>Total</b>			<b>392</b>

De-icing Material (i.e. Dry salt / ABP)	Location	Type (barn/open)	Min (tonnes) 1st Oct
Magnesium Chloride			
<b>Total</b>			

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**Table 6.1.4b Brine Production & Storage**

Location	Type (saturator/storage only)	Capacity (litres)	Minimum (litres)
Perth	Saturator/storage	15,000/10,000	15,000
Inverness	Saturator/storage	10,000/10,000	10,000
Dundee	Saturator/storage	15,000/15,000	15,000
Forfar	Saturator/storage	10,000/15,000	10,000
Aberdeen	Saturator/storage	15,000/22,000	15,000
Huntly	Saturator/storage	15,000/10,000	15,000
Kinross	Saturator/storage	15,000/20,000	15,000

**Table 6.1.5 - Winter Service Plant for all Winter Service Patrols**

Table deleted – information covered in following tables.

Table 6.1.6 - Front line Winter Service Plant permanently available and located in the Unit for Winter Service for carriageways

Type of Winter Service Plant & Reg. No.	Depot Location	Vehicle Capacity	Number of Vehicles	Plant Use* (i), (ii)
32 tonne 8x4 spreader	Perth	12 cub m	2	(i) & (iii)
32 tonne 8x4 combi sprayer/spreader	Perth	12 cub m	1	(i) & (iii)
18 tonne 4x4 spreader	Perth	6 cub m	2	(ii) & (iii)
32 tonne 8x4 spreader	Aberdeen	12 cub m	3	(i) & (iii)
26 tonne 6x4 spreader	Aberdeen	9 cub m	1	(i) & (iii)
18 tonne 4x4 spreader	Aberdeen	6 cub m	3	(ii) & (iii)
32 tonne 8x4 spreader	Dundee	12 cub m	3	(i) & (iii)
18 tonne 4x4 spreader	Dundee	6 cub m	1	(ii) & (iii)
32 tonne 8x4 spreader	Forfar	12 cub m	2	(i) & (iii)
18 tonne 4x4 spreader	Forfar	6 cub m	2	(ii) & (iii)
32 tonne 8x4 spreader	Kinross	12 cub m	2	(i) & (iii)
26 tonne 6x4 spreader	Kinross	9 cub m	1	(i) & (iii)
18 tonne 4x4 spreader	Kinross	6 cub m	2	(ii) & (iii)
32 tonne 8x4 spreader	Huntly	12 cub m	2	(i) & (iii)
18 tonne 4x4 spreader	Huntly	6 cub m	2	(ii) & (iii)
32 tonne 8x4 spreader	Inverness	12 cub m	2	(i) & (iii)
18 tonne 4x4 spreader	Inverness	6 cub m	1	(ii) & (iii)
Snowblower attachment	Huntly		2	(iii)
Snowblower attachment	Perth		2	(iii)

\* Table 6.1.6 Key:

- (i) precautionary treatment and clearance of snow with a depth up to 100 millimetres.
- (ii) Winter Service Patrols.
- (iii) In accordance with other requirements of Schedule 2 Scope, Section 6 Network Operations - Winter Service.

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Table 6.1.7 - Front line Winter Service Plant permanently available and located in the Unit for the Winter Service for footways footbridges and cycling facilities

Type of Winter Service Plant & Reg. No.	Depot Location	Vehicle Capacity	Number of Vehicles	Plant Use* (i), (ii), (iii)
Hako spreader	Aberdeen	200 litres	1	(i)
Hako spreader	Dundee	200 litres	1	(i)
Hako spreader	Kinross	200 litres	1	(i)
Hako spreader	Huntly	200 litres	2	(i)
Hako spreader	Inverness	200 litres	1	(i)

\* Table 6.1.7 Key:

- (i) precautionary treatment and clearance of snow with a depth up to 100 millimetres.
- (ii) Winter Service Patrols.
- (iii) In accordance with other requirements of Schedule 2 Scope, Section 6 Network Operations - Winter Service.

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Table 6.1.8 - Reserve Winter Service Plant permanently available and located in the Unit for Winter Service for carriageways footways footbridges and cycling facilities

Type of Winter Service Plant & Reg. No.	Depot Location	Vehicle Capacity	Number of Vehicles
32 tonne 8x4 combi sprayer/spreader	Perth	12 cub m	1
32 tonne 8x4 spreader	Perth	12 cub m	1
32 tonne 8x4 spreader	Aberdeen	12 cub m	1
32 tonne 8x4 spreader	Dundee	12 cub m	1
32 tonne 8x4 spreader	Forfar	12 cub m	1
26 tonne QCB gritter	Perth	9 cub m	1
26 tonne QCB gritter	Huntly	9 cub m	1
26 tonne QCB gritter	Inverness	9 cub m	1
Hako spreader	Dundee	200 litres	1
Hako spreader	Huntly	200 litres	1

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Table 6.1.9 - Additional Winter Service Plant Permanently Available and Located in the Unit for Winter Service for Carriageways, Footways and Cycling Facilities

Type of Winter Service Plant & Reg. No.	Depot Location or Third Party Operator and Location	Number of Vehicles	Mobilisation Time in Hours
Fastrac tractor	Huntly	2	4
Fastrac tractor	Perth	2	4

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Table 6.1.10 – The Operating Company's Compounds, Depots and Facilities

Compound, Depot or Facility Name	Owner	Postal Address	Purpose	Access Arrangements	Contact Details	Facilities
Perth	REDACTED	REDACTED	Central Office	24 hours		Office, Welfare Mess
Perth	REDACTED	REDACTED	Operational and Winter depot	24 hours	REDACTED	Office, Welfare Mess
Dundee	REDACTED		Operational and Winter depot	24 hours	REDACTED	Office, Welfare Mess
Forfar	REDACTED	REDACTED	Operational and Winter depot	24 hours	REDACTED	Office, Welfare Mess
Kinross	REDACTED	REDACTED	Operational and Winter depot	24 hours	REDACTED	Office, Welfare Mess
Huntly	REDACTED	REDACTED	Operational and Winter depot	24 hours	REDACTED	Office, Welfare Mess
Inverness	REDACTED	REDACTED	Operational and Winter depot	24 hours	REDACTED	Office, Welfare Mess
Aberdeen	REDACTED	REDACTED	Operational and Winter depot	24 hours	REDACTED	Office, Welfare Mess
Errol	REDACTED	REDACTED	Salt Storage	24 hours	REDACTED	Salt storage

**Attachment 6.2 Winter Service Plan**

**Table 6.2.1 Winter Service Plan - Contents (See 6.1 for appendices)**

Item	Contents
<b>1</b>	<b>Management Arrangements</b>
	the Winter Service Plan shall provide the following:
<b>1.1</b>	<b>Winter Service Manager</b>
1.1.1	Name,
1.1.2	Qualifications,
1.1.3	Experience,
1.1.4	Responsibilities.
<b>1.2</b>	<b>Winter Service Duty Officers</b>
1.2.1	Names,
1.2.2	Qualifications,
1.2.3	Experience,
1.2.4	Responsibilities.
<b>1.3</b>	<b>Monitoring Arrangements</b>
1.3.1	Monitoring arrangements during normal working hours,
1.3.2	Monitoring arrangements outwith normal working hours.
<b>1.4</b>	<b>Personnel Resources</b>
1.4.1	Names of Contract Personnel and labour resources.
1.4.2	Availability rosters including names, addresses and telephone numbers of the Contract Personnel listed.

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**1.5 Call out arrangements**

- 1.5.1 Call out arrangements during normal working hours,
- 1.5.2 Call out arrangements outwith normal working hours,
- 1.5.3 Contact arrangements during normal working hours,
- 1.5.4 Contact arrangements outwith normal working hours,
- 1.5.5 Mobilisation times.

**1.6 Communications Equipment**

**1.7 Training for Managers and Other Staff**

- 1.7.1 Details of previous training,
- 1.7.2 Details of proposed training.

**2 Weather Forecasting**

**2.1 Purpose**

**2.2 Methodology**

**2.3 Weather forecasting service**

- 2.3.1 Climatic domains,
- 2.3.2 Weather radar,
- 2.3.3 Weather Stations, forecast sites and camera sites,
- 2.3.4 Thermal mapping,
- 2.3.5 Location plans.

**2.4 Computer Systems**

**3 Monitoring Arrangements for Areas Requiring Special Attention**

**4 Decision Making**

**4.1 Role of the Winter Service Manager**

**4.2 Role of the Winter Service Duty Officer**

4.2.1 Procedures for Winter Service Patrol mobilisation.

4.2.2 Proposals for precautionary and additional de-icing treatments when low confidence forecasts are issued for variable road and weather conditions.

4.2.3 Proposals for monitoring the effectiveness of de-icing materials.

4.2.4 Road closure and snow gate operational procedures.

4.2.5 Proposals for dealing with areas requiring special attention.

4.2.6 Proposals for using alternative de-icers in extreme temperatures.

**5 Liaison & Communication**

**5.1.1. Liaison and communication with:**

(i) the Director,

(ii) the Police Scotland,

(iii) the Traffic Scotland Operations and Infrastructure Services Contractor,

(iv) adjacent road and highway authorities,

(iv) Network Rail,

(vi) Other Operational Partners.

**6 Mutual Aid Arrangements**

**6.1 Mutual Aid**

6.1.1 A statement explaining what Mutual Aid arrangements are in place, including contact details.

**7 Winter Service Patrols**

**7.1 Winter Service Plan and Reporting**

7.1.1 Winter Service Plan provided by the Operating Company for the Winter Service Patrols shall be as referred to in Schedule 2 Scope, Appendix 6 Winter Service Attachment 6.1 Appendices for Winter Service Plan.

7.1.2 A Winter Service Patrol Report shall be provided by the Operating Company in the format referred to in Schedule 2 Scope, Appendix 6 Winter Service Attachment 6.1 Appendices for Winter Service Plan.

**8 Treatment Routes**

8.1.1 In accordance with Schedule 2 Scope, Appendix 6 Winter Service Attachment 6.1 Appendices for Winter Service Plan.

(i) precautionary treatment routes, including sections shared with an adjacent road authority,

(ii) contingency plans for alternative access to precautionary treatment routes where normal access is prevented due to weather related or other Incidents,

(iii) locations of de-icing material loading points, and

(iv) cycling facilities in urban areas

8.1.2 The Operating Company shall provide details of cycling facilities in urban areas in Schedule 2 Scope, Appendix 6 Winter Service Attachments 6.1 Appendices for Winter Service Plan.

**9 Snow and Ice Clearance**

**9.1 Snow Clearing**

9.1.1 Arrangements and resources for managing snowfall. The Winter Service Plan shall demonstrate how all carriageways shall be maintained free from snow or ice as far as is reasonably practicable and in accordance with Schedule 2 Scope, Appendix 6 Winter Service Attachments 6.12 Snow Clearance.

9.1.2 Road closure procedure including use of snow gates.

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- 9.1.3 Prolonged snowfall strategy, including use of additional Winter Service Plant and operative resources.
- 9.1.4 Snow and ice clearance in accordance with Schedule 2 Scope, Appendix 6 Winter Service Attachment 6.11 De-Icing Material Spread Rates.
- 9.1.5 Arrangements for safe clearance of snow or ice from wide single carriageways.
- 9.1.6 Treatment strategy for bridge service roads, footways (including those on bridge decks), footpaths and cycling facilities including location of salt bins where applicable in accordance with Schedule 2 Scope, Appendix 6 Winter Service Attachments 6.10 - Categories A and B Footways, Footbridges & Cycle Facilities.

**9.2 Plans showing the location of the footways, footbridges and cycling facilities in Categories A and B.**

**10 Freezing Rain/Rain Falling On Extremely Cold Surfaces**

**10.1 Advance Planning**

- 10.1.1 Advanced planning for freezing rain/rain falling on extremely cold surfaces including as a minimum:
  - (i) arrangements for liaison with Police Scotland, Traffic Scotland Operations and Infrastructure Services Contractor and other interested parties, and
  - (ii) risk assessments .

**10.2 Operational Arrangements**

- 10.2.1 Operational arrangements for managing freezing rain/rain falling on extremely cold surfaces including as a minimum:
  - (i) details of treatment regimes in advance of, during and following a freezing rain event, and
  - (ii) arrangements for monitoring.

**10.3 Hazard Mitigation**

- 10.3.1 Hazard mitigation for freezing rain/rain falling on extremely cold surfaces including as a minimum:

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(i) arrangements for informing road users including use of Variable Message Signs, and

(ii) road closure procedure, rolling blocks and convoy arrangements.

**11 De-Icing Materials**

**11.1 Details**

11.1.1 For each type of de-icing material, including alternatives:

(i) detailed specification of material,

(ii) storage conditions, system types and capacities,

(iii) details on testing methods, including their type and frequency,

(iv) state suppliers, including any secondary suppliers,

(v) state any importers used to meet supply demands,

(vi) stock levels (total and split by location), and

(vii) details of re-stocking, including procurement mechanism and details of stock level monitoring.

11.1.2 Details of de-icing materials stocks shall be provided by the Operating Company in Schedule 2 Scope, Appendix 6 Winter Service Attachments 6.1 Appendices for Winter Service Plan and shall take account of the minimum stock levels to be maintained as referred to in the Appendix.

**12 Strategic Salt Stocks**

**12.1 Details**

12.1.1 Strategic salt stocks including as a minimum:

(i) suppliers including locations, initial delivery points and haulage arrangements,

(ii) third parties, liaison arrangements, haulage, delivery and 24 hour access arrangements, and

(iii) administration of strategic salt stocks

**13 Winter Service Plant**

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- 13.1.1 In accordance with Schedule 2 Scope, Appendix 6 Winter Service Attachment 6.1 Appendices for Winter Service Plan:
- 13.1.2 (i) the Operating Company's front line Winter Service Plant and reserve Winter Service Plant available on the Unit for the Winter Service,
- 13.1.3 (ii) the Operating Company's additional Winter Service Plant available through contingency arrangements and arrangements for the mobilisation of such additional Winter Service Plant for the Winter Service, and
- (iii) loading Winter Service Plant available on the Unit for loading such front line, reserve and additional Winter Service Plant .

**13.2 Calibration of Winter Service Plant**

- 13.2.1 Calibration arrangements and procedures for front line and reserve Winter Service Plant, in accordance with Schedule 2 Scope, Section 6 Network Operations - Winter Service, 6.5.7, 6.5.8 and 6.5.9.
- 13.2.2 The Winter Service Plan will describe how the requirements of this Part shall be met and where and how the calibration certificates will be held.

**14 Compounds, Depots and Facilities**

- 14.1 In Schedule 3 Contract Management, Appendix 3 Offices, depots & other infrastructure incl. plant, a schedule of compounds, depots and facilities covering the network of the Unit.

**15 Maps, Drawings and Graphical Information**

**15.1 Maps**

- 15.1.1 Provide scale maps for the following:
- (i) precautionary treatment routes for carriageways, including on/off slips and depots,
- (ii) precautionary treatment routes for footways, footbridges and cycling facilities,
- (iii) reactive treatment routes for footways, footbridges and cycling facilities,
- (iv) Winter Service Patrol routes,

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- (v) ploughing routes for carriageways, including on/off slips and depots,
- (vi) Weather stations including sensor types and where these sites are equipped with weather cameras, (map to differentiate between single and bidirectional cameras),
- (vii) snow gates,
- (viii) snow fences,
- (ix) shelter belts,
- (x) snow poles,
- (xi) snow or ice and hidden message signs,
- (xii) salt bins,
- (xiii) vertical concrete barriers,
- (xiv) other facilities, and
- (xv) where route based forecasting is not used, climatic domains and the sensors used to generate domain forecasts.

**16 Compiling and Maintaining Records**

**17 Snow Poles**

**17.1 Maintenance, replacement of damaged or missing snow poles, refurbishment and reserve stocks**

**18 Snow Gates**

**18.1 Maintenance, operation and liaison.**

**19 Variable Message Snow and Ice and Hidden Message Signs**

**19.1 Maintenance and operation of message signs and associated liaison arrangements.**

19.1.1 A schedule that specifies the type and location of the following signs in the Unit:

- (i) fixed message signs,

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	(ii) variable message signs, (iii) snow hidden message signs, (iv) ice hidden message signs, and (v) road closure hidden message signs
<b>20</b>	<b>Salt Bins</b>
<b>20.1</b>	<b>Stock level monitoring and replenishment procedures.</b>
<b>21</b>	<b>Salt Measurement Apparatus</b>
<b>21.1</b>	<b>Equipment and locations and recording methods.</b>

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**Attachment 6.3 Salt Stock Monitoring Report**

<b>Operating Company:</b>	<b>Reporting Month:</b>
1) Salt used during reporting period:	
2) Actual salt stocks held at the end of the reporting period:	
3) Salt orders placed and deliveries received during reporting period:	
4) Salt orders expected during next reporting period (include imports, dates deliveries expected & tonnage expected):	
5) Forecast usage during next reporting period	
6) Any other items to report (such as reduced treatment networks, any notable arrangements with local authorities, etc.)	

**Attachment 6.4 Winter Service Report**

**Table 6.4.1 Winter Service Report – Contents**

Item	Contents
<b>1</b>	<b>The Winter Service report shall provide:</b>
1.1	An executive summary of the annual report.
1.2	An overview and review of the service provided.
1.3	A summary of key performance reports.
1.4	Information on significant events and related actions.
1.5	An assessment of the accuracy of weather forecasts provided.
1.6	An assessment of weather station and camera performance.
1.7	An analysis of the ability of the Management System to capture reported Non-Conformances.
1.8	Details of innovations and improvements implemented.
1.9	Recommendations for continuous improvement.
1.10	Details of actions taken during periods of low confidence forecasting for variable and marginal winter weather conditions.
1.11	Details of Winter Service Plant available, including reserve and additional Winter Service Plant.

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**Attachment 6.5 Locations of Winter Service Infrastructure**

**Table 6.5.1 - Locations of Snow Fences, Snow Gates and Salt Bins**

Route	Snow Fence (meters)	Snow Gates (Number)	Salt Bins (Number)

\*None Currently in the Unit

**Table 6.5.2 - Locations of Hidden Message Signs**

Road Number	Location	Detailed Description
A96	Huntly	Approach to Huntly roundabout southbound
A96	Colpy	At the A920 junction at Colpy facing traffic turning from the A920
A96	Colpy	At the A920 junction at Colpy facing northbound
A96	Oyne	Northbound approach to Oyne Fork Junction

**Table 6.5.3 - Locations of Weather Stations, Forecast Sites and Camera Sites (Single or Bi-Lateral)**

Road Number	Location
A9	Balhaldie
A9	Inveralmond
<b>A9</b>	<b>Loaninghead</b>
A92	Charlestown (in Aberdeen City) – Maintained by Aberdeen City Council
A90	Fiddes
<b>A90</b>	<b>Forfar</b>
A90	Fraserburgh
<b>A90</b>	<b>Laurencekirk</b>

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A90	Starr Inn Farm
A92	North Anderson Drive (in Aberdeen City) – Maintained by Aberdeen City Council
A92 / A956	Bridge of Don (in Aberdeen City) – Maintained by Aberdeen City Council
A90	Stracathro
A90	Todhills
<b>A90</b>	<b>Toll of Birness</b>
<b>A92</b>	<b>New Inn</b>
A92	Cowdenbeath EFRR 1
A92	Cluny EFRR 2
A92	Sandford
<b>A95</b>	<b>Ballindalloch</b>
A95	Grantown
A95	Avielochan (on A9 NW unit)
<b>A96</b>	<b>Brodie</b>
A96	Fochabers
<b>A96</b>	<b>Foudland</b>
A96	Keith
A96	Delnies
<b>A96</b>	<b>Tyrebagger</b>
<b>M90</b>	<b>Glenfarg</b>
M90	Kelty
M90	Friarton Bridge

Forecasting Road Weather Stations are shown in **bold**.

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**Table 6.5.4 - Locations of Snow Poles**

Route A95					
Link	Section	Start Location	End Location	No.	Link
10935	05	Junction A970 Achnagonalin	Brig a Brown Junction	12	
10935	05	Junction A970 Achnagonalin	Brig a Brown Junction	12	
10940	05	Brig a Brown Junction	Balmenach Junction	36	
10940	05	Brig a Brown Junction	Balmenach Junction	49	
10945	45	Tormore	Moray Boundary	7	
10950	05	Moray Boundary	Cragganmore	29	
10950	20	Marypark	Carron Junction	78	
10950	20	Marypark	Carron Junction	100	
10960	30	Rosarie	Haughs Junction	40	
10960	30	Rosarie	Haughs Junction	37	

Route A96					
Link	Section	Start Location	End Location	No.	Link
17640	00	A920 Junction	Ythanwells	16	
17640	00	A920 Junction	Ythanwells	8	
17640	14	Ythanwells	Clinkstone	8	
17640	42	Whinbrae Climbing lane		6	
17640	58	End of climbing lane	end of Newtongarry	19	
17640	58	End of climbing lane	end of Newtongarry	23	

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17675	20	Buckie Junction	Mulben Junction	19	
17675	20	Buckie Junction	Mulben Junction	18	
17675	70	Dramlachs climbing lane		27	
12640	95	Brodie climbing lane		12	

**Table 6.5.5 - Locations of Vertical Concrete Barriers**

A90 Powrie Brae, North of Dundee

A90 Brechin Bypass.

Care will be taken to ensure that deep lying snow is ploughed away from these vertical barriers by the use of echelon ploughing to the left verge.

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**Attachment 6.6 Winter Service Patrols**

**Table 6.6.1 – Category A and B Winter Service Patrol Routes**

Route	Category
M90 - Halbeath to Perth	A
A9 – Inveralmond to Keir Roundabout	A
A90 - Perth to Stonehaven	A
A92 – Stonehaven to Charleston	A
A96 - Keith to Craibstone Roundabout	A
A90 – Fraserburgh to Tipperty	B
A92 – Halbeath to Dundee	B
A95 - Keith to Granish	B
A96 - Inverness to Keith	B

Notes:

1) Details of the Operating Company's Winter Service Patrol routes shall be as provided by the Operating Company in Schedule 2 Scope, Appendix 6 Network Operations - Winter Service, Attachments 6.1 Appendices for Winter Service Plan.

2) Patrol reports shall be recorded in accordance with Schedule 2 Scope, Appendix 6 Network Operations - Winter Service, Attachments 6.1 Appendices for Winter Service Plan.

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**Attachment 6.7 Location of Known Vulnerable Locations**

**Table 6.7.1 - Frost Susceptible Areas**

Road Number	Location
A96	Near Fochabers
A96	Roundabout near A9
A96	Inverurie Bypass
A96	Glens of Foudland
A96	North of Huntly near Westerton
A95	Bridge of Avon
A90	Near Candy farm
A90	Near Gateside Interchange
A90	Temple of Fiddes
A9	Blackford
A9	Balhaldie
A92	Sandford
M90	Friarton Bridge

**Table 6.7.2 - Water Run Off Locations**

Road Number	Location
A95	Kinnermony, near Aberlour
A90	Brechin Bypass
A95	Dalvey bridge – Tormore
A95	Tom un Uird to Cromdale
A95	Gaich to Craggen

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A95	Drumullie to Kinveachy
A95	South of Advie
A96	Skares – Bainshole
A96	Carnie Junction – Coachford
A96	Portsoy Junction to Banff Junction
A96	Huntly
A90	Opposite Stracathro Services
A90	Bancar Hotel, Lonmay
A9	Blackford

**Table 6.7.3 - Gradient Locations**

Road Number	Location
A9	A9 Cairnies Braes
A90	Temple of Fiddes
A95	Ballindalloch
A95	Granish to Cromdale
A96	Glens of Foudland
A96	Tyrebagger Hill
M90	Balmanno Hill northbound

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**Attachment 6.8 Records**

**Table 6.8.1 – Records**

Item	Contents include:
1	Decisions taken, when and by whom,
2	Planned and actual treatment records,
3	Planned and actual response times achieved,
4	Planned and actual commencement times,
5	Planned and actual route times,
6	Planned and actual spread rates,
7	Observations and actions taken by the Winter Service Patrols,
8	Output from Winter Service Plant on-board data capture devices,
9	Winter Service Plant down time and software faults,
10	Winter Service Plant deployment records (including vehicle location records) and driver and operator logs,
11	Logs (both manual and electronic) for telephone, electronic mail and two way communication calls,
12	Loading point de-icing stocks and replenishment orders,
13	Ice prediction system Records,
14	Weather forecasts and actual weather experienced,
15	Complaints by members of the public and Trunk Road users,
16	Accidents during winter conditions,
17	Road closures due to winter conditions,
18	Weights and volumes as appropriate for the amount of de-icing material(s) spread for each route,
19	Pre- and mid-season road sensor calibration systems,

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20	Winter Service Plant calibration certificates, and
21	Actual salt stocks held including strategic salt stocks.

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**Attachment 6.9 Potassium Acetate Treatment**

**Table 6.9.1 - Potassium Acetate Treatment**

Road Number	Location
M90	Friarton Bridge

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**Attachment 6.10 Footways, Footbridges and Cycleways – Response Times and Clearance Requirements**

**Table 6.10.1 - Footways, Footbridges and Cycleways – Precautionary Treatment Requirements**

Categories	Requirements
<b>A and B</b>	Complete precautionary treatment before 06:00 hours each morning or one hour in advance of road surface temperature (RST) falling below +1 °C

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**Table 6.10.2 - Footways, Footbridges and Cycleways – Response Times and Clearance Requirements for Snow or Ice Occurring Together**

<b>Categories</b>	<b>General</b>	<b>Between 06.00 and 19.00 hours</b>	<b>Treatments out with daytime hours</b>
<b>A and B</b>	Between the hours of 06:00 and 19:00, commence snow clearing as soon as practicable to prevent compaction by traffic. Ploughing should be continuous thereafter to prevent a build-up of snow.	Clear all snow within 2 hours of snow ceasing to fall. On wide Routes, 1.2 metre minimum width shall be cleared initially.	Clear snow when required by the Director.

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**Table 6.10.3 - Footways, Footbridges and Cycleways within the Unit**

Location Number	Route	Location	Name of street/side of street to be treated	Details of Footway		Route Centreline Length (m)	
				Start	Finish	Category A	Category B
1	A90	Crimond	Logie Avenue East/ Both Sides	Crimond House (12430/56 1940m)	Anvil Cottage (12430/68 390m)	600	
2	A90	Dundee	Forfar Rd/ Both Sides	Kingsway	Jack Martin Way	1650	
3	A90	Fraserburgh	Cross St – Maconochie Rd/ Both Sides	High St	Boothby Rd	1710	
4	A92	Dundee	East Dock St/ Both Sides	Trades Ln	East Whale Ln	200	
5	A92 / A97 2	Dundee	East Dock St- Broughty Ferry Rd- Greendykes Rd- Kingsway East/ Both Sides	East Marketgait	Forfar Rd	4770	
6	A92	Glenrothes	A92/ Both Sides	Bridge south of B9130 (14855/05 550m)	14865/05 450m	1100	
7	A92	Freuchie	A92/ Both Sides	Shield Ave	Filling Station	580	
8	A95	Aberlour	High St/ Both Sides	Dowan's Hotel (10950/05 2550m)	West Lodge (10950/30 1540m)	1760	
9	A95	Craigellachie	A95- Victoria St/ Both Sides	Bridge east of A941 on A95 (10960/05 145m)	Spey Rd (10960/50 450m)	330	
10	A95	Cromdale	A95/ Both Sides	Cromdale Hall (10940/50 0m)	The Old Inn (10940/50 810m)	810	
11	A96	Keith	Moss St/ Both Sides	Church Rd	17665/00 0m	745	
			Church Rd- Regent St/ Both Sides	Moss St	Westend Cottage (17670/46 420m)	1300	
			A96/ Southern Side	B9015	Tigh Geal (12670/00 1080m)	630	

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			Lennox Cres/ East Side	Intersection between A96 and A98	17675/91 100m	100	
			Lennox Cres/ West Side	Intersection between A96 and A98	Burnside Cottage (17675/70 2040m)	445	
12	A96	Elgin	East Rd/ Northern Side	Newmill Rd	Reiket Ln	1300	
			South Collage St- Alexandra Rd- High St- West Rd/ Both Sides	Pansport Rd	Eight Acres Hotel (12625/00 580m)	3100	
13	A96	Nairn	King St/ Both Sides	Viewfield Dv	St Ninians Rd	265	
			St Ninian St- Bridge St- Forres Rd/ Both Sides	King St	A939	700	
			Inverness Rd- Academy St- King St/ Both Sides	Tradespark Rd	Viewfield Dv	1575	
14	A96	Alves	Main Road/ Northern Side	Filling Station (12625/46 100m)	12625/37 750m	1220	

**Attachment 6.11 De-icing Material Spread Rates**

**Table 6.11.1 – Decision Matrix for Winter Service**

Road Surface Temperature	Predicted Road Conditions		
	Wet	Wet Patches	Dry
May fall below 1°C	Salt before frost	Salt before frost (See note A)	No action likely, monitor weather (See note A)
Expected to fall below 1°C		Salt before frost (see note B)	
	Salt after rain stops		
	Salt before frost and after rain stops (see note C)		
	Salt before frost		Monitor weather conditions
Expected snow	Salt before snow		
Freezing Rain	Salt before rainfall (see note C)		
	Salt during rainfall (see note C)		
	Salt after rainfall (see note C)		

Notes:

(a) Particular attention should be given to any possibility of water running across carriageways and such locations should be monitored and treated as required.

(b) When a weather forecast contains reference to expected hoarfrost considerable deposits of frost are likely to occur and close monitoring will be required. Particular attention should be given to the timing of precautionary treatments due to the possibility that salt deposited on a dry road may be dispersed before it can become effective.

(c) Under these circumstances rain will 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.

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Table 6.11.2 sets out the spread rates for precautionary treatments. Rate of spread for precautionary treatments should not be adjusted to take account of residual salt or surface moisture unless stated otherwise.

The rates in the table below are for precautionary salt treatment prior to snowfall that is essential to form a de-bonding layer and snow clearance.

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**Table 6.11.2 – Treatment Matrix Spread Rates for Precautionary Treatments**

Item	Forecast weather condition	Dry or damp road (grammes/square metre)	Road Surface Wet / Frost Susceptible / Surface Water Run-off Area (grammes/square metre)
1	RST higher than plus 1°C	0	0
2	RST lower than or equal to plus 1°C but higher than minus 2°C	10	20
3	RST lower than or equal to minus 2°C but higher than minus 5°C	15	30
4	RST lower than or equal to minus 5°C (or see TS alternative de-icer guidance)	30	40
5	Freezing Fog	Add 5 to Item 1 to 4 as applicable	Add 10 to Item 1 to 3 as applicable; otherwise as per item 4.
6	Freezing Rain	40	40
7	Snow Accumulations of any depth	40	40

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**Table 6.11.3 – Precautionary Treatment Potassium Acetate Spreading Rates**

Conditions forecast	Spread Rate (litres/square metre)
Road surface temperature lower than or equal to plus 1°C but higher than minus 2°C	0.0156
Road surface temperature lower than or equal to minus 2°C but higher than minus 5°C	0.0312
Frost and road surface temperature lower than	A minimum of 0.0312 which should be increased with manufacturer's recommendations
-5°C	
Snow	
Freezing conditions after rain	

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**Table 6.11.4 – Snow or Ice Clearance Salt Spreading Rates**

Road Surface Condition	Treatment				
	Spreading Salt (grammes/square metre)	Ploughing	Blowing	Alternative De-Icer	Ice Breaker
Ice Formed	40	No	No	Where Applicable	No
Snow covering of less than 30mm	40	Yes	No	No	No
Snow covering exceeds 30mm	40	Yes	No	No	No
Snow accumulations due to prolonged snowfall	40	Yes (continuous)	Where applicable	No	No
Hard packed snow/ice less than 20mm thick	40 (successive treatments)	No	No	No	Where applicable
Hard packed snow/ice	salt/abrasive (successive)	No	No	Yes	Yes

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**Attachment 6.12 Snow Clearance  
Table 6.12.1 Snow Clearance**

Condition Criteria	Category A Patrol Routes		Non Category A Patrol Routes	
	Dual Carriageways & Motorways		Dual Carriageways	Dual Wide Single 2+1 & Single Carriageways
	Number of Existing Lanes		Number of Existing Lanes	
	2	3 or More	2	1 or 2 (WS 2 + 1)
	Minimum number of lanes in each direction free from ice and snow as far as is reasonably practicable		Minimum number of lanes in each direction free from ice and snow as far as is reasonably practicable (Except where snow gates)	
Snow at any time	1	2	1	1
Following clearance of minimum lanes or the cessation of snow fall all lanes are to be clear of snow	3 hours	3 hours	3 hours	3 hours

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**Table 6.12.2 Road Surface Wetness**

<b>Definition</b>	<b>Description</b>	<b>Water film thickness (for when using WFT instrumentation)</b>
Dry Road	A road that shows no signs of water or dampness at the surface but may be just detectably darker. It may have moisture contained in pores below the surface that is not 'pumped' to the surface by traffic.	0 to 0.03mm (=0-30 g/m <sup>2</sup> )
Damp Road	A road which is clearly dark but traffic does not generate any spray. This would be typical of a well-drained road when there has been no rainfall after 6 hours before the treatment time.	0.03 to 0.05mm (=30-50 g/m <sup>2</sup> )
Wet Road	A road on which traffic produces fine spray but not small water droplets. This would be typical of a well-drained road when there has been rainfall up to 3 hours before the treatment time.	0.05 to 0.1mm (=50-100 g/m <sup>2</sup> )
Very Wet Road and Flowing Water on Road	A road on which traffic produces droplets of water in the air to visibly flowing water on the surface	Greater than 0.1mm (=>100 g/m <sup>2</sup> )

**Attachment 6.13s Salt Storage Facility  
6.13.1 Specification for Salt Storage Facility**

**General**

- All salt storage facilities subject to Director approval.
- It may be permissible to use existing depot provisions which are fit for purpose subject to Director approval.

**Planning Requirements**

- All planning, building and environmental regulations, appertaining to the facility, should be followed.

**Design**

- All buildings and storage structures must meet UK building design codes and be constructed of materials not subject to corrosion.
- The storage area must be large enough to contain the salt stockpile and provide room for vehicles to maneuver when unloading/ loading and maintaining the stockpile.
- Storage facility construction should be designed and specified by competent persons.

**Site Conditions**

- Salt stockpiles should be kept on a concrete or bituminous base strong enough to carry the weight of the salt and the loads imposed by the structure.
- Base to be sloped to allow water to drain away.
- Adequate drainage must be provided which meets environmental requirements/agreements.

**Walls**

- Salt stockpiles shall be enclosed on three sides with retaining walls.
- Retaining walls for stockpiles shall be impervious to water, mainly to prevent water entering but also they will help to maintain a more stable moisture content in dry conditions.
- All of the walls must be designed to withstand the maximum possible loads caused from salt stored against them and the dynamic forces from loading the salt.

**Roof**

- A structured roof shall be provided and there shall be no gaps between walls and the roof structure to eliminate salt spillage.

**Safety**

- For safety reasons the maximum stockpile height should not exceed the ability of the loader to push up salt from solid ground. All faces should be sloped to reduce the risk of collapse.