

Balfour Beatty Regional Civil Engineering

**M77 (FENWICK TO MALLETSHEUGH)/
GLASGOW SOUTHERN ORBITAL
DBFO PROJECT**

WINTER SERVICE PLAN

2017/2018



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WINTER SERVICE PLAN 2017/2018

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Client:

East Renfrewshire Council

Project:

**M77/GSO DBFO
Operations and Maintenance**

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Balfour Beatty Regional Civil Engineering

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Revision History

01	Original draft for review
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05	Incorporating ERC Compliance Audit comments
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July 2013	18	G Drummond	D Allen	Name changes, Dates and contact details. Section 3.5, details on accessing weather forecasts. Section 5.17.1 - Change of phrasing. Section 5.17.13 – Change of phrasing. Section 5.15 – Low humidity conditions deleted due to use of pre wetted salt Section 5.17.1 – Modified to include possible use of smart phone technology
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Beatty Regional Civil Engineering

M77 (FENWICK TO MALLETSHEUGH)/

**GLASGOW SOUTHERN ORBITAL
DBFO PROJECT**

WINTER SERVICE PLAN

2017/2018

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DISTRIBUTION LIST of Controlled Documents

Organisation	Recipient	Copy Nos.
Connect Roads	Operations Manager	1
ERC	ERC Representative	2
Transport Scotland	Head of Projects Branch	3
	Network Impacts Manager	4
Balfour Beatty		
Winter Service Manager	Stewart MacKenzie	5
Framework Manager	Robert McDougall	6
Operations Manager	Frank Croall	7
Depot Supervisor	Working Supervisor	8
Duty Officer		9
Scotland Transerv Call Centre	Operations/Control Room Manager	10
Police	Headquarters	11
Adjacent Authorities		
East Renfrewshire Council		12
East Ayrshire Council		13
South Lanarkshire Council		14
Scotland Transerv		15

1. INTRODUCTION AND POLICY

- 1.1 This document represents Balfour Beatty Regional Civil Engineering (BBRCE) submission of its annual Winter Service Plan (WSP) to East Renfrewshire Council (ERC), in accordance to Schedule 4, Part 2, "Winter Maintenance Management" and Part 5 Series 2800 of the Project Agreement.
- 1.2 The WSP describes the procedures for dealing with Winter Service Activities. It is designed to provide a planned and co-ordinated response by BBRCE and its Suppliers on behalf of its Client.
- 1.3 The WSP has been compiled to reflect the consultations with the adjacent road authorities and emergency services and should be read in conjunction with BBRCE's Emergency Response Plan (M77/OPS/003).
- 1.4 Although the WSP becomes effective at the commencement of the winter service period, 1 October 2017 to 15 May 2018, BBRCE has made arrangements whereby, in the unlikely event of winter service being required out side the period, the WSP will be invoked to deliver an appropriate service to maintain a safe and operational Network.
- 1.5 The major and most frequent activity of Winter Service is the precautionary salting of roads to keep them free from ice and hoar frost. This is a routine activity, which is activated through a weather forecasting system and a computerised Ice Prediction System.
- 1.6 BBRCE's response to frost and snow warnings is pre-planned as outlined within this document. On receipt of an adverse weather forecast the precautionary salting plans will be activated and put into operation by the Duty Winter Service Officer (WSO) concerned.
- 1.7 BBRCE's objective is to initiate and manage procedures for dealing with winter conditions, enabling as far as reasonably possible the safe movement of traffic on the M77/A77 Malletsheugh to Meiklewood, the Glasgow Southern Orbital, A726 West Mains Road roundabout to Phillipshill Interchange and the A727, Phillipshill Interchange to the Carmunock roundabout.
- 1.8 BBRCE is responsible for the management of winter service. This coverage is detailed in Appendix A. In addition to these carriageway areas, the winter service plan covers footways, cycle track and lay-bys as defined in Appendix B.
- 1.9 Precautionary salting routes for the network are included in Appendix C.
- 1.10 It is BBRCE's intention that a consistent and co-ordinated service is achieved along the M77/A77, GSO A726 and A727, together with the adjacent Agents and Authorities ensuring the available resources are deployed in an efficient manner. This will require liaison and co-ordination with adjacent Agents and Authorities, co-operation in route planning and working across administrative boundaries.

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- 1.11 It is BBRCE's policy to endeavour that the M77/A77, GSO, A726 and A727 are kept open to traffic and to minimise disruption to road users.
 - 1.12 BBRCE's operatives will be available for winter services in accordance with the WSP at least one month prior to commencement of the winter period.
 - 1.13 Salt bins or heaps shall not be used unless particular problems such as regular water flow from a verge, occurs. In such cases temporary use of a salt bin or heap shall be made until a permanent solution can be found.
 - 1.14 In exceptional circumstances, where it would benefit the service to road users, the use of salt bins containing grit or a mixture of salt and grit may be considered for difficult footway areas (i.e. approaches to footbridges and subways, well used footpaths on steep gradients). Their use should be considered carefully, bearing in mind the resources available for spreading grit and the subsequent increased cleansing requirements.
- Uncontrolled if printed

2. MANAGEMENT ARRANGEMENTS

- 2.1 The Winter Service Manager (WSM) has the delegated responsibility for winter service decisions and operational actions. The WSM will have a sufficient experience in delivering winter service operations to enable competent supervision and responsibility for all aspects of the Winter Service
- 2.2 The WSM has delegated and overall responsibility for the winter service decisions, operational actions and ensuring compliance with the Contract and the following activities:
- Ice Prediction and weather forecasting service
 - Collection and management of weather data
 - Approval of daily winter service decision making
 - Plant and communications
 - De-icing material stock levels and storage
 - Staff and Operative training and rosters
 - Maintaining records
 - Daily and annual reporting
- 2.3 The BBRCE's Winter Service Officers (WSO) are contacted either at the Connect Operations Centre or by mobile telephone during working hours or out side working hours. Details of WSO are highlighted in Appendix D. If the WSO are required to be contacted in an emergency situation then contact can be made through BBRCE emergency number.
- 2.4 The WSO will have relevant experience and training to be responsible for receiving weather information, taking decisions and initiating appropriate action for all winter events that take place during the period for which he or she is on duty. The WSO will have received, as a minimum, RoadCast Standard Training Course provided by MeteoGroup. This training includes basic meteorology and for the interpretation of weather forecasts to make informed winter maintenance decisions. Training certificates will be available for inspection. The decision-making algorithm in Appendix E will be used to facilitate the process, but decisions will not be restricted to its recommendations or in accordance with the action flowchart on Appendix F.
- 2.5 For co-ordination purposes a supplementary information sheet containing key contact names within the adjacent Agents and Authorities is included as Appendix G.
- 2.6 Consultation has been made with SW Trunk Road Unit's Operating Company, East Renfrewshire, East Ayrshire and South Lanarkshire Councils with regards to any boundary issues with regards to precautionary gritting.



3. WEATHER FORECAST PROVIDER

- 3.1 MeteoGroup will act as the Forecasting Organisation during the 2017/2018 winter season.
- 3.2 From 1 October 2017 to 15 May 2018 weather forecasts will be issued daily by MeteoGroup. These will be transmitted to the Forecasting Organisation's web-based viewer to facilitate interrogation of the disseminated data. The web-based viewer will be available at the M77 Operations Centre and to all WSO.
- 3.3 The following forecast data will be available via the web-based viewer:
 - (a) **by 1300hrs -** 24 hour forecast
2-5 day outlook
Prediction graphs for outstations
 - (b) **by 1900 hours-** Updated prediction graphs if required when the 1300 hours minimum road surface temperature prediction is below +3C.
 - (c) Further amendments as advised throughout the 24-hour period.
- 3.4 All amendments to the forecast will be advised by telephone from MeteoGroup to the WSO.
- 3.5 If, for any reason, access to weather forecasts is not possible by normal means (company issued computers) any web enabled device may be utilised instead, including computers at other locations and smart telephones.
- 3.6 A 24-hour consultancy service is available from MeteoGroup not only to answer specific queries but also to be made aware of actions being taken in response to forecasts. This helps the forecaster in deciding the need to update information to BBRCE.
- 3.7 Contact details of MeteoGroup can be found in Appendix G.
- 3.8 MeteoGroup have confirmed that the Project Roads pass through 1 climatic domain. MeteoGroup have therefore confirmed that forecast provision will be based on this climatic domain.
- 3.9 Weather radar, message boards and archive facilities will be available via the MeteoGroup web site.



4. ICE PREDICTION SYSTEM

- 4.1 The Computerised Road Weather Information System (CRWIS) shall assist the WSO in the decision making process for the winter operations. This system will be provided by Vaisala Limited.
- 4.2 The CRWIS provides for incoming road meteorology forecasts, being issued by the forecast provider, to be captured and stored on the system.
- 4.3 The CRWIS will be set to poll ice sensor outstations at hourly intervals.
- 4.4 The CRWIS has an archive facility which will back up the data from the system on a regular basis. Vaisala also back up their whole system and information can be retrieved for the purpose of audit and any potential third party claims. All proposed actions will be sent out via e-mail and posted through the MeteoGroup Message Board web page to designated personnel.
- 4.5 There are three ice sensor stations located at M77 Gardrum Mill, A726 Peel Park and the GSO Glasgow Road. The Gardrum Mill site shall be used as a forecast site by the Forecast Organisation. The location of the sites, relative to the route, is shown in Appendix C.
- 4.6 If in the unlikely event that the CRWIS fails for any reason then the WSO can contact the 24 hour CRWIS helpdesk and/or the MeteoGroup consultancy service for assistance.

5. DECISION MAKING

5.1 For planning and operational purposes three Winter Service periods are defined as follows:

High: The months of December, January and February when severe conditions might reasonably be expected.

Low: The months of November and March, when severe conditions may occur.

Marginal: The months of October, April and May, when severe conditions are not expected.

5.2 Winter Service site operations will be undertaken by BBRCE from 1st October 2017 to 15th May 2018. BBRCE will have appropriately qualified staff available to carry out all winter service duties. BBRCE will have sufficient resources available on a **Normal** and **Stand-by** basis to cover precautionary salting actions within a total treatment and response time of 3 hours. Additional staff will be made available by BBRCE to enable 24-hour **Continuous** operation, when required. The definitions of the highlighted terms are:

Normal: On duty based at the depot during normal working hours.

Stand-by: Personnel available at the depot no more than 1 hour after being called out.

Continuous: On duty based at the depot on a 24-hour/day basis.

Decision Matrix Guide		Predicted Road Conditions		
Road Surface Temperature	Precipitation etc.	Wet	Wet Patches	Dry
May fall below +1°C	<u>No</u> rain <u>No</u> hoar frost <u>No</u> fog	Salt before frost	Salt before frost (See note A)	No action likely, monitor weather (See note A)
Expected to fall below 1°C	<u>No</u> rain <u>No</u> hoar frost <u>No</u> fog		Salt before frost (see note B)	
	<u>Expected</u> hoar Frost <u>Expected</u> fog			
	<u>Expected</u> rain <u>BEFORE</u> freezing		Salt after rain stops	
	<u>Expected</u> rain <u>DURING</u> freezing		Salt before frost and after rain stops (see note C)	
	<u>Possible</u> rain <u>Possible</u> hoar Frost <u>Possible</u> fog		Salt before frost	Monitor weather conditions
<u>Expected</u> snow		Salt before snow fall		
Freezing Rain	Before rain	Salt before rainfall (see note C)		
	During rain	Salt during rainfall (see note C)		
	After rain	Salt after rainfall (see note C)		

Notes

- Particular attention should be given to any possibility of water running across carriageways and such locations should be monitored and treated as required.
- When a weather warning 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 becomes effective.
- 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.

Weather Conditions Road Surface Conditions Road Surface Temperature (RST)	Air Temp	Treatment	
		Salting (g/m ²)	Ploughing
Frost or forecast frost RST at or above -2°C		10	No
Frost or forecast frost RST below -2°C and above -5°C		20	No
Frost or forecast frost RST at or below -5°C and above -10°C and dry or damp road conditions		20	No
Frost or forecast frost RST at or below -5°C and above -10°C and wet road conditions (existing or anticipated)		2x20	No
Light snow forecast (<10mm)		20	No
Medium/heavy snow forecast		2x20	No
Freezing rain falling		20 (successive)	No
After freezing rain		20	No
Ice formed (minor accumulations)	above -5°C	20	No
Ice formed	at or below - 5°C	2x20	No
Snow covering exceeding 30mm		20 (successive)	Yes
Hard packed snow/ice	above -8°C	20 (successive)	No
Hard packed snow/ice	at or below - 8°C	Salt/abrasive (successive)	No

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- 5.3 The text forecast provided by the weather forecast provider will be the primary factor in deciding upon the appropriate action to be taken.
- 5.4 Treatment times for precautionary salting will not exceed 2 hours. The maximum combined response/treatment time during any winter service period shall not exceed 3 hours. BBRCE will undertake internal audits of the Winter Operations to ensure that contractual response times are being achieved.
- 5.5 Outside Normal working hours the winter service operations will be controlled by the WMO, who has 24-hour communication access to the operational personnel.
- 5.6 Clear communication channels will be established between the WSO, adjacent agents and authorities and Traffic Scotland. It is BBRCE's intention that a consistent approach to winter service operations can be established between adjacent agents and authorities, e.g. times of gritting. However it should be noted that forecast information may vary between all parties therefore a consistent approach may not always be possible. Contact details for adjacent agents and authorities can be found in Appendix G.
- 5.7 The WSO will liaise with the ERC representative, Connect M77/GSO Plc and Traffic Scotland on a day-to-day basis as appropriate to the conditions.
- 5.8 BBRCE will distribute copies of proposed actions to adjacent Agents, Authorities and Police by e-mail and posted on MeteoGroup message board.
- 5.9 Full use will be made of the weather forecast and CRWIS to determine the optimum time to commence precautionary salting. However, Winter Service Patrols as described in Section 7 of the WSP will be carried out when conditions dictate.
- 5.10 Due to the network road surface having Stone Mastic Asphalt, residual salt in an open texture surface is negligible.
- 5.11 In the event of hoarfrost, black ice or freezing fog being forecast, precautionary salting or salting using pre-wetted salt will be carried out even if roads are dry.
- 5.12 In the event of frost forecast after rain, precautionary salting will be delayed until cessation of precipitation to reduce loss of salt by runoff unless precipitation occurs at the time of forecast frost. In the event of precipitation occurring unexpectedly before forecast frost all affected sections of the project roads will be inspected and, if required, corrective action will be taken before the forecast frost to re-salt any sections of the project road where salt has been lost due to runoff.
- 5.13 In the event of a report of hoarfrost or freezing fog occurring without a forecast and causing the road surface to become icy, the Patrol driver will be deployed by the WSO for immediate salting of routes affected as soon as the conditions are reported unless thawing is likely before salting can begin.
- 5.14.1 In the event that a query of any decision is made by the Winter Duty Officers or no treatment is planned when a red code readiness is forecast, then the Framework Manager will be notified.

5.15 Records

5.15.1 The WSO shall maintain sufficient records to enable:

- (a) a detailed check of monthly accounts
- (b) an annual performance appraisal
- (c) handling of third party insurance claims

5.15.2 The records content will include at least the following: Weather reports; action taken; route length treated (particularly where this relates to spot treatment); plant and manpower deployed; hours worked; salt usage; number and nature of complaints. These reports will be either stored and archived by MeteoGroup/Vaisala and accessed via their websites or kept electronically by BBRCE on computer network drives.

5.15.3 Winter service records shall be retained for the minimum periods stated within Schedule 4, Part 7 of the Project Agreement.

5.16 Reports

5.16.1 The following routine reports will be prepared by the WSO throughout the three winter service periods:

- (i) Daily, minimum ice sensor temperature summaries are available via the Vaisala web based system. All other temperatures and road states are also available within the same system.
- (ii) A monthly summary of, actions taken and daily salt usage. Salt usage will be related to the daily forecast and will therefore cover the period 1200hrs – 1200hrs. The scheduled routine weather forecasts are accessible via computers and smart telephones at any time. In the event of unscheduled forecast updates the Forecasting Organisation will inform the WSO, who will in turn verify the changes on their own computer and notify the operatives of any change in the proposed action.

5.16.2 Any major incident arising on the Project Roads as a result of winter conditions will be notified immediately to ERC by telephone. A written report will be provided to ERC within 12 hours of the DBFO Company becoming aware of the incident.

5.16.3 An end of season Winter Service report will be produced by 31 May 2018, in accordance with the Project Agreement. Prior to the 15th June 2018, the company shall convene a meeting with adjacent road authorities to review the company's operations. In turn a report will be submitted by the 30th June 2018 containing proposals and recommendations.


6. SALTING ROUTES

- 6.1 Maps and descriptions of the salting routes and depot location are detailed in Appendix C.
- 6.2 Prior to the commencement of pre-salting operations, salt spreading plant will be subject to dry running to ensure compliance with the salting route duration requirements and to prove mechanical worthiness. Dry running will include for the fitting of ploughs and other associated equipment. Records of dry runs will be produced.

7 PATROL ROUTES

- 7.1 The purpose of Winter Service Patrols shall be to identify sections of the route where ice may be forming at an early stage and provide advance warning of potential adverse conditions.
- 7.2 Where the forecast provider is predicting road temperatures of +3°C or below, winter service patrols will be instructed.
- 7.3 Winter service patrols are normally carried out during the period 01 November to 31 March inclusive, between the hours of 02:00hrs and 10:00hrs, however patrols may also be instructed at the discretion of the WSO outside this period should marginal conditions prevail.
- 7.4 Where patrols are instructed they will take place not less than one hour driving with 1 hour rest throughout the period where the road temperature remains below 3°C.
- 7.5 Operatives will follow two prescribed routes of patrol in a loaded gritter. One gritter will concentrate on the M77 between junction 3 to A77 Grassyards and the other on the GSO, A726 and A727. Should ice/hoar frost be encountered, the Duty Operatives will notify the WSO and seek further instruction.
- 7.6 Map and descriptions of the patrol route are detailed in Appendix I
- 7.7 It should be recognised that the threshold of winter service patrol deployment is stated within the Project Agreement and this may on occasions lead to disparity of winter service treatments with the inter-connecting road network.

8 SNOW CLEARING

- 8.1 When a snow warning is received precautionary salting will be carried out on all routes. Snowploughs will be fitted to appropriate vehicles on commencement of snowfall.
- 8.2 Snowploughing will not normally take place if the depth of snow is less than 30mm.
- 8.3 If precautionary salting has been carried out before the snowfall and the depth of snow reaches 30mm then ploughing with simultaneous salting will be carried out utilising dry salt.
- 8.4 If precautionary salting has not been carried out and the depth of snow is less than 30mm, salting only will be carried out.
- 8.5 If precautionary salting has not been carried out and the depth of snow exceeds 30mm, simultaneous salting and ploughing will be undertaken.
- 8.6 Ploughing will be carried out on the basis of "ploughing by lanes". In the first instance this will generally imply the nearside lane of dual carriageways and full width clearance of single carriageways, with subsequent ploughing of other lanes. Ploughing will be undertaken in such a manner as to not deposit snow from more than two lanes into the central reserve. No snow will be deposited onto areas below elevated carriageways, multi level or grade separated junctions
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- 8.7 Ploughing of slip roads shall be undertaken as soon as practically possible following the clearance of the main carriageway nearside lane so as to ensure a single lane each way of Network is operable. Only when this single lane of Network has been secured will ploughing operations commence in the offside lanes of dual carriageways and slip roads.
- 8.8 Lighter falls may call for ploughing where local drifting has occurred or to remove snow not dispersed by traffic (e.g. where traffic is reluctant to use offside lanes or at night when traffic is light).

- 8.9 Ploughing will continue for as long as necessary to clear all routes. It is important that the M77/A77, GSO, A726 and A727 within the Project Network are cleared and that no area is abandoned for the sake of concentrating resources on localised areas. In all cases therefore the defined precautionary salting routes will be adhered to for snow ploughing. Where conditions demand a more intensive treatment in specific areas a reserve vehicle will be called out to attend such areas.
- 8.10 Where reasonably practical, ploughing will be undertaken to join with neighbouring authorities operations as to provide a consistent clearance of the larger network. BBRCE will endeavour to advise its neighbouring authorities of when ploughing operations are to commence.
- 8.11 In all ploughing conditions care will be taken wherever possible to ensure that any resulting windrows are kept to a minimum and are removed as soon as possible so not to obstruct the flow of water to highway drainage outlets and to ensure that road markings and road studs are visible.
- 8.12 It may not be possible to remove deep accumulations of snow or snowdrifts by normal ploughing and the use of other mechanical plant, including snow blowers, may be necessary.
- 8.13 In exceptionally adverse conditions BBRCE shall bring into operation previously arranged plans to use other plant and labour such as farmers' tractors and loading shovels and plant hires or other recourses within BB Group as described in Appendix J.
- 8.14 In the event of exceptional snowfall, which may require the temporary dumping of accumulated snow, the WSO will decide to stockpile off site and store within depot/lay by holding areas or storage facilities/arrangements.

In the event of extreme conditions persist and road closures have to be considered, then the Winter Service Officer will consult with the Police and contact Traffic Scotland staff and advise them accordingly. There are no snow gates on the project network.

8.15 Rates of Spread

8.15.1 Salt will melt ice and snow at temperatures as low as -20 C, but below -10 C the amount needed becomes environmentally and economically undesirable. Salt will therefore be applied at the rates shown in Section 5 – Decision Making.

8.15.2 Use of salt alone to treat hard packed snow and ice must be done with caution as in low temperatures it can result in an uneven and slippery surface. In exceptional circumstances a 6mm single size abrasive aggregate will be applied either separately or mixed with the salt. This application is purely to assist traction and does nothing to clear snow or ice and its use will be discontinued as soon as possible to avoid blocking of gullies and drains on thawing.

8.16 Footway & Cycle Track

8.16.1 In times of snowfall, heavily used footways and footbridges as detailed in Appendix B will be cleared in accordance with the priorities defined therein so to ensure that ice and snow is removed by 1700hrs the following working day.

8.16.2 As much as possible priority will be given to pedestrian crossing and waiting points such as bus stops

8.17 Follow-up Actions

8.17.1 Arrangements will be made to keep drains and drainage channels clear to deal with floodwater in the event of a rapid thaw.

8.17.2 After periods of snow and frost, arrangements will be made to inspect the roads for frost damage and where necessary, in the interests of safety, carry out temporary or permanent repairs.

8.18 Method Statement and Risk Assessment

8.18.1 Maintenance works will be undertaken by the operatives in accordance with BBRCE's Health and Safety Procedures Manuals.

9 LABOUR

- 9.1 The minimum training requirement for BBRCE operatives will be the City & Guilds award for Winter Service Operatives, or an acknowledged industry equivalent.
- 9.2 Details of the operative's training are included as Appendix H. All records are kept centrally at the M77 Operations Centre.
- 9.3 Call out procedures in the event of an emergency will be as defined in M77-OPS-003 Emergency Response Plan.

10 PLANT, EQUIPMENT AND DEPOTS

- 10.1 The vehicles described in Appendix K are to be used for winter service functions on the M77/A77, GSO, A726 and the A727. Salt spreading vehicles used on the Network will be capable of GPS satellite positioning. The tracking of vehicles will be provided by Masternaut.
- 10.2 Major servicing of the vehicles, including the reserve vehicle, shall take place before 1st October 2017.
- 10.3 All gritters will be fitted with road sensor temperature probes which will transmit GPS positioning and temperatures to a web page accessible by Transport Scotland, Traffic Scotland and the Duty WSO. They will also be equipped with emergency rations if required by the public.
- 10.4 Routine servicing, comprising of daily vehicle check when operational and an 8-weekly vehicle inspection shall be undertaken.
- 10.5 BBRCE have appointed Balfour Beatty Fleet Services who will supply a fitter and will be available on call 24 hours per day during the whole winter maintenance season to deal with any defects of the gritting vehicle, spreading equipment or loading shovel.
- 10.6 The operations described within this Winter Service Plan shall be run from M77 Operations Centre.
- 10.7 All vehicles, plant and equipment shall be provided by Balfour Beatty Fleet Services and be available for use at the depot during the winter service period. An in-situ calibration check shall be carried out bi-annually during September and January. Additionally, an ad-hoc calibration of a spreader, that has undergone repair to the hopper and spinner mechanism, will be undertaken.
- 10.8 It is a requirement of BBRCE that all winter service vehicles have a radio or hands free telephone and On-board data capture equipment within each vehicle.

11 DE-ICING MATERIALS

11.1 Details

11.1 Salt shall be kept as dry as possible in a purpose built salt barn. Dry salt is easier to handle and can be more accurately spread at the specified rates with the equipment available.



11.2 Run off from the salt will be collected by a positive drainage system within the depot.

11.3 Steps shall be taken to ensure that salt is correctly rotated in use and that old salt is not allowed to accumulate at the end of each season.

11.4 All salt for treatment purposes will be ordered by BBRCE.

11.5 BBRCE will arrange for salt stocks to be periodically tested to the current British Standard (BS 3247) for grading and, in addition, for moisture content and density, and will endeavour to arrange that testing commences at the beginning of each season, or will only order salt from Quality Assured suppliers.

11.2 De-icing Material Stock

11.2.1 Details of salt stockpiles are included as Appendix L

11.3 Pre-wetted Salt

11.3.1 BBRCE will continue to use pre-wetted salt as a precautionary treatment. Precautionary salt spreading rates will be reduced by 30% for the pre-wetted applications. These applications will be made up of 70% rock salt and 30% brine.

11.3.2 Pure white salt will be stored at the Connect Operations Centre for the production of brine on site. Salt concentration in the brine will be manufactured to a target of 23%, in accordance with the manufacturer's guidelines.

11.3.3 Salt saturator is installed within the yard area of the M77 Operations Centre and will also act as a storage vessel. The capacity of the tank is 5,000 litres, which is the equivalent to 2 precautionary treatments on the network.

11.3.4 Brine will be regularly monitored to ensure that it is manufactured to a target of 23%.

11.3.5 Appendix C scopes out the amount of salt and brine required for pre-wetted treatments.

12 VARIABLE MESSAGE SIGNS AND PUBLICITY

12.1 The use of Variable Message Signs, to inform motorists of road conditions will be encouraged where possible. The WSO will endeavour to co-ordinate information to Traffic Scotland (NNCC) on a regular basis to enable current road conditions to be disseminated via the national VMS system.



12.2 During periods of heavy snowfall or other extraordinary circumstances, where media attention is considered highly likely, contact shall be made through to East Renfrewshire's O&M Manager who will be requested to inform the media. The relevant contact details can be found in Appendix G

12.3 Should parts of the Network, including the associated roads, be closed as a result of snow or ice, BBRCE shall notify ERC, following the procedures set out in the project's Emergency Response Plan, compiled by BBRCE.

13 LOCATIONS FOR SPECIAL TREATMENT

13.1 Careful consideration will be given to areas along the route which are known for being susceptible to frost. Similarly, areas that are also affected from surface run off from adjacent land will be identified and closely monitored during low temperature periods, and additional salt dispersed as deemed appropriate by BBRCE. Any locations for special treatment will be detailed in Appendix M.

14 OTHER COMMENT

14.1 There are no other comments

APPENDIX A

BALFOUR BEATTY REGIONAL CIVIL ENGINEERING AREA OF RESPONSIBILITY

SCOTTISH GOVERNEMENT TRUNK ROADS			
Ref	NAME AND START POINT	ROUTE LENGTH (m)	FULL DESCRIPTION
A	M77 /A77	17000	M77 Jct 5 Ayr Road Overbridge to Approx 180m south of Meiklewood Interchange
B	A726 – Glasgow Southern Orbital	10000	A726 Glasgow Southern Orbital from M77 Maidenhill Interchange to Phillipshill Interchange
C	A726	1250	West Mains Road Roundabout to Phillipshill Interchange
D	A727	1250	Phillipshill Interchange to Carmunock Roundabout

APPENDIX B

ADDITIONAL SNOW REMOVAL AREAS

High: To be carried out when all carriageway lanes open
Medium: To be carried out when High priorities complete
Low: To be carried out when Medium priorities complete

M77 /A77

	LAYBY		LAYBY FOOTWAY		OTHER COMMENTS
	Northbound	Southbound	Northbound	Southbound	
High Priority	Police patrol point M77	Police patrol point M77			
Medium Priority					
Low Priority					

A726, A727 and GSO

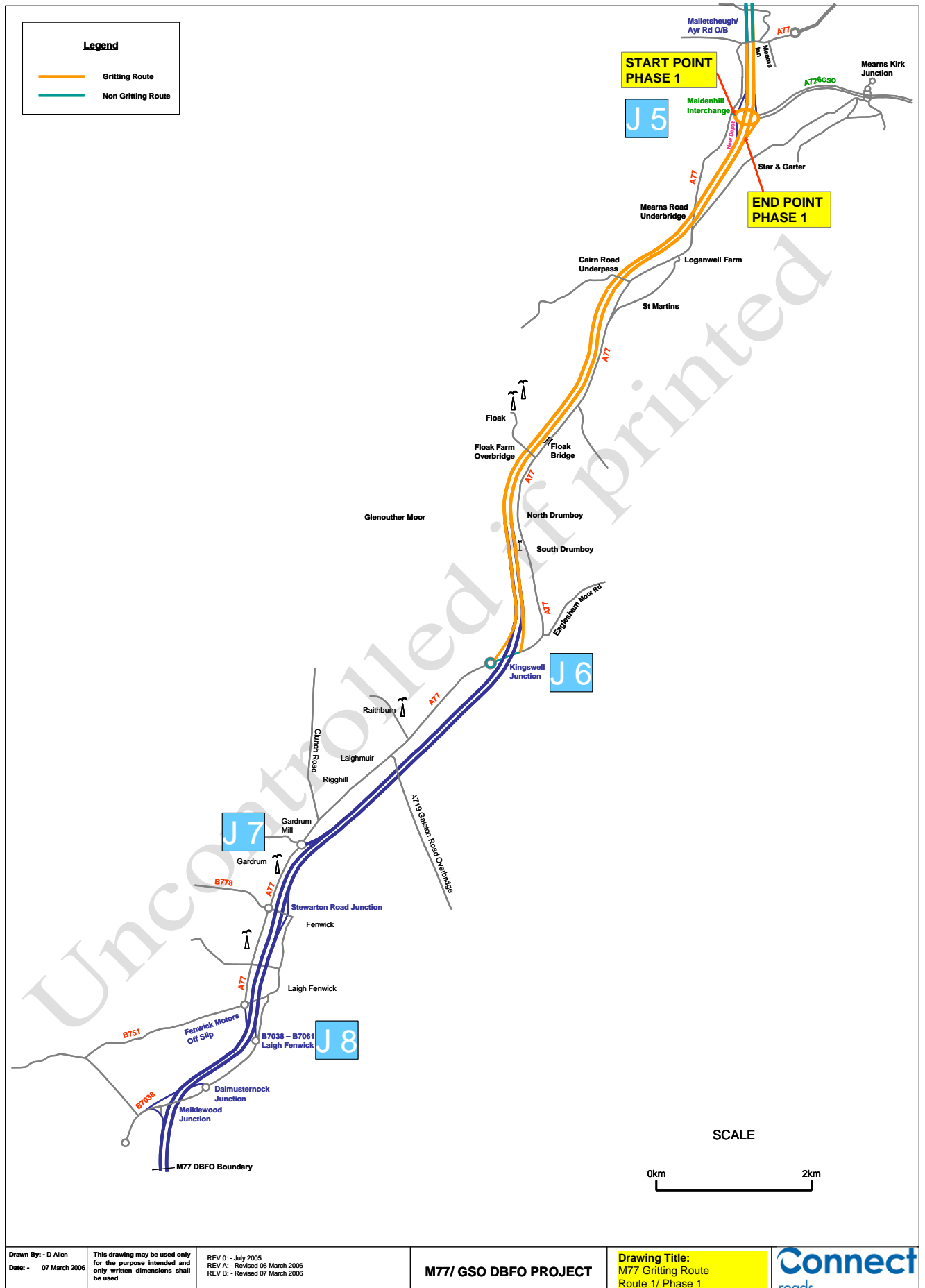
	LAYBY		LAYBY FOOTWAY		OTHER COMMENTS
	Eastbound	Westbound	Eastbound	Westbound	
High Priority	2 No. Bus Stops Emergency Lay by	2 No. Bus Stops Emergency Lay by			To include footbridge and pedestrian crossing facility.
Medium Priority			1 No. Footpath	1 No. Footpath	
Low Priority					

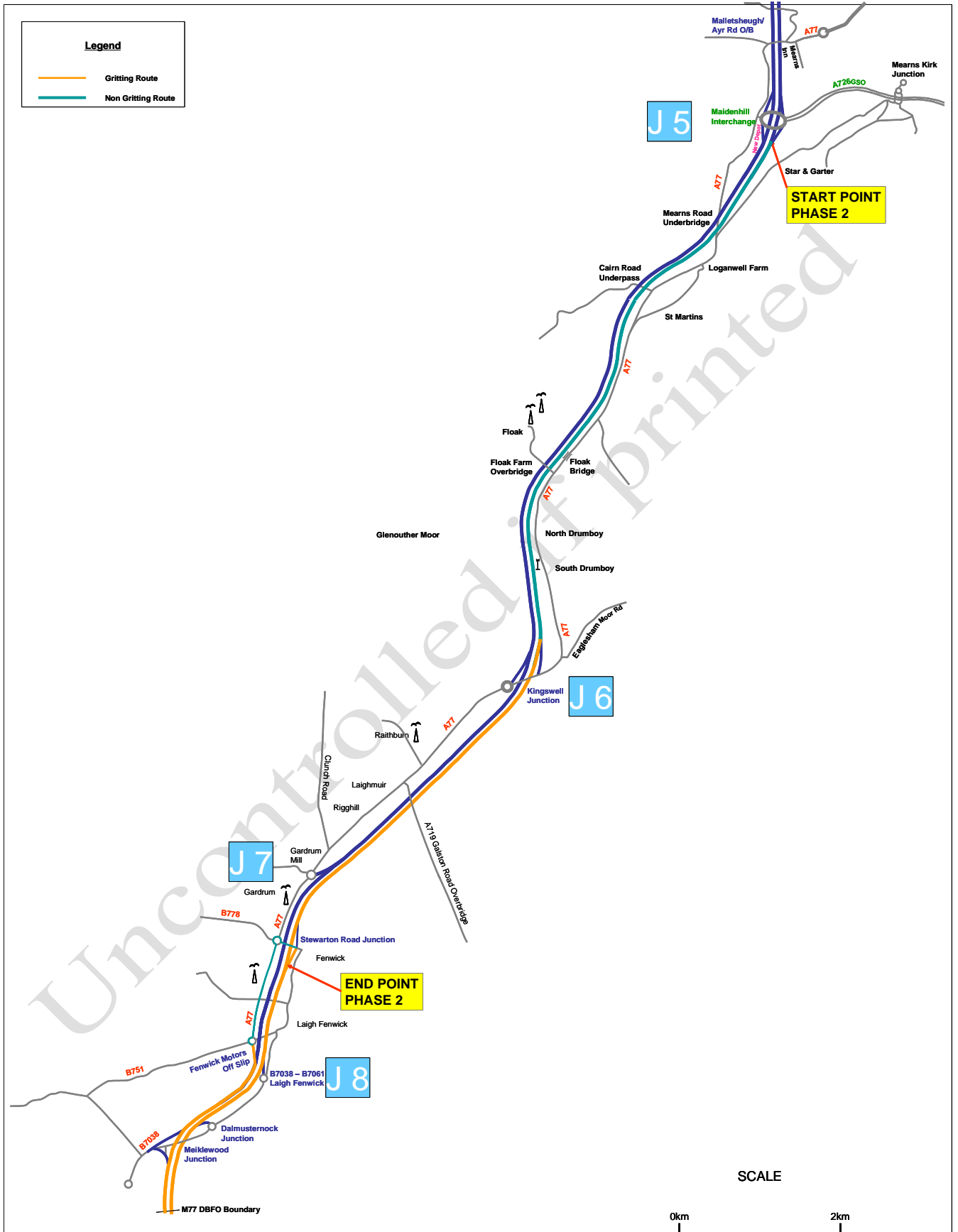
APPENDIX C

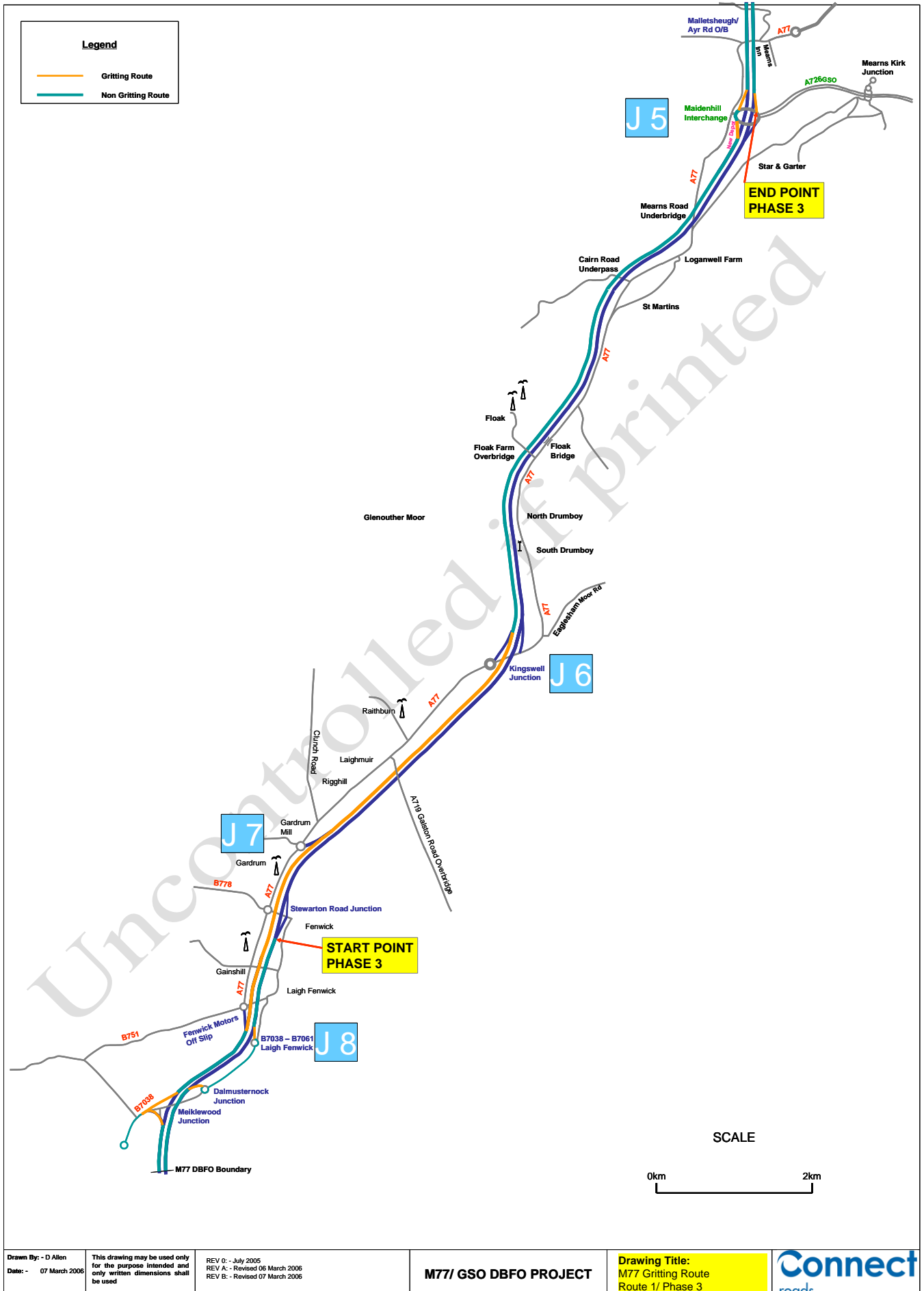
PRECAUTIONARY SALTING ROUTES

The routes defined below will be followed in order to treat the M77 during the 2017/2018 winter season.

M77 (Fenwick to Malletsheugh) Glasgow Southern Orbital DBFO			
Route Number	One	Route Description	M77 Motorway Malletsheugh to Meiklewood
Base Compound	Operation Centre		
Part	Description		Action (Travel/Salt)
1	From Depot - to Maidenhill Roundabout (Junction 5)		Travel
2	Maidenhill Roundabout, M77 SB on slip, M77 main line to and including Kingswell (Junction 6) SB off slip		Salt
3	Proceed to Kingswell (Junction 6) NB on slip		Travel
4	Kingswell (Junction 6) NB on slip and M77 main line to boundary at Ayr Road Overbridge		Salt
5	Proceed to junction 3, turn at Jct 3 then back to Ayr Road Overbridge SB		Travel
6	Ayr Road Overbridge SB to merge with Maidenhill SB on slip		Salt
7	Proceed to Kingswell SB off slip		Travel
8	from Kingswell SB off slip to end of A77 network boundary		Salt
9	Turn at New Farm Loch and proceed to NB network boundary		Travel
10	NB from network boundary to and including Fenwick motors off slip		Salt
11	Proceed to Fenwick North (Junction 7) SB on slip		Travel
12	Fenwick North SB on slip		Salt
13	Proceed to Fenwick south (Junction 7) SB off slip		Travel
14	Fenwick south SB off slip		Salt
15	Proceed to A77 Meiklewood SB on slip		Travel
16	A77 Meiklewood SB on slip		Salt
17	Proceed to New Farm Loch, turn and proceed to Meiklewood NB off slip		Travel
18	Meiklewood NB off & on slip		Salt
19	Proceed to Fenwick motors off slip		Travel
20	From mainline Fenwick motors to Kingswell (Junction 6) NB on slip merge		Salt
21	Proceed to Maidenhill (Junction 5) NB off slip		Travel
22	Maidenhill NB off slip and NB on slip		Salt
23	Proceed to Junction 3, turn, and return to Maidenhill (Junction5) SB off slip		Travel
24	Maidenhill SB off slip		Salt
25	END OF ROUTE, RETURN TO DEPOT		





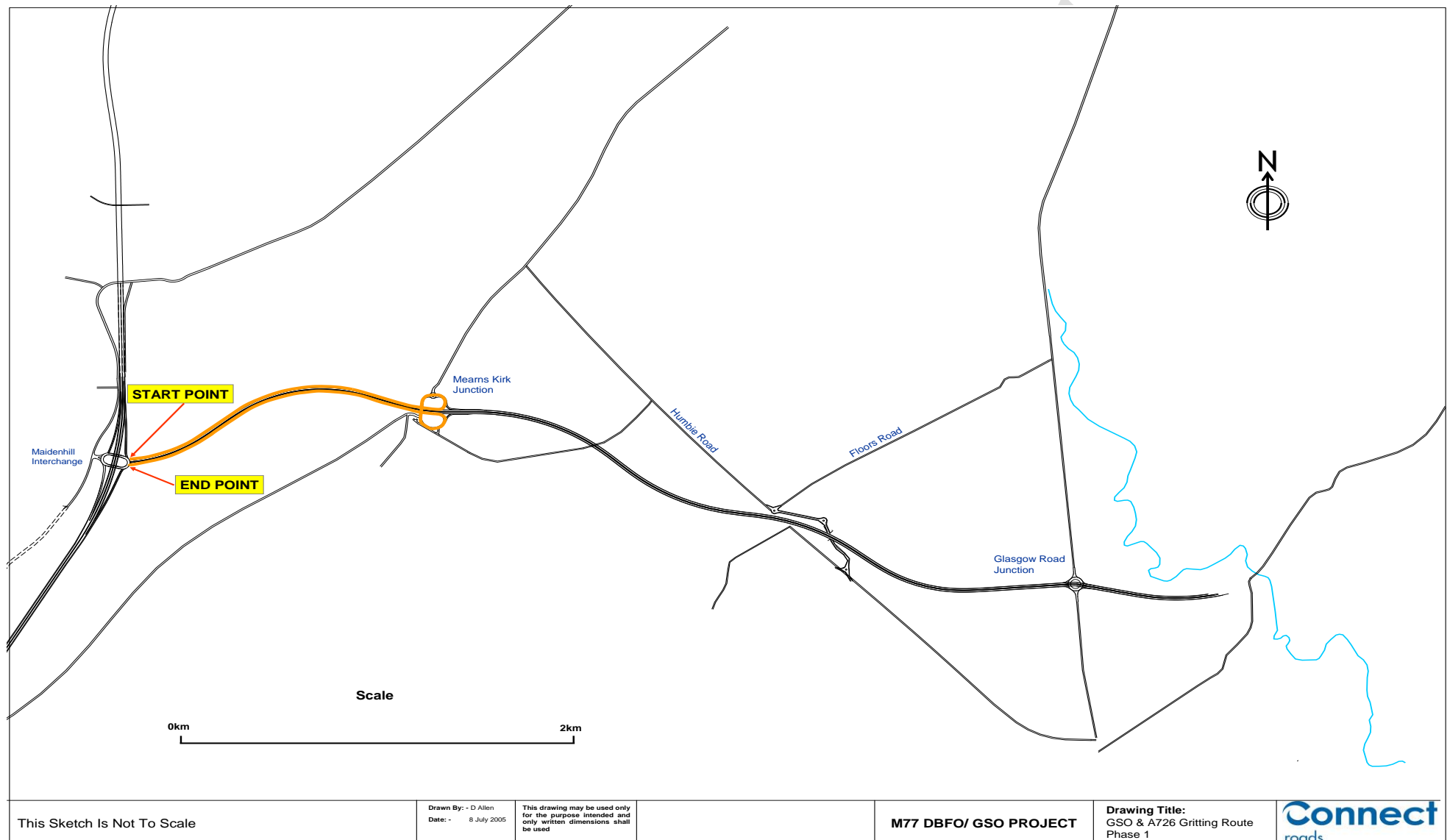


The routes defined below will be followed in order to treat the GSO - A726 and A727 during the 2017/2018 winter season.

M77 (Fenwick to Malletsheugh) Glasgow Southern Orbital DBFO			
Route Number	Two	Route Description	Glasgow Southern Orbital and A726, A727
Base Compound	Operation Centre		
Part	Description		Action (Travel/Salt)
1	Maidenhill Interchange (Junction 5) to GSO Eastbound		Travel
2	GSO E/B and continue to & including Mearns Road E/B off slip, the over bridge onto W/B on slip to Maidenhill Interchange (Junction 5).		Salt
3	Return E/B to Mearns road E/B off slip		Travel
4	Main carriageway from Mearns E/B off slip to Glasgow Road Roundabout, circle r/about continue E/B to and including circling Phillipshill r/about, A727 W/B on slip at Turnkey to and circle Carmunnock r/about and continue to A726 and circle West Mains r/about, to Phillipshill W/B off slip and continue back to Glasgow Road Roundabout westbound. Stop		Salt
5	From Glasgow Road to Redwood Drive E/B off ramp		Travel
6	Redwood Drive E/B off and on slips. Stop		Salt
7	Proceed to Phillipshill E/B on slip		Travel
8	E/B Phillipshill on slip. Stop		Salt
9	turn at West Mains to W/B Phillipshill flyover		Travel
10	Phillipshill flyover from W/B off slip to W/B on slip. Stop		Salt
11	Proceed to Phillipshill E/B off slip		Travel
12	E/B Phillipshill off slip. Stop		Salt
13	Proceed to Redwood Drive W/B off slip		Travel
14	Redwood Drive W/B off slip and W/B on slip. Stop		Salt
15	Proceed W/B to Glasgow Road		Travel
16	Glasgow road W/B to and including Mearns Rd W/B off slip and continue over bridge to and including E/B on slip. Stop		Salt
17	Proceed to Glasgow Road Roundabout then proceed back to Mearns Road W/B off slip		Travel
18	between Mearns Road W/B off and on slips. Stop		Salt
19	Proceed to the M77 Fenwick North (Junction 7) SB off slip		Travel
20	Fenwick North (Junction 7) SB off slip		Salt
21	Proceed to Grass Yard, turn and proceed to Meiklewood NB stub slip		Travel
22	Meiklewood NB Stub slip		Salt
23	Proceed to Gardrum mill (Junction 7) NB on slip		Travel
24	Gardrum Mill (Junction 7) NB on slip		Salt
25	END OF ROUTE, RETURN TO DEPOT		

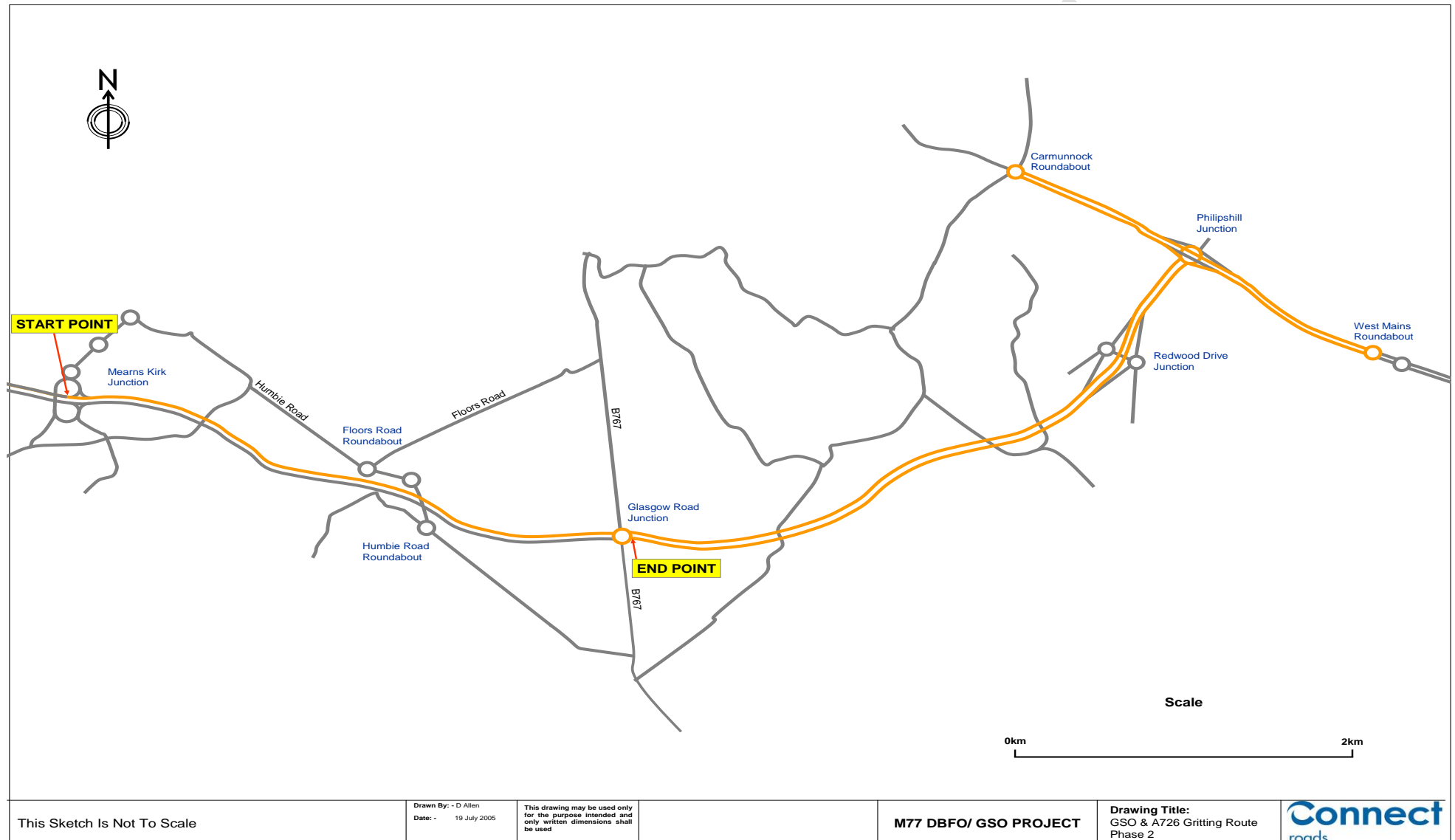
WINTER SERVICE PLAN 2017/2018
M77 (Fenwick to Malletsheugh)
Glasgow Southern Orbital
DBFO

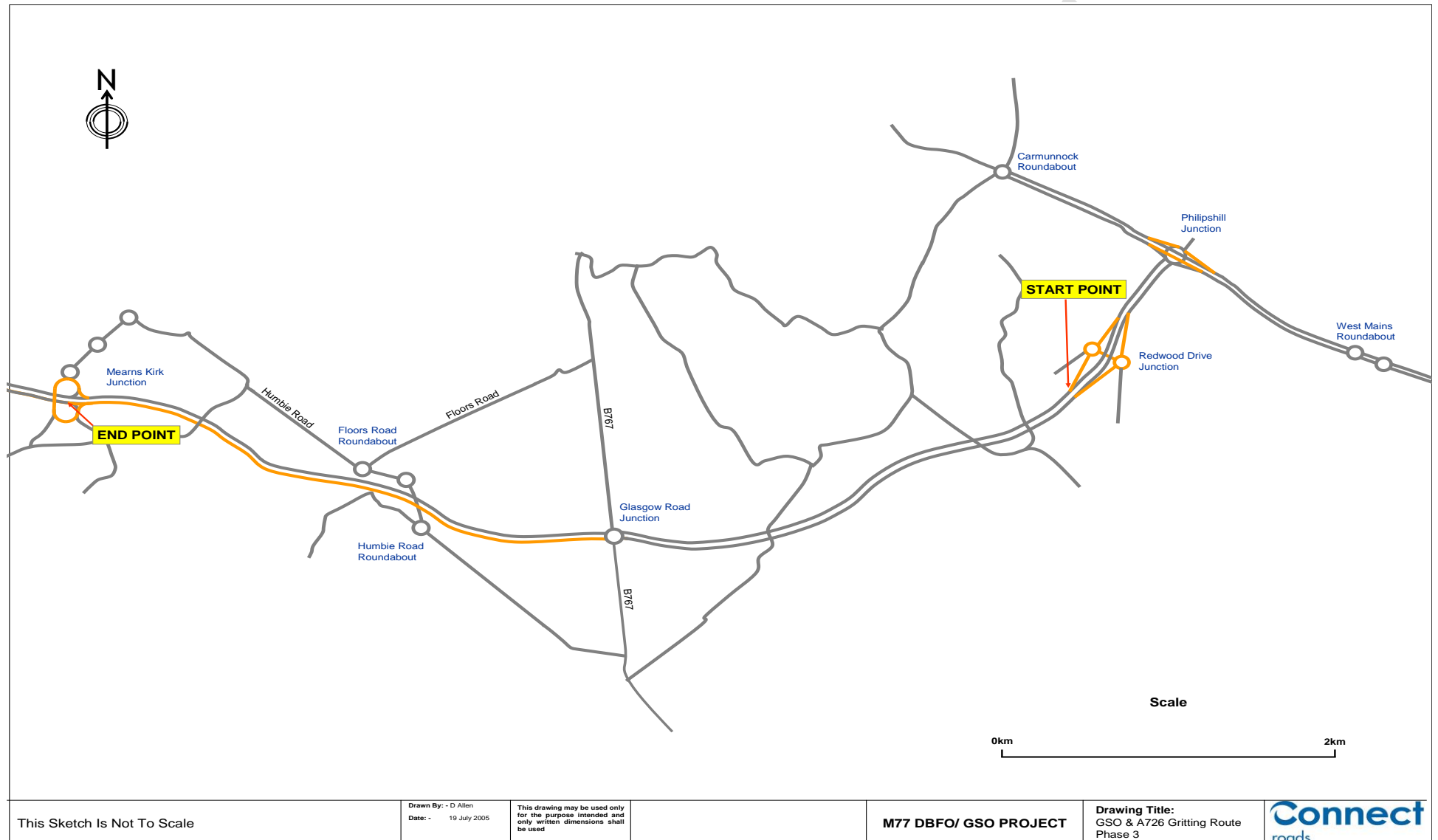
M77-OPS-004
Revision 26
December 2017

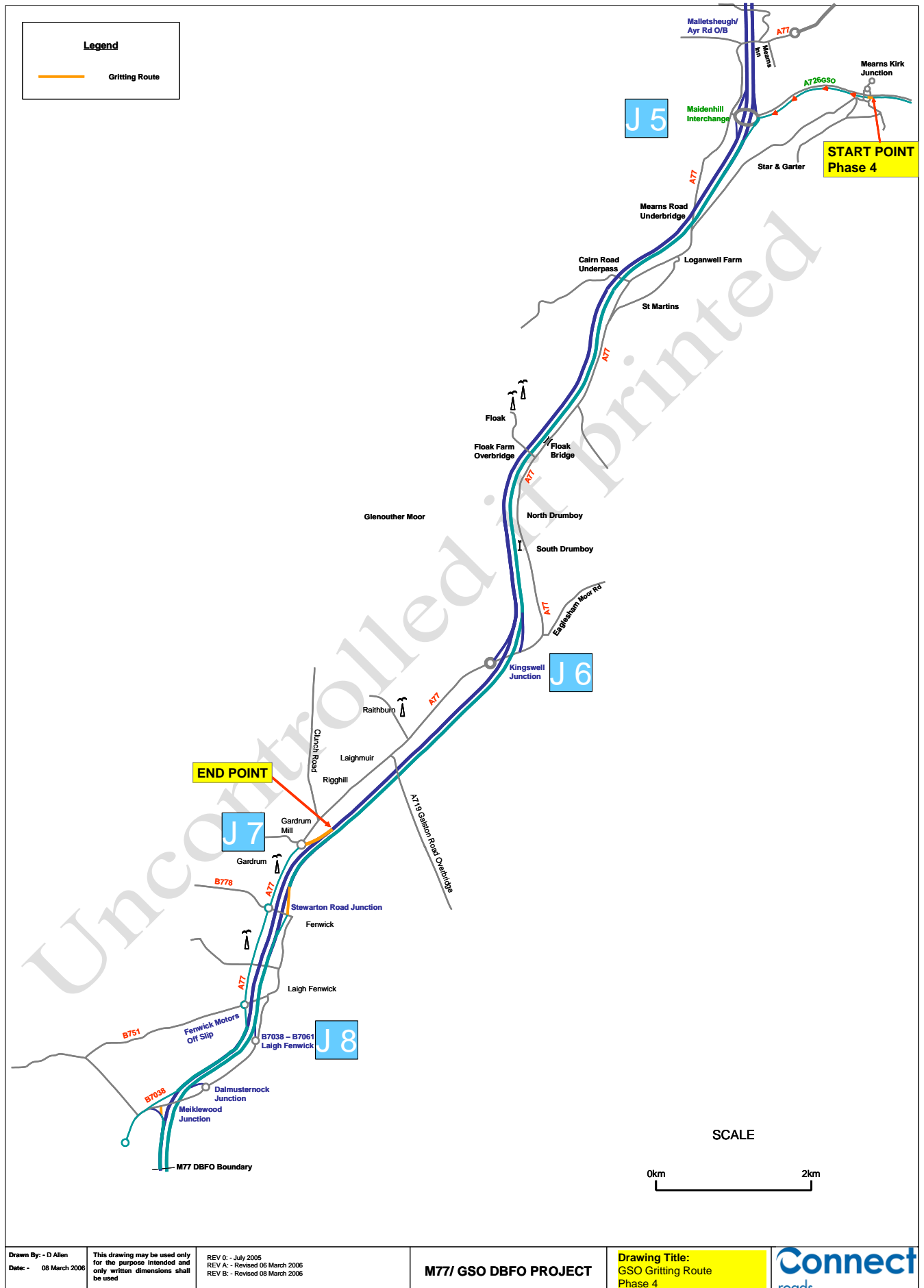


WINTER SERVICE PLAN 2017/2018
M77 (Fenwick to Malletsheugh)
Glasgow Southern Orbital
DBFO

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Route No 1

M77/A77 Malletsheugh to Fenwick

Precautionary Salting Route

(1)	Route Number	-	1
(2)	Depot	-	Connect Roads Operations Centre
(3)	Description	-	Malletsheugh to Meiklewood
(4)	Depot to Route (km)	-	100m
(5)	Time to Route (mins)	-	1 Minutes
(6)	Salting Length (km)	-	37.2 Km
(7)	Average Speed (km/hr)	-	45 Km/Hr
(8)	Route Time (mins)	-	85 Minutes
(9)	Route to Depot (km)	-	300m
(10)	Average Width of Route (m)	-	10.10m
(11)	Route Tonnage at :		
	10 gm/sq.m (tonne)		3.89 Tonnes (Dry Salt) 2.72 70% of Dry Salt tonnage 1170 litres of 30% brine
	20 gm/sq.m (tonne)		7.79 Tonnes (Dry Salt) 5.45 70% of Dry Salt tonnage 2340 litres of 30% brine

Route No 2

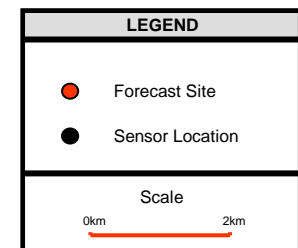
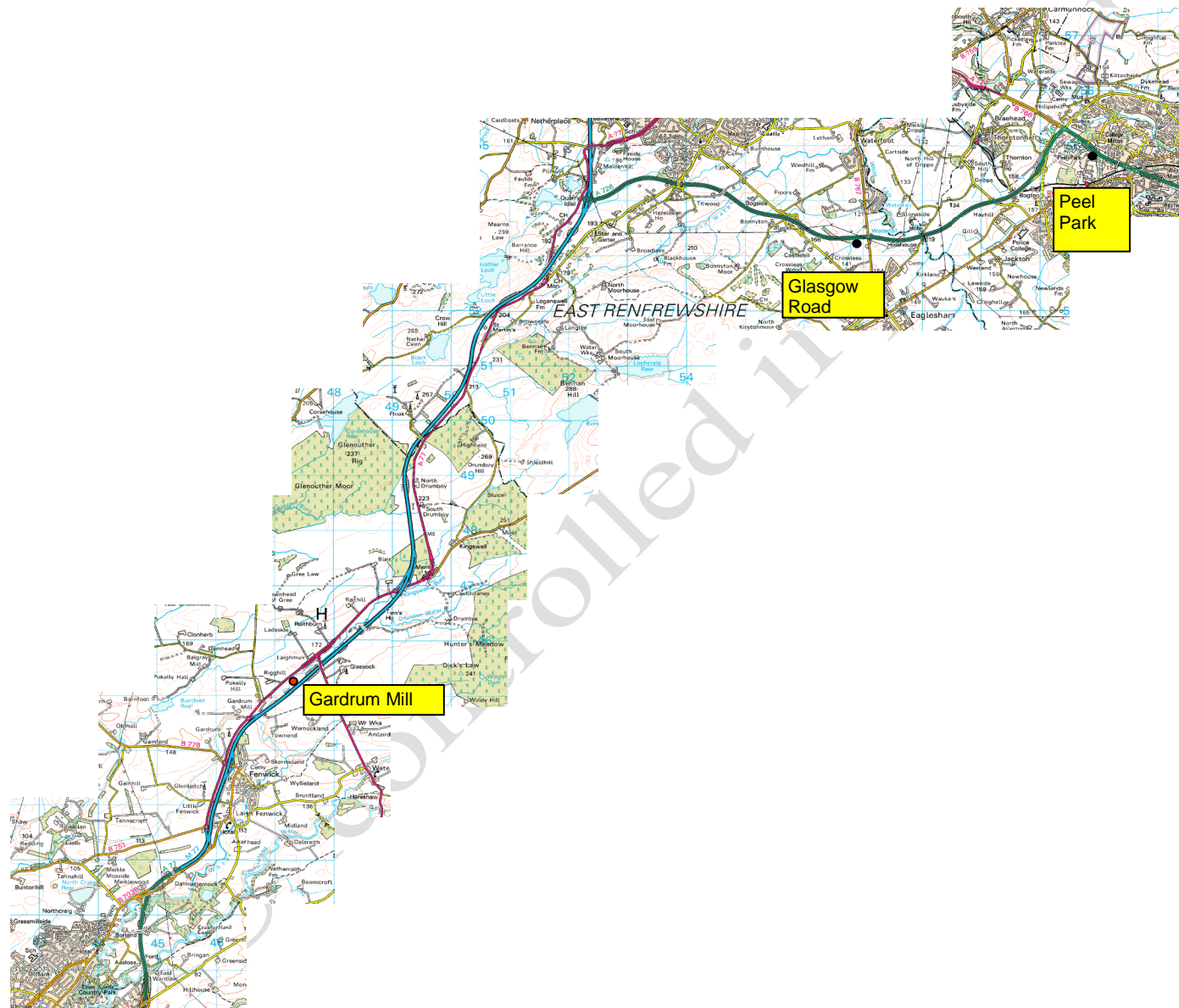
GSO & A726

Precautionary Salting Routes

(1)	Route Number	-	2
(2)	Depot	-	Connect Roads Operations Centre
(3)	Description	-	GSO & A726
(4)	Depot to Route (km)	-	100m
(5)	Time to Route (mins)	-	1 minutes
(6)	Salting Length (km)	-	36.156 Km
(7)	Average Speed (km/hr)	-	45 Km/Hr
(8)	Route Time (mins)	-	70 mins
(9)	Route to Depot (km)	-	14.7km
(10)	Average Width of Route (m)	-	7.3 m
(11)	Route Tonnage at :		
	10 gm/sq.m (tonne)		2.66t (Dry Salt) 1.86 70% of dry salt tonnage 800 litres of 30% brine
	20 gm/sq.m (tonne)		5.32t (Dry Salt) 3.72 70% of dry salt tonnage 1600 litres of 30% brine

WINTER SERVICE PLAN 2017/2018
M77 (Fenwick to Mallettsheugh)
Glasgow Southern Orbital
DBFO

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December 2017



Drawn By: - D Allen
 Date: - 16 July 2005

This drawing may be used only for the purpose intended and only written dimensions shall be used

M77/ GSO/ DBFO PROJECT

Drawing Title:
 Ice Prediction Locations

Connect
 roads

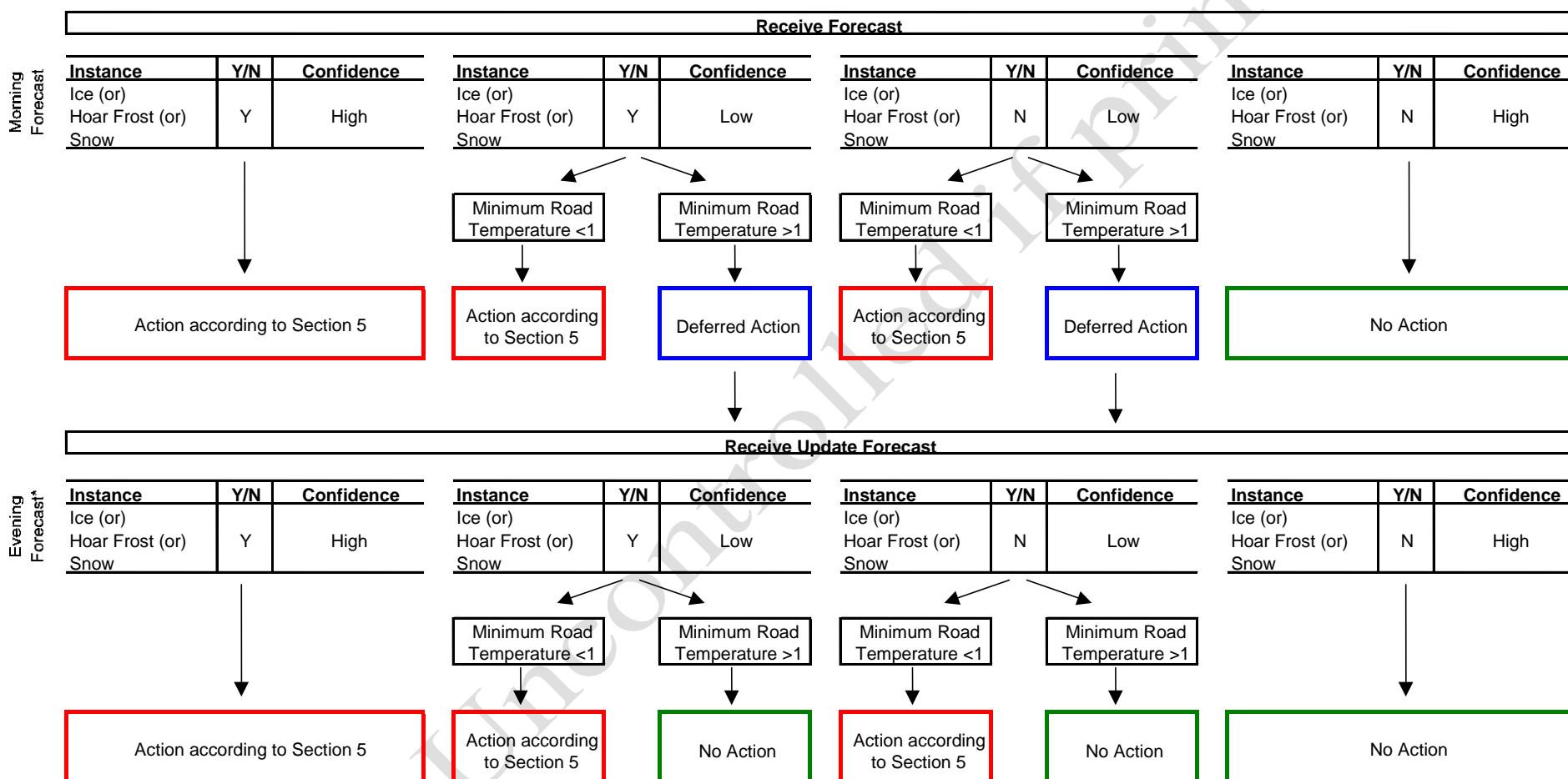
APPENDIX D

BALFOUR BEATTY MAINTENANCE STAFF

Name	Function	Telephone Number	Mobile Telephone Number
Stewart MacKenzie	Winter Service Manager		
Frank Croall	WSO		
John McCulloch	WSO		

APPENDIX E

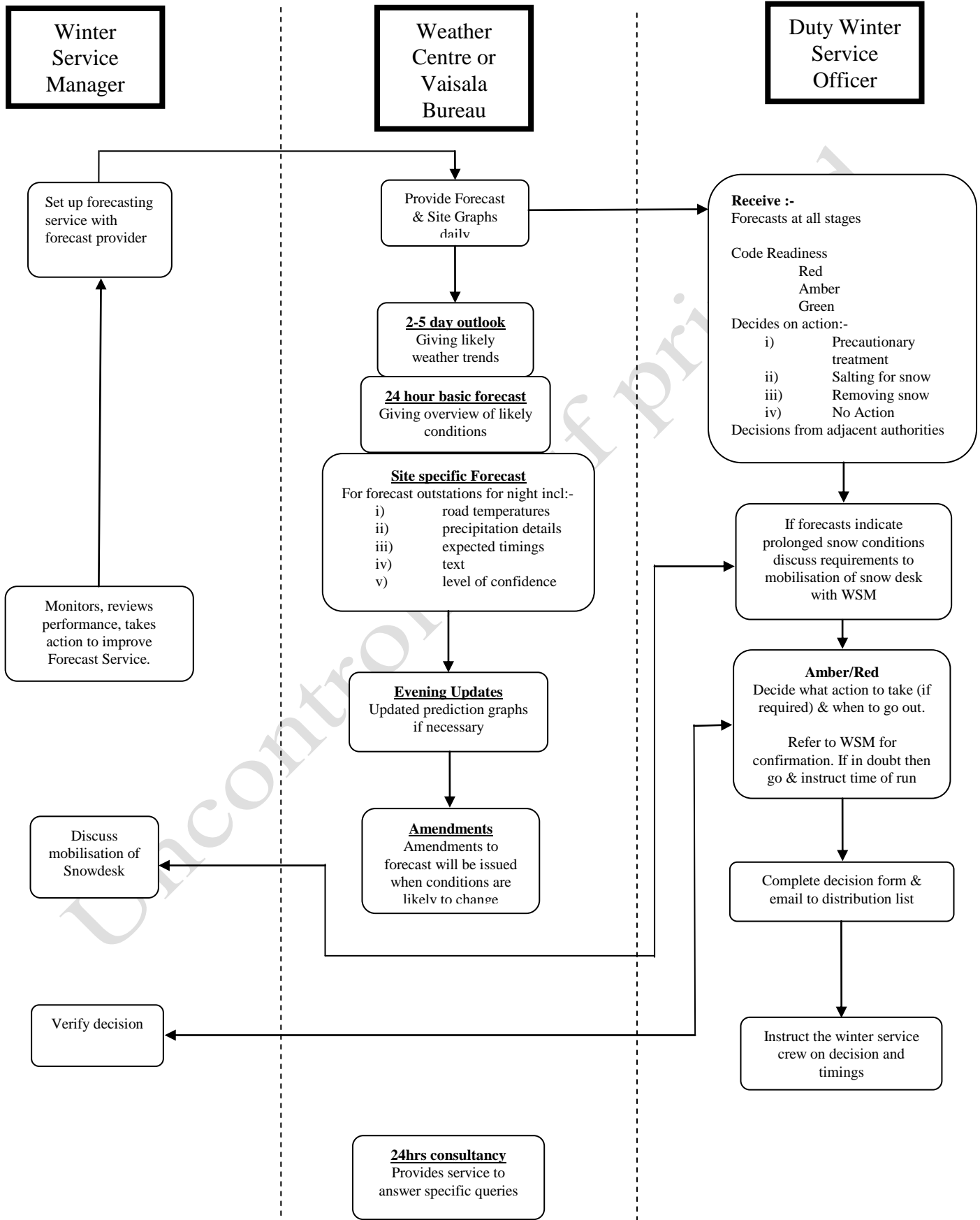
WINTER SERVICE DECISION-MAKING ALGORITHM



*Or subsequent forecasts as necessary

APPENDIX F

ACTIONS FLOWCHART



APPENDIX G

ADJACENT AGENTS AND AUTHORITIES CONTACT LIST

NAME OF ORGANISATION	Telephone Nos.	Fax Nos.
Connect plc		
Balfour Beatty Regional Civil Engineering		
Office Hours		
Out of Office Hours and Emergency		
Adjacent Authorities		
East Ayrshire Council (for A77 and Associated Roads within EAC Boundary)		
East Renfrewshire Council (for Associated Roads within ERC Boundary)		
South Lanarkshire Council (for A726 and Associated Roads within SLC Boundary)		
MeteoGroup		
Duty Weather Forecaster (24 hours service)		
Duty Weather Forecaster (Back up Number)		
Vaisala Helpdesk (for forecast communication queries)		
Police		
Operations Room		
Traffic Management and Abnormal Loads		
TRAFFIC SCOTLAND		
Operations Room		
East Renfrewshire Council		
Office Hours		
Out of Office Hours		
South Lanarkshire Council		
Representative		
Out of hours		
East Ayrshire Council		
Representative		
Out of Hours		
Scotland Transerv		
Duty Engineer		
Media		
AA		
RAC		
Westsound		
BBC Scotland		
Scottish Television		
Bus Operators		
Scottish Citylink		
Balfour Beatty Press Office		
24hr Contact Centre		

APPENDIX H

WSC MAINTENANCE STAFF

Name	Function	Qualification	Mobile Telephone Number
BBRCE			
	Driver	City & Guilds	
	Driver	City & Guilds	
	Driver	City & Guilds	
	Driver	City & Guilds	
	Driver	City & Guilds	
	Driver	City & Guilds	
	Driver	City & Guilds	
	Driver	City & Guilds	
In the event of Prolonged Snow Event further assistance by CNDR or Scotland Transerv			

APPENDIX I

PATROL ROUTES

The following route will be followed to patrol the M77, GSO, A726 and A727 during the 2016/2017 winter season.

PATROL ROUTES

From Depot;

1. A726 Maidenhill to Phillipshill Interchange
2. Phillipshill Interchange to Carmunnock roundabout
3. Carmunnock roundabout to West Mains Roundabout
4. West Mains Roundabout to Phillipshill Roundabout
5. Phillipshill Roundabout to Maidenhill Interchange

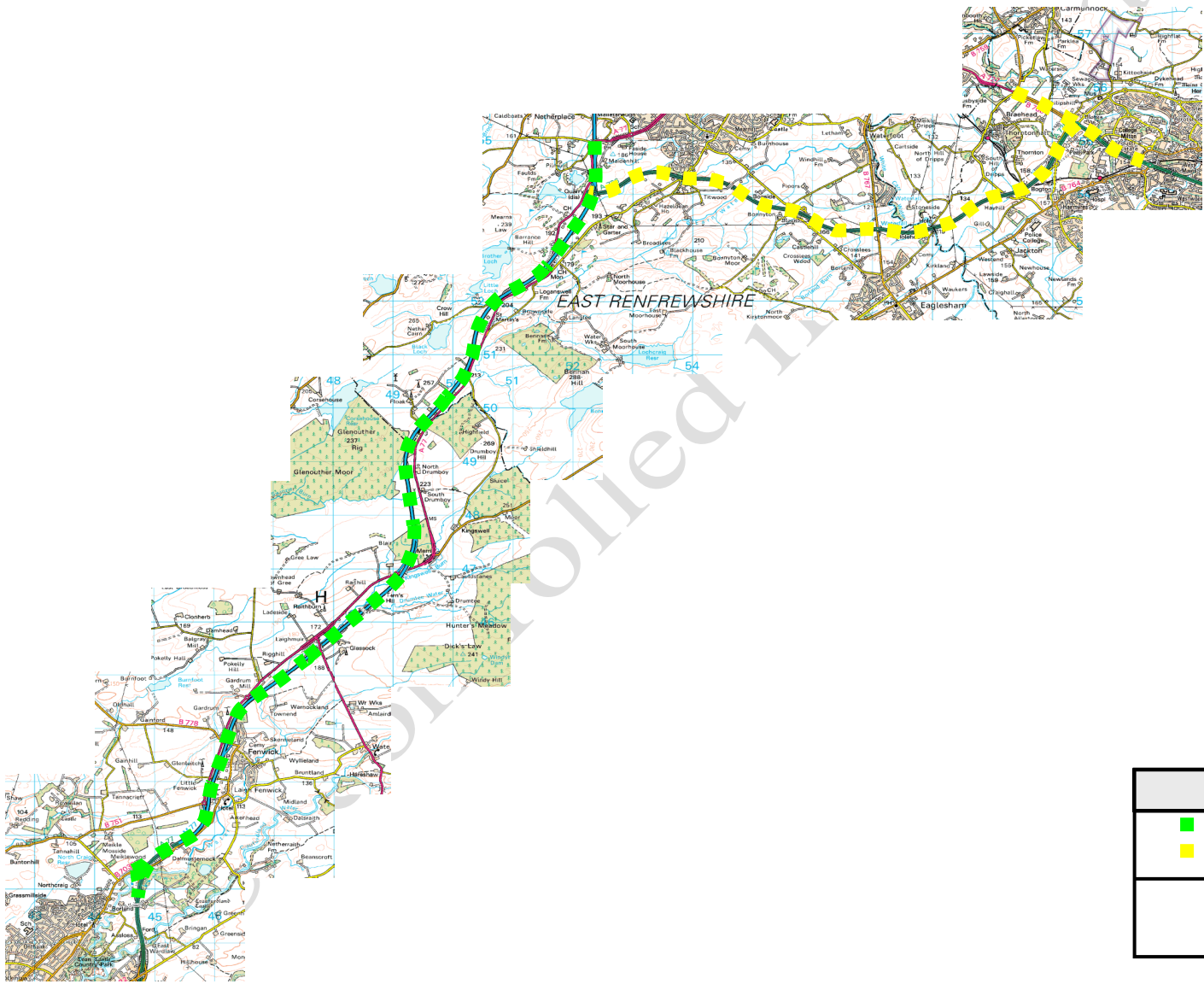
Resting Place to be located on the GSO Eastbound Lay by

1. Maidenhill Interchange to southern end of network at Meiklewood Interchange
2. Turn at Grassyards Interchange to Northbound start of network
3. Meiklewood start of Network to Maidenhill Interchange Jct 5 Northbound on slip
4. Jct 5 NB on slip to Jct3 NB off slip and return to Maidenhill Interchange

Resting Place to be located on the Maidenhill roundabout

WINTER SERVICE PLAN 2017/2018
M77 (Fenwick to Malletsheugh)
Glasgow Southern Orbital
DBFO

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LEGEND	
	M77
	GSO & A726
Scale	

Drawn By: - D Allen
Date: - 18 July 2005

This drawing may be used only for the purpose intended and only written dimensions shall be used

M77/ GSO/ DBFO PROJECT

Drawing Title:
Patrol Route



APPENDIX J

PLANT AND EQUIPMENT AVAILABLE IN EXCEPTIONAL ADVERSE WEATHER CONDITIONS

Contact Name	Address	Telephone No.	Description of Equipment
Lomond Plant Hire			JCBs, Excavators, Telehandler
Malcolm Plant			JCBs, Excavators, 8 wheeled wagons
William Meikle			Tractors and JCBs
Jamieson Plant Hire			JCBs
WM Hamilton & Sons			8 wheeled wagons
East Ayrshire Council			Gritters and Snow blowers
A Plant			Telehandler and small plant
Balfour Beatty Fleet Services			Additional Gritters
Transerv Scotland			Gritters and snow blowers
CNDR Contract			Gritters

APPENDIX K

PLANT AND EQUIPMENT

Table 1 – Operational Spreading Vehicles

Location	Vehicle Type	Snowplough(s)	Capacity	Reg Number
Maidenhill Depot	Fixed body	Yes	9 cu.m	FM 66 LFG
Maidenhill Depot	Fixed body	Yes	9 cu.m	YH 67 VHX
Maidenhill Depot	Fixed body	Yes	6 cu.m	YR 14 OND

Table 2 – Reserve Spreading Vehicle

Location	Vehicle Type	Snowplough(s)	Capacity	Reg Number
Maidenhill Depot	Demountable body	Yes	9 cu.m	FJ 55 EXV

Table 3 – Tractor Loading Shovels

Location	Vehicle Type		Capacity	Number
Maidenhill	Telehandler		7m	

Table 4 – Brine Tank

Location	Plant	Supplier	Capacity (ltr)	Number
Maidenhill	Brine Saturator	Schmidt	5,000	

APPENDIX L

Salt Stockpiles

Location	Minimum stock level at 1 st October (Tonne)	Minimum stock level from 1 st March (Tonne)
Balfour Beatty Regional Civil Engineering Connect Roads Operations Centre	1000	100

APPENDIX M

LOCATIONS FOR SPECIAL TREATMENT

Route	No.	Direction	Location	Seepage Possible	Susceptible to Frost
M77	1	N/B & S/B	Kingswell Overbridge	No	Yes

The Projects Roads shall be inspected regularly and this Appendix will be updated and issued as addendums to document when required.

APPENDIX N

ALTITUDE MAPS – M77



M77 Junction 5 to 8 – Altitudes (m)

