

Appendix A

## BEDFORDSHIRE HIGHWAYS

# WINTER SERVICE OPERATIONAL PLAN



**2009 – 2010**

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## 1. Introduction

- 1.1. Winter Maintenance is essential for public safety and also to the economy in maintaining the movement of traffic and pedestrians. Winter Maintenance involves treating the highway to:
  - Prevent ice from forming - precautionary salting
  - Melt ice and snow already formed - post salting
  - Remove snow
- 1.2. Highway Authorities are under a statutory duty to maintain highways. This general duty, as set out in the Highways Act 1980, embraces Winter Maintenance. In addition to the statutory duty, Highway Authorities may take preventative measures against the accumulation of snow and ice. It is important to recognise in the context of a Highway Authority's statutory maintenance duty that:
  - i) It should be noted that The Railways and Transport Safety Act 2003 Section 111 amends Section 41 of the Highways Act 1980, to add Section 41 (1A) which states : *"In particular, a Highway Authority is under a duty to ensure, so far as is reasonably practical, that safe passage along a highway is not endangered by snow and ice"*. The Act received royal assent in July 2003.
  - ii) The above statement will be tested through the courts and Highway Authorities will have to react to the interpretation of this new case law.
- 1.3. Highway Authorities are permitted to take preventative measures against the accumulation of snow and ice. The use of this power is relevant to an Authority's road safety responsibilities as well as its highway maintenance function.
- 1.4. Bedford Borough Council and Central Bedfordshire Council can demonstrate that they are meeting their current legal obligations, and are doing so in a way which ensures that their resources are being deployed in the most economic, efficient, effective and environmentally friendly manner. This Winter Service Operational Plan provides the framework for that approach.
- 1.5. Bedford Borough Council and Central Bedfordshire Council have a contractual arrangement with its Highway Services provider, Amey, through a partnership arrangement known as Bedfordshire Highways to provide the Winter Maintenance service. The Winter Service Provider – Amey - is responsible for providing all aspects of the Winter Maintenance Service, including decision making, supervision and monitoring of winter maintenance activity, ownership and maintenance of the winter maintenance fleet, etc all in accordance with the specification within the Term Contract for Highway Services.
- 1.6. Bedford Borough Council provide the winter service on some of the roads in Bedford, Kempston, Elstow, Biddenham, Bromham and Great Denham. (See appendix 4 for details)

It should therefore be noted that in general, this Plan refers to the operations of Amey working with Bedford Borough Council and Central Bedfordshire Council.

- 1.7. In addition, Bedford Borough Council is required to produce their own Winter Service Operational Plan to assist them in carrying out the function effectively and efficiently. These plans will include as a minimum, the following requirements.
- Route hierarchy
  - Policy statement
  - Management and control procedures
  - Vehicles and Plant
  - Salt
  - Salt bins
  - Performance monitoring and record keeping

## **2. Circulation List via Email**

### **Name**

Amey

Bedford Borough Council

Central Bedfordshire Council

Bedfordshire Police

Luton Borough Council

Cambridgeshire County Council

Hertfordshire County Council

Buckinghamshire County Council

Milton Keynes Council

Northamptonshire County Council

Carillion - WSP

### **3. Route Hierarchy**

#### **3.1. Agency Agreements**

- 3.1.1. Carillion-WSP on behalf of the Highways Agency maintains the Motorway and Trunk Road network in Bedfordshire. Bedford Borough Council and Central Bedfordshire Council have no winter maintenance responsibility for the M1, A1, A5 and A421 (East of M1 Jct. 13).

#### **3.2. Priority One Network**

- 3.2.1. The Priority One network has been developed from identified need from the list of roads for which Bedford Borough Council and Central Bedfordshire Council are responsible. This network includes all category 2 and 3a routes together with most category 3b routes and some category 4 and 4a routes. It also includes busy peak hour commuter routes, main peak hour bus routes, routes from most but not all fire stations, ambulance stations, hospitals, most but not all school bus routes and past schools where possible, together with other known trouble spots. The network has been devised so that most villages of 500 plus residents are close to a road which is pre-treated in anticipation of ice or snow.
- 3.2.2. The full definition of the category of roads is explained in the document – Delivering Best Value in Highway Maintenance (Code of Practice for Maintenance Management).
- 3.2.3. The Priority One network is listed at Appendix 4.

#### **3.3. Priority Two Network**

- 3.3.1. Identifies the road network that, although not treated as a precaution, is considered important enough to warrant treatment during prolonged winter weather when the Priority One network is passable and free from major ice and snow.

#### **3.4. Priority Three Network**

- 3.4.1. This is the rest of the highway network for which Bedford Borough Council and Central Bedfordshire Council as the Highway Authority are responsible.

#### **3.5. Reciprocal Arrangements**

- 3.5.1. In the interests of route efficiency, the adjoining Highway Authorities treat certain lengths of the Priority One network in Bedfordshire and a reciprocal arrangement exists in that Amey treats certain lengths of roads in these adjoining authorities. **These arrangements do not apply when additional resources are required.**
- 3.5.2. Reciprocal agreements are confirmed with the respective adjoining Highway Authorities prior to the winter season each year.
- 3.5.3. A list of the current agreements is at Appendix 5.

#### **3.6 Road Closures**

- 3.6.1. During the winter maintenance period, road closures on the priority 1 network may cause traffic to be diverted on to roads on the priority 2 or 3 network that are not

normally pre-salted. In these cases, the diversionary route will be treated as part of the Priority 1 network and will be pre-salted for the duration of the closure.

- 3.6.2 For off peak road closures, the timing of the closures shall be considered together with the predicted weather conditions in deciding whether to treat the diversionary route.
- 3.6.3 For emergency road closures, these roads should be treated at the earliest opportunity, or as the closure is lifted.

## **4. Policy Statement**

### **4.1. Objective**

- 4.1.1. The objective of Winter Service is to ensure as far as is reasonably possible within the appropriate resource level, the safe movement of vehicles on the Bedford Borough Council and Central Bedfordshire Council strategic highway network and the more important other high priority routes, together with the minimisation of delay and accidents which could be attributable to adverse weather conditions.

### **4.2. Winter Maintenance Period**

- 4.2.1. The period of the year during which the process of Winter Maintenance will normally be undertaken is from the last Friday in October to the first Friday in April. However this period may be extended by Bedford Borough Council and Central Bedfordshire Council if necessary.

### **4.3. Dealing with Ice, Definitions of treatments**

#### **4.3.1. Precautionary salting**

This is the action taken in advance to prevent ice forming and snow settling on the road. The timing of this treatment can vary according to the weather forecast and local knowledge.

Precautionary salting is to be carried out at a spread rate of 15 gms. per square metre. When frost is expected after rain, the spread rate may well be increased.

#### **4.3.2 Post salting**

This is the action taken to remove ice that has already formed on the highway.

A spread rate of 20gms per square metre will be used. If post salting of the network becomes necessary, subsequent to a decision being made to salt; all vehicles will be mobile within one and a half hours.

### **4.4 Service provision in respect of the Pre-Treatment and Post Treatment of Ice**

In implementing the Winter Service Operational Plan, the following shall apply.

#### **4.4.1 Priority 1 network, (See 3.2.)**

This network is the normal routine network on which precautionary salting shall be undertaken.

The length of this network enables it to be treated within 2.5 hours of leaving a depot.

Occasionally requests are received for salting off of the Priority One network, particularly by Bedfordshire Police subsequent to a road traffic accident. Attached at Appendix 3 is a procedure for dealing with such requests

#### **4.4.2 Priority 2 network (See 3.3.)**

No precautionary salting shall be carried out on this network. This network of roads shall be considered for salting in periods of prolonged adverse weather and then only when resources are not required on the priority 1 network.

#### 4.4.3 Priority 3 network (See 3.4.)

Generally this network of roads, being the rest of the network not included in either the Priority 1 or 2 networks, shall not be considered for treatment unless the Priority 1 and 2 networks are passable and clear of obstruction. It is not anticipated with existing resources together with the average type and duration of winter conditions experienced in Bedfordshire that these roads will be treated.

#### 4.4.4 Footways

Footways subject to normal overnight frosty conditions will not be treated.

It is considered that given the overall resources available to the highway authority for pre-treatment of ice, resources are not available for the pre-treatment of even the category 1 footways. It is also considered that the potential harm to pedestrians in the event of slipping on ice is not as great as the potential harm to persons in a fast moving motor vehicle. However, in exceptional conditions of continuous frost / ice conditions, treatment of Category 1 footways and all major footways in the vicinity of schools will be undertaken when resources become available from the carriageway Priority One and Two networks.

It is noted however, that some of the most heavily used urban footways are within Town Council areas. Some of these Town Councils have their own direct labour available. When prolonged and continuous ice is forecast, then contact should be made to Town Councils to seek their assistance in spreading salt on town centre footways

#### 4.4.5 Cycleways

Where the cycleway is part of the carriageway, then this will be treated in accordance with adjoining road. Other cycleways that are subject to normal overnight frosty conditions will not be treated.

It is considered that given the overall resources available to the highway authority for pre-treatment of ice, resources are not available for the pre-treatment of off street cycleways. It is also considered that the potential harm to cyclists in the event of slipping on ice is not as great as the potential harm to persons in a fast moving motor vehicle. However, in exceptional conditions of continuous frost / ice conditions, and due to the relative light usage of cycleways particularly in adverse weather, treatment of Category A cycleways will be undertaken but only when resources become available from the carriageway Priority One and Two networks.

### **4.5. Dealing with Snow, Definitions of treatments**

#### 4.5.1. Precautionary salting for snow

When continuous snow is forecast the rate of spread should be increased to 40gms per square metre. This should help melt the initial snowfall and provide a wet surface from which to commence ploughing.

#### 4.5.2 Treatment of snow

For snow already on the road at depths over 40mm, a combined ploughing and salting operation should be carried out. A rate of spread of salt of 40 gms per square metre should be used on the first pass. This rate of spread can be reduced to 20 gms per square metre on subsequent passes. Repeated applications of salt may be



necessary, particularly in the urban environments when ploughing will be impractical.

The clearance of snowfalls, particularly drifting, can be supplemented by utilising contract excavators and snowploughs (see Appendix 1)

#### 4.5.3 Treatment of hard packed snow

For air temperatures above -5 degrees Celsius successive salting at a rate of spread of around 30 gms per square metre should be used. For each degree air temperature below -5 degrees Celsius the amount of salt necessary to melt snow increases by 15 gms per square metre. It therefore becomes uneconomic to use salt to remove snow at temperatures lower than -10 degrees Celsius.

Consideration should be given to spreading a 6mm single size abrasive aggregate either alone or mixed with salt to assist in removing snow at these low temperatures. This method should only be used in exceptional circumstances due to the possibility of aggregate being thrown up on to vehicles. The clearance of deep hard packed snow can be supplemented by utilising contract excavators and snowploughs (see Appendix 1)

The clearance of drifting and excessive snowfalls can be supplemented by utilising contract excavators and snowploughs (see Appendix 1)

### 4.6 Service Provision In Respect Of the Pre-Treatment and Post Treatment of Snow

#### 4.6.1 Priority 1 network (See 3.2.)

In the event of snow, ploughing supplemented by farmers, shall continue until all traffic lanes are clear. Clearance of snow should be concentrated on the strategic route network in preference to the distributor routes until resources permit these routes to be cleared.

#### 4.6.2 Priority 2 network (See 3.3.)

This network of roads shall be considered for snow clearing and salting in periods of prolonged adverse weather but only when resources are not required on the priority 1 network.

#### 4.6.3 Priority 3 network (See 3.4.)

Generally this network of roads, being the rest of the network not included in either the Priority 1 or 2 networks, shall not be considered for treatment unless the Priority 1 and 2 networks are passable and clear of obstruction. It is not anticipated with existing resources, together with the average type and duration of winter conditions experienced in Bedfordshire that these roads will be treated.

#### 4.6.4 Footways

In snow conditions when labour resources become available, they will be directed to clear snow on Category 1 footways and promoted safer routes to school and routes used by walking buses. As and when the Category 1 footways and promoted safer routes to school and routes used by walking buses are treated, resources will be directed to clear snow in the more urban environments where there is a high pedestrian usage, together with important off street footways that never get over run of salt from winter maintenance vehicles.

It is considered that the potential harm to pedestrians in the event of slipping on snow is not as great as the potential harm to persons in a fast moving motor vehicle. Labour resources will only be directed in this respect when these resources become available from the carriageway Priority One and Two networks.

It is noted however, that some of the most heavily used urban footways are within Town Council areas. Some of these Town Councils have their own direct labour available. When prolonged and continuous snow is forecast, then contact should be made to Town Councils to seek their assistance in spreading salt on town centre footways.

#### 4.6.5 Cycleways

Where the cycleway is part of the carriageway, the cycleway will be treated in the same way as the road

It is considered that the potential harm to cyclists in the event of snow is not as great as the potential harm to persons in a fast moving motor vehicle.

In exceptional conditions of continuous frost / ice conditions, and due to the relative light usage of cycleways particularly in adverse weather, treatment of Category A cycleways will be undertaken but only when resources become available from the carriageway Priority One and Two networks.

#### 4.7. **Procedure for the instigation of continuous working for the clearance of persistent Ice and Snow**

During times of persistent ice and or snow, it may be necessary to carry out a continuous salting and ploughing regime, particularly to include the priority 2 network in clearance operations. As this type of operation can be very costly, the instruction to commence all day continuous working will only be authorised by the Winter Service Provider (Amey) in consultation with the Local Highway Authority.

#### 4.8 **Procedure to be undertaken when It becomes impossible to keep the Primary Route Network open to traffic**

During times of extremely heavy and drifting snow it may become impossible within the resources available, to keep even the primary routes of the Priority One network open to traffic.

If this becomes the case then Bedfordshire Highways senior management, in conjunction with the Police and the Local Highway Authority should consider declaring a civil emergency.

## **5. Decision Making Management and Control Procedures**

### **5.1. Decisions and Responsibilities**

- 5.1.1. Listed at Appendix 3 are the decisions/responsibilities that are involved in respect of the Winter Maintenance function, together with the minimum level of responsibility.

### **5.2. General Decision Making for Winter Maintenance**

- 5.2.1. The decision making process as to whether or not to carry out some form of winter maintenance action is carried out by nominated staff in Amey. These staff members form a duty rota to cover the whole of the winter period.
- 5.2.2. The duty rota for staff in Amey, which is revised annually before each Winter season, is attached as Appendix 2.
- 5.2.3. The procedure for winter maintenance action decision making is as given in Appendix 3.
- 5.2.4. The duty engineer may request additional information concerning residual salt to help him decide on any action required. This is attached as Appendix 12.

### **5.3. Requests for Salting off of The Priority One Network**

- 5.3.1. Occasionally requests are received for treatment off of the Priority One network. Attached at Appendix 3 is a procedure for dealing with such requests.

### **5.4. Decision Making Guide**

- 5.4.1. To assist the duty officers in their general decision making as to whether or not some form of winter maintenance action is required, a guide has been produced and is attached as Appendix 3.
- 5.4.2. It is important to note that this chart is meant as a general guide only and that the weather forecast, together with prevailing weather conditions may warrant actions different to those listed.

### **5.5. Agency Arrangements**

- 5.5.1. As indicated in Appendix 3 referring to 6.2. above, Bedford Borough Council will be informed when Bedfordshire Highways is to carry out any precautionary salting. It is generally expected that Bedford Borough Council will follow with similar action.

## **6. Weather Forecasts and Ice Detection Systems**

### **6.1. General**

- 6.1.1. Amey uses a weather forecasting service and an Icelert ice detection computer system to assist in the winter maintenance decision making process.

### **6.2. Weather Forecast**

- 6.2.1. There are a number of weather forecasting consultancies available to the Winter Service Provider to assist in the winter maintenance decision making process.
- 6.2.2. Details of the current weather forecasting consultancy are given at Appendix 3.

### **6.3. Icelert ice detection system**

- 6.3.1. The Icelert system monitors road weather information and provides a medium for the forecasting consultancy to interrogate and to input data. The complete system assists the winter maintenance duty officers in arriving at more accurate and efficient decisions together with providing a historical weather record.
- 6.3.2. Current details of the 'Icelert' Ice Detection System are attached at Appendix 6.

## **7. Vehicles and Plant**

### **7.1. General**

- 7.1.1. The size, composition and standard of the vehicle fleet have a major impact on the economy, efficiency and effectiveness of the Winter Maintenance operation.
- 7.1.2. Vehicle unreliability can seriously undermine the Winter Service Operational Plan.

### **7.2. Winter Maintenance Fleet**

- 7.2.1. The size and configuration of the winter maintenance fleet will be reviewed after each Winter Maintenance season and any recommendations put into practice having regard to available finance.
- 7.2.2. The Amey winter maintenance fleet is made up of directly owned vehicles. A current list of the Amey vehicles is as shown at Appendix 1.
- 7.2.3. Before every Winter Maintenance season winter maintenance vehicles shall be allocated to the presalting network as efficiently as possible, taking into account the recommendations given by the Audit Commission Guidelines listed at Appendix 9.
- 7.2.4. All vehicles that are used for spreading salt will be speed related and calibrated accurately before the winter season. Additional checks on the rate of spread should be carried out intermittently throughout the winter period.
- 7.2.5. All vehicles will be single manned during normal precautionary salting and post salting for ice.
- 7.2.6. All operatives of salt spreading equipment will be in possession of the 'Winter Maintenance Operators Qualification' awarded by City and Guilds Institute.

### **7.3. Supplementary Snow Clearance Plant**

- 7.3.1. In the event of heavy snowfalls, the routine salting and snow clearing fleet may find it difficult to cope with the conditions. In this respect private contractors shall be employed to clear snow. The list of available contract plant is to be revised annually and is currently as shown at Appendix 1.
- 7.3.2. In the event of heavy snowfalls, consideration should be given to the provision of four wheel drive vehicles for staff in Amey directly involved in managing the snow clearance operation. Initially this will be 2 vehicles in Bedfordshire, but the number will be dictated by the weather conditions.

## **8. Communications**

### **8.1. Publicity**

- 8.1.1. It is important that the highway user is aware of and understands Bedford Borough Council and Central Bedfordshire Council's approach to winter maintenance, plus advice on how to prepare for and undertake a vehicular journey, and for pedestrians, how to prepare to walk on footpaths that may be icy, even to refrain from walking wherever possible in severe winter weather
- 8.1.2. It is considered that publicity of the winter maintenance service is paramount. Publicity is provided by the Local Highway Authority.
- 8.1.3. Winter maintenance information is available on the Bedford Borough Council and Central Bedfordshire Council's websites.

### **8.2. Media Communications**

- 8.2.1. In the event of heavy snowfalls resulting in blocked roads, a one-point contact should be made with both Bedford Borough Council and Central Bedfordshire Council and local radio stations, so that traffic information can be passed direct to the travelling public.
- 8.2.2. In addition, the AA and RAC organisations should be informed of road conditions.

### **8.3. Operational Communications**

- 8.3.1. All Amey winter maintenance vehicles used on the public highway are equipped with a communication system in order that contact can be made at all times between the operational centres and the vehicles.

## **9. Salting**

### **9.1. General**

- 9.1.1. Salt is the prime material used for combating snow and ice. It is recognised that salt is also environmentally unfriendly. However, other materials that can be used are either more detrimental to the environment or are prohibitively expensive. To gain the most economic and environmentally satisfactory solution, it is necessary that the minimum amount of salt is used to obtain the best effect.

### **9.2. Rates of Spread and Spread Widths**

- 9.2.1. The target rates of spread of salt are as given in 4.3.1. and 4.3.2. respectively.

### **9.3. Salt Purchase and Stock Levels**

- 9.3.1. Salt is stored at 2 depots in Bedfordshire (excluding Bedford Borough Council stocks), and is currently kept in the open
- 9.3.2. At the start of the Winter period the stock levels are to be maintained by the winter service provider to their requirements for delivering the service.
- 9.3.3. Following the winter of 2008/09 when national salt stocks run low, it was decided to increase the minimum stock level in Bedford depot by 500 Tonnes

## **10. Salt Bins**

### **10.1. General**

- 10.1.1. Salt bins are provided at known trouble spots such as sharp bends, steep hills, junctions etc., and mainly on roads not covered by the Priority One precautionary salting network. Most of the known trouble spots now have salt bins. More salt bins are available on demand for public use, particularly for example outside schools, hospitals, fire and ambulance stations, and sheltered accommodation that does not have their particular road salted. Before any new locations are agreed, it should be confirmed that there is a genuine need for the users of the highway and that they are not located in areas where the salt may be used privately and that the bins are not used for the disposal of litter.
- 10.1.2. Currently there are approximately 150 salt bins at locations detailed in Appendix 7.
- 10.1.3. Each bin is to be checked annually and refilled before the start of the winter season. Bins that are either broken or worn are to be replaced as necessary. A stock level of around 15 bins will be maintained.

### **10.2. Agency Arrangements**

- 10.2.1. Bedford Borough Council should refer to 10.1.1. above with regard to their current salt bin provision.



## **11. Snow Fences**

### **11.1. General**

- 11.1.1. Consideration should be given to the erection of snow fencing which can significantly reduce the drifting of snow onto the highway, although this has not been necessary for many years.
- 11.1.2. The legal powers to erect snow fences on or adjacent to the highway are contained in Section 102 of the Highways Act 1980. Where no agreement can be reached with the landowner, the Highways Act also provides compulsory powers in Sections 239, 240 and 250.

### **11.2. Design and Layout**

- 11.2.1. Research has been carried out into the design and location of snow fences and reference is to be made to RRL Report LR362 "Snow Fences" by L E Hogbin (January 1970)
- 11.2.2 Areas that may need attention during drifting are:-
  - A5120 Lords Hill Toddington
  - A428 Stevington Turn
  - A600 Hammer Hill Haynes
  - B660 Ravensden
  - A6 Knotting

## **12. Responsibilities of Water Utilities for leaks onto the Highway.**

### **12.1 Introduction**

The following procedure is for dealing with leaks from utilities apparatus onto the highway, such that during periods of sub-zero road surface temperatures (RSTs) ice is likely to form on the highway.

The utility is ultimately responsible for the failure of their apparatus and any consequence. This includes compensating the highway authority (and other utilities) under the New Roads and Street Works Act 1991, section 82 or any other parties under common law. However, this does not exonerate the highway authority who are obliged to assist the utility when requested or on the failure of the utility to discharge its responsibilities.

### **12.2 On discovery of leaks or bursts on the Highway**

It's anticipated that members of the public would notify the majority of leaks directly to the relevant utility. Any leaks found by the highway authority or its agents whilst carrying out their duties shall be reported **immediately** to the relevant utility. Should this be during a period of sub-zero RSTs, or where Sub-zero RST's are anticipated, then the highway authority or its agent are obliged to take suitable action until the utility can assume control of the site.

Suitable actions may include but not limited to:

- Salting the localised area on a regular basis.
- Damming or filtering the seepage through a rock salt bung.
- Protecting and signing the affected area
- Any actions to prevent water seeping on to the highway surface.

### **12.3 Dealing with the water seepage**

On assuming control of the site the utility is expected to carry out all actions and procedures as would be required under NRSWA. This will include the salting of any seepage onto the highway. However in some situations because of the excessive length of the road affected the highway authority will be required to assist. This assistance may be:

- Advice or guidance in the deployment of traffic management as would be expected under NRSWA,
- The provision of rock salt.
- Manpower and plant in order to salt large areas of the highway.
- Providing weather forecast and advising on precautionary salting actions.

### **12.4 Signing And Protecting**

If RST's are forecasted to be at or below zero, the utility shall deploy 'Ice Warning Signs' to 554.2 with sub-plate 554.3 and shall advise the Duty Engineer. Any further measures which may include extra signing or measures to warn highway users of the presence of ice shall only be deployed with the agreement of the Winter Maintenance Duty Officer. Lane or road closure may only be used in exceptional circumstances.

## **12.5 Recharging for works or assistance**

The Highway Authority may recharge the utility for:

- Plant, labour and material supplied upon the utility's request,
- Action(s) carried out between notifying the utility and them assuming control of the site.
- Damage caused to the highway under section 82.
- Any subsequent claims against the highway authority as a result of the leakage.

## **13. Performance Monitoring and Record Keeping**

### **13.1. General**

- 13.1.1. It is important that the cost effectiveness of the winter maintenance operation is regularly assessed. Many of the following monitoring exercises are carried out during the winter period. However it is considered important that the Winter Service Operational Plan is reviewed annually by Bedford Borough Council, Central Bedfordshire Council and the Winter Service Provider, in the spring in the light of the experiences gained during the previous winter season.

### **13.2. Client Operations**

- 13.2.1. The Audit Commission has produced a set of benchmark figures such that an Authority's client operations can be assessed. These benchmark figures are attached at Appendix 9. It is noted that these benchmarking figures, produced in the early 1980's, are somewhat irrelevant given modern busier traffic flows.

- 13.2.2. The following aspects of the client operation are also to be monitored

- communications and reasons for actions between client/forecaster
- communications between client/contractor
- provision of information to the media.
- the level and validity of public complaints.
- the incidence of road traffic accidents.
- third party claims.

### **13.3. Contractor Operations**

- 13.3.1. Service delivery by the Winter Service Provider is to be monitored against the requirements of the MAC Contract for Highway Services.

- 13.3.2. Key issues, which are to be monitored, are

- decision making and keeping of detailed records thereof
- response time
- treatment time
- fleet downtime due to breakdown
- satisfactory completion of each salted route on every salting run.
- salt usage

These points are to be recorded at the time of the operation by utilising a form similar to that attached at Appendix 10.

- 13.3.3. All winter maintenance vehicles are fitted with a GPS system, and will record the following information automatically:

- Start and end times of each winter maintenance run
- Direction and speed of travel of the winter maintenance vehicle.

#### **13.4. Forecasting Service**

- 13.4.1. Performance monitoring will be undertaken throughout the Winter period to establish the standard of forecasting and the incidence of abortive actions and failures to salt. This monitoring is to be carried out using a form as detailed in Appendix 11. Minimum actual temperatures will be taken directly from the Icelert Master Station.

#### **13.5. Icelert Calibration**

- 13.5.1. All Icelert outstation sensors are to be calibrated annually prior to the Winter season. The frequency of and the responses to equipment downtime should be monitored.

#### **13.6. Record Keeping**

- 13.6.1. Data from the Icelert is automatically archived by the Icelert Bureau. An electronic copy of the resultant action for every day of the Winter period is to be kept for 21 years.
- 13.6.2. All other records and performance monitoring reports are to be kept for 21 years.

## **14. Winter Service Resilience**

### **14.1. General**

- 14.1.1 The Secretary of State for Transport asked the UK Roads Liaison Group to review lessons that can be learnt from the events of winter 2008/9 and to recommend what steps could be adopted by highway authorities, producers and suppliers of salt and other stakeholders to ensure England is even better prepared should similar events occur in future. The following details the way in which the winter service will change following the recommendations made by the UK Roads Liaison Group.
- 14.1.2 Our pre-season salt stocks and in-season stocking arrangements have been reviewed to ensure we have sufficient salt to deliver our defined service. Minimum stock levels have been increased by 33% giving sufficient salt for over 20 standard gritting runs.
- 14.1.3 To ensure that sufficient drivers are available to cover for 24 hour manning in times of severe weather, the number of drivers available have been increased by 50% ensuring that we now have three drivers for each route. We have also revised our management and supervision of the winter service and have increased the number of staff who are able to control these operations. This will ensure that there are adequate resources available in the event of severe weather.
- 14.1.4 As a result of the 2008/09 winter a minimum winter network plan was devised covering all A & B roads only. This enabled a reduced network to be treated with less vehicles, drivers and salt. This reduced plan can now be implemented if needed in the event of any further national salt shortages or any pandemic. But this option would only be used in extreme circumstances following extensive publicity and approval of the local Highway Authority.
- 14.1.5 Staff in Bedfordshire have built up a good relationship with adjoining authorities including the Highway Agency. Mutual aid was agreed during the 2008/09 Winter, and should the need arise, this relationship would be beneficial.

## **Appendix 1 Inventory of Winter Maintenance Plant**

### **WINTER SERVICE PROVIDER - AMEY INVENTORY OF WINTER MAINTENANCE EQUIPMENT**

**2009 - 2010**

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**Winter Service Provider - Amey – Winter Maintenance vehicles c/w snow plough blades**

<b>Reg No.</b>	<b>Type Of Vehicle</b>	<b>Body Type</b>	<b>Capacity (m<sup>3</sup>)</b>
X411 UPK	Volvo 4x2	Speed Related Econ Low Throw	6.0
X412 UPK	Volvo 4x2	Speed Related Econ Low Throw	6.0
X413 UPK	Volvo 4x2	Speed Related Econ Low Throw	6.0
X414UPK	Volvo 4x2	Speed Related Econ Low Throw	6.0
KX51 EPA	Volvo 4x2	Speed Related Econ Low Throw	6.0
KX51 EPC	Volvo 4x2	Speed Related Econ Low Throw	6.0
KX51 EPD	Volvo 4x2	Speed Related Econ Low Throw	6.0
KX51 FAJ	Volvo 6x4	Speed Related Econ Low Throw	9.0
KX51 FAK	Volvo 6x4	Speed Related Econ Low Throw	9.0
KX51 FAM	Volvo 6x4	Speed Related Econ Low Throw	9.0
KN52 HYJ	Volvo 4x2	Speed Related Econ Low Throw	6.0
KN52 HYK	Volvo 4x2	Speed Related Econ Low Throw	6.0
KN52 HYL	Volvo 4x2	Speed Related Econ Low Throw	6.0
KN52 HYM	Volvo 4x2	Speed Related Econ Low Throw	6.0
KN53 UCM	Volvo 4x2	Speed Related Econ Low Throw	6.0
OV52 UJO	Mercedes Unibody	Speed Related Econ Low Throw	6.0
OE02 WKG	Mercedes Unibody	Speed Related Econ Low Throw	6.0
OE02 WKH	Mercedes Unibody	Speed Related Econ Low Throw	6.0
YD02 THY	Volvo 4x2	Speed Related Econ Low Throw	6.0
RK57 XRH	DAF 6 Wheel	Speed Related Econ Low Throw	6.0
WU51 EZL	DAF 6 Wheel	Speed Related Econ Low Throw	6.0

**Winter Service Provider - Amey Owned Special Purpose Snow Blowers**

<b>Fleet No.</b>	<b>Reg No.</b>	<b>Type Of Vehicle</b>
Unimog 1	318MBM	M Benz Unimog and Schmidt Rotary Snow cutter
Unimog 2	319MBM	M Benz Unimog and Schmidt Rotary Snow cutter



## Contract Farmers With Snow Plough Blades

### Bedford Borough

Name	Telephone	Type of Vehicle
E.F. Wootton & Sons Wood End Ravensden MK44 2RS	01234 772105 01234 772127 07771 575224	MF 4x4 50XH
R Cox & Sons Grange Farm Shelton PE28 0NR	01933 622040	John Deere 600
Tom Elliot Keysoe Row West Keysoe Beds MK44 2JE	01234 771787	International 955xL
John Maddison Brook End Keysoe Beds MK44 2HT	01234 709190	TS110 Matbro Teleporter with bucket
J Northern & Son Harrold Beds MK43 7EE	01234 720292 01234 720293 07778 800467/6	MF6170
M.D. Prowse Riseley Beds MK44 1BZ	01234 708483 07081 011497	Case 1455 4WD 1455xL New Holland TM190
Alex Bates The Chestnuts Honeydon Beds MK44 2LR	01234 376323 01234 376395	John Deere
Mr M Garratt & Sons High Street Thurleigh	07967012548 01234771444	Case 170 Case 140
M Horsford Upper Dean Beds PE28 0ND	07904 633854 01234708268	John Deere 3140

## Central Bedfordshire

L.E.Barnes & Sons Ltd Marston Moretaine Beds MK43 0QG	01234 768265	JCB Loadall CAT 930
Churchill Farm Partners Greenfield Road Westoning MK45 5JD	01525 712420 07850 770075	Tractor Case 5150 JCB Loadall with Bucket JD6910
Mr M.C. Cherry 58 Oliver Street Amphill MK45 2SF	01525 404504 07850 734221	2x JCB Digger Site Master
Mr D Curtis Salford Road Aspley Guise MK17 8HZ	01908 582759	John Deere
Alex Hinds Limbersey Lane Maulden MK45 2EA	07702 929131	Ford TW 15
Mark Howe Wood End Marston Beds MK43 0NY	01234 767788 07966 276662	JCB 53070 Teleporter
Karl Bradshaw 10 Crancott Close Houghton Conquest MK45 3ND	01234 740383 01234 740367 07831 849870	Volvo 642 Volvo 846
I.J. Deas & Sons New Road Maulden Beds MK45 2BQ	01525 402189	JCB Sitemasters 4x4
R F Lane Houghton Conquest Beds MK45 3LN	01234 740241	John Deere 6910 JCB Loadall
Beancroft Farm Marston Moretaine MK43 0QE	07771 73057	JCB Teleporter
Dave Tompkins Millbrook Beds MK45 2JH	01525 403142 01525 406232	JCB 525 58 4WD Snow Plough

R&C Cooper 39 Woolgrave Rd Hitchin SG4 0BZ	07860669931	JCB 4x4 3cx
Cutmore Bros Potton Sandy Beds SG19 2PB	07860 758648	2x JCB3cx 4x4 Excavator
Wildman Transport Ltd Kempston Beds MK42 7BU	01234 854244 01234 852380	Rubber tyre loading Shovels Tipper Lorries
Trumpertons Thorncote Green Sandy Beds SG19 1PU	07771 927547	JCB 530 Case 1056 4WD
C.G.V.Heathcote & Son Langford Beds SG18 9TL	01462 700226 07971302510	New Holland 8340 4x4
J Hope Myers Road Potton, Beds SG19 2RG	01767 261149	John Deere 2140 Massey Ferguson 590
Darren Maskell Duck End Farm Wilstead Beds MK45 3HP	01234740213 01234 740449 07785 986554	JCB 3cx Komatsu 380 HP JCB 4WD Loadall Fordson Tractor 135 HP
F Redman Lower Gravenhurst Beds MK45 4HJ	01525 860717 07850028275	Ford Tractor 8560 160HP
Robert Blake Markyate Beds AL3 8AJ	01582 840209 07719578190	2x JCB Diggers JCB 4WD FENDT 512
J.B. Harris Milton Bryan Beds MK17 9HS	01525 210001 07831112487	MF 6150 Tractor 4WD
Heathcote Farms Park Road Toddington LU5 6HH	01525 873566 07876711477	Manitou 4WD MXN190
Westrope Bros Eaton Bray Dunstable LU6 2BQ	01525 220587 07831563363	MF 50 JCB Loadall New Holland 8670

## **Appendix 2 Telephone Numbers**

### **2009 - 2010 Winter Maintenance**

All calls to the Winter Maintenance Duty Engineer shall be made to

**01417 816555**

#### **Winter Maintenance Duty Officers**

PETER HULL	07725 445365
JOHN GIBBONS	07725 445427
CHRIS CLARKE	07725 445446
MARK MACDONALD	07800 974108

## Appendix 3. Weather Forecasting and Decision Making

### Decisions and Responsibilities

The list of major decisions together with the respective decision making level of staff is as shown below:

<b>Responsibility</b>	<b>Minimum Responsibility Level</b>
Update and revise W M Plan	Winter Service Provider - Amey
Monitor requirements of W M Plan	Senior Project Manager
Update and revise route hierarchy	Network Maintenance Policy Adviser
Confirm adjoining County reciprocal agreements	Winter Service Provider - Amey
Arrange weather forecasting consultancy	Winter Service Provider - Amey
Extend or otherwise Winter maintenance season	Head of Highways
Winter Maintenance Duty Officer Rota	Winter Service Provider - Amey
Implement daily actions and responses	Winter Maintenance Duty Engineer
Instigate and stand down 24 hour manning	Winter Service Provider - Amey
Instigate consideration of a Civil Emergency	Head of Highways
Routine Icelert system administration Backups of data etc..	Winter Service Provider - Amey
Icelert System Administrator	Winter Service Provider - Amey
Maintenance of WM. fleet	Winter Service Provider - Amey
Allocation of fleet to route hierarchy	Winter Service Provider - Amey
Spread rates of salt, widths of spread etc.	Winter Service Provider - Amey
Agree Bedford Borough Council fleet allocation	Winter Service Provider - Amey
Revision of contract snow clearing plant list	Winter Service Provider - Amey
Media communications in snow conditions	Winter Service Provider - Amey
Arrange salt purchase and storage	Winter Service Provider - Amey
Maintain salt bins	Winter Service Provider - Amey
Arrange for erection of snow fences	Winter Service Provider - Amey
Performance monitoring	Winter Service Provider - Amey

## Procedure for General Weekday Decision Making

The forecasts will be obtained from the forecasting consultancy via the master Icelert computer at 12-00 hours. Any secondary master station can access this forecast.

A decision will be made by the Duty Engineer as to what action if any is to be taken. This decision shall immediately be passed on to the following, via the Icelert email system.

Amey Area Teams	area.team1@amey.co.uk;area.team2@amey.co.uk;area.team3@amey.co.uk; area.team4@amey.co.uk;area.team5@amey.co.uk;area.team6@amey.co.uk; area.team7@amey.co.uk;area.team8@amey.co.uk
Amey Call Centre	ocr.scotland@amey.co.uk Bedswinter@amey.co.uk
Amey WM Duty Engineers	chris.clarke@amey.co.uk;peter.hull@amey.co.uk;john.gibbons@amey.co.uk; mark.macdonald@amey.co.uk;tom.palacio@amey.co.uk
BBCEL A421	stuart.routh@bbcel.co.uk;jan.bath@bbcel.co.uk
Bedford Borough Council	dhellyn@bedford.gov.uk;andrew.prigmore@bedford.gov.uk; john.humphreys@bedscc.gov.uk
Bedfordshire Police	Gordon.pearsal@Bedfordshire.pnn.police.uk
Bucks County Council	sdudley@buckscc.gov.uk
Cambridge County Council	richard.kingston@cambridgeshire.gov.uk
Central Beds	Basil.Jackson@centralbedfordshire.gov.uk;Lee.Baldry@centralbedfordshire.gov.uk robin.pope@centralbedfordshire.gov.uk;Iain.Berry@centralbedfordshire.gov.uk
District Managers	ian.rolph@amey.co.uk;anthony.hood@amey.co.uk;neil.hollis@amey.co.uk
Hertfordshire County Council	jon.prince@hertshighways.org.uk;derek.twigg@hertshighways.org.uk
Highways Helpline	Highways.Helpdesk@bedford.gov.uk;Highways@centralbedfordshire.gov.uk
Luton Borough Council	robert.scott@luton.gov.uk;shane.creighton@luton.gov.uk; christopher.godden@luton.gov.uk
Met Office	nimbuslwc@metoffice.gov.uk
Milton Keynes	Ian.Buckle@Milton-Keynes.gov.uk
Northamptonshire	DGrindley@northamptonshire.gov.uk
Temporary Works	Andrew.Rosamond@amey.co.uk
Test	quintinblane@findlayirvine.com
Traffic Link	london@trafficlink.co.uk
Unilever	Goodman.Colworth@Reliancesecurity.co.uk;jane.hughes@arlington.com; sophia.barnes@arlington.com;Andrew.Coggins@unilever.com; Andy.Mayes@unilever.com Rob.Tober@unilever.com; Ray.Kester@unilever.com

If it is felt that the forecast is too borderline to make a firm decision at 12-00, then the decision can be delayed until the forecast update is received at approximately 18-30 hours.

The proforma shown at Appendix 11 must be completed, in full, by the Duty Engineer.

### Procedure for General Weekend Decision Making

The forecast will be obtained from the forecast consultancy, via the master Icelert computer, at or before 12-00 hours.

A decision will be made by the Duty Engineer as to what action if any is to be taken.

All decisions, whether salting or not, shall be emailed to the adjoining authorities via the Icelert Bureau.

If it is felt that the forecast is too borderline to make a firm decision at 12-00, then the decision can be delayed until the forecast update is received. If this is the case then all of the above, with the exception of Police HQ, should be informed of the delay.

The proforma's shown at Appendix 11 must be completed, In full, by the Duty Engineer every day.

### Decision Making Guide

Road Conditions	Road Surface Temperatures	May fall below freezing	Expected to fall below freezing				
	Precipitation	No Rain No Hoar Frost No Fog	No Rain No Hoar Frost No Fog	Expected Hoar Frost Expected Fog	Expected Rain before freezing	Expected Rain during freezing	Possible Rain Possible Hoar Frost Possible Fog
Wet		1	1	1	3 See note (3)	1 and 4 See note (3)	4
Wet Patches		2 See note (1)	2 See note (1)	2 and 4 See note (2)	3 See note (3)	1 and 4 See note (3)	5
Dry		6 See note (1)	6 See note (1)	4 See note (2)	3 See note (3)	1 and 4 See note (3)	5
Sufficient residual salt and no subsequent rain		6 See note (1)	6 See note (1)	6 See note (1)	3 See note (3)	4 See note (3)	5

### ACTIONS

1. Evening precautionary salting
2. Evening precautionary salting of any wet patches
3. Precautionary salting after rain stops
4. Precautionary salting early morning
5. Monitoring of weather by duty officer
6. No action

### NOTES

1. Particular attention should be paid to the possibility of water run off across the carriageway from adjacent accesses, fields and verges etc. Such locations may need treatment.

2. The incidence of hoarfrost can sometimes mean considerable deposits. Hoarfrost usually occurs in the early morning when dew develops, this falls on to a cold road and freezes on impact. It is impossible to forecast with any accuracy where and when this will occur and it is extremely difficult to cater for as any salt deposited on a dry road may be dispersed by traffic. Precautionary salting is therefore ideally carried out just as the hoarfrost is forming, but such actions are usually not practical and therefore salt may have to be spread on a dry road. Consideration may be given to raising the spread rate in such instances if severe hoarfrost is forecast. Salt alone will not stop the dew freezing; in fact dew will even freeze on salt crystals. Salt will only work in conjunction with traffic movements crushing the salt and dew into solution onto the sub-zero road, thus providing the necessary protection.
3. If rain has not stopped by early morning and road temperatures are still expected to freeze, then precautionary salting should be carried out as soon as the rain stops. This is one of the worst scenarios for the formation of ice. Full precautionary salting may have to be undertaken on dry roads before the onset of rain. In severe instances then precautionary salting may have to be undertaken during the period of rain also.

### **WEATHER FORECASTING CONSULTANCY**

For the 2009-2010 season, the Meteorological Office will be providing a forecasting consultancy service. The Met Office will be providing the following using the Icelert computer as a transmission medium:

- General 24 hour regional weather forecast for Bedfordshire by 12-00.
- Detailed site specific forecast and ice prediction graph for Ridgmont (Central Bedfordshire forecast outstation) and for Luton SW (Luton Borough Council forecast outstation).
- Routine ice prediction update in the form of 'no significant change' or a short text, to be received by 16-30 hours each day.
- 2 to 5 day ahead forecast.
- 24 hour telephone consultancy service.

Open Road Weather Forecasting Service:

**Met Office**  
Fitzroy Road  
Exeter  
Devon  
EX13PB

Tel: +44 (0)7824550087 Fax: +44 (0)2920 786565

**Open Road forecaster available on 01392 884322**



## **Requests for salting off of the Priority One Network**

### **A) During Periods of continuous working**

Whilst the Priority 1 network is being treated, all requests for the salting of routes off of this network should be recorded and an assessment made as to whether the request is on the Priority 2 or Priority 3 network. It is essential that the Priority 1 network is running relatively clear before any winter maintenance vehicles are diverted on to the Priority 2 network. Likewise, both the Priority 1 and 2 networks should be running relatively clear before winter maintenance vehicles are diverted on to the priority 3 network.

During heavy or long periods of snow, when continuous working is normally implemented anyway, requests for snow clearance as well as salting are generally received. Consideration should be given to deploying a local contractor to clear the requested route of snow. A composite list of available farmers equipped with snow ploughs is given at Appendix 1.

### **B) During normal precautionary salting operations**

Requests for salting off of the priority one network are normally received from two sources, either from the public and Town / Parish Councils, or from Bedfordshire Police Control Room.

#### **i) The public and Town / Parish Councils**

Requests for salting off of the priority 1 network should be firmly resisted. The normal precautionary salting service should be explained using the annual winter maintenance leaflet for reference. Driver advice from the leaflet can be given depending on the situation of the request. An offer to send a leaflet to the complainant may also help.

#### **ii) Bedfordshire Police Control Room**

Generally requests from the Police for salting off of the priority 1 network are made as a result of reported road traffic accidents normally on the priority 2 network. Consideration should be given to carrying out salting off of the priority 1 network using the following parameters as a guide.

- Scope of problem, e.g. number and severity of reported accidents.
- Availability of resources, eg. are winter maintenance vehicles already out salting the priority one network?
- Time of request from Police.
- Time needed for a vehicle to attend and treat the site.
- Whether RSTs are expected to remain below zero for some time.
- Time road surface temperatures (RSTs) are expected to rise above zero.
- Expected precipitation.

**N.B. It is important that records are retained of decisions made under this procedure, including the thought process used. This should be recorded on the enclosed form**

**Request for salting off of the Priority One Network**

**Request From:** \_\_\_\_\_

**Address:** \_\_\_\_\_  
\_\_\_\_\_

**Date:** \_\_\_\_\_

**Time:** \_\_\_\_\_

**Request Type 1**      **Request for permanent addition of route to priority one network**      ( )

**Request Type 2**      **Request adhoc immediate treatment of route**      ( )

**Route:** \_\_\_\_\_

**Location:** \_\_\_\_\_

**Decision:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**It should be noted that If Request Type 1, then request should be refused as per procedure.**

**However, please identify below, an assessment of priority either high, medium or low, that the route would attain should extra funds for precautionary salting become available in future years.**

**Duty Engineer:** \_\_\_\_\_

## Appendix 4 Schedule of Presalting Routes

### 4.1. BEDFORDSHIRE HIGHWAYS DIRECT

#### 2009 – 2010 SCHEDULE OF PRESALTING ROUTES

Road Number	Description	Kms	Constraints
A6	Manton Lane Roundabout, Bedford to Hospice, Luton	36.08	
A6	Manton Lane to Northants border	24.6	
A418	A505 Rbt to Bucks County Bdy	0.00	Buckinghamshire salt for Bedfordshire
A421	A507 to Milton Keynes Bdy	2.98	
A421	Detruncked Section Roxton - Ravensden	8.50	
A422	C53 in Bucks to A428 Bromham Bypass	4.46	Bedfordshire salt part in Buckinghamshire
A428	County boundary at Turvey to A421 roundabout, Renhold	19.32	
A505	A418 Leighton Buzzard to A5 Dunstable	13.27	
A507	A421/M1 junction to A1 via Ridgmont, Shefford and Stotfold Bypasses	36.99	Local dualling C123 junction
A600	A421 Bedford Bypass to A507 Shefford/Henlow Bypass	12.33	
A600	A507 Airman to County Boundary	3.44	
A603	A5134 junction to A1 Sandy	7.47	
A1081	M1 spur to C212 junction	3.18	
A4012	A507 Husborne Crawley to Leighton Buzzard boundary	14.57	
A4146	Leighton Buzzard Bypass to River Ouzel bridge (Herts bdy)	2.80	
A4146	B4506 junction to C225 junction	3.30	Bedfordshire salt part in Buckinghamshire
A5120	A507 Ampthill to UC197 Houghton Regis	13.17	
A5130	C94 Woburn Sands to A4012 Woburn	2.93	
A5134	A428 Bromham to C70 Kempston	5.09	
A6001	A6001 Henlow Camp into Biggleswade then A 1 Nth / Sth	14.36	Shortmead St, London Road, St Andrews St and Teal Road
<b>SUB TOTAL 'A' ROADS</b>		<b>228.84</b>	
B489	Dunstable Boundary to B4506 Rbt	1.83	Buckinghamshire salt from B4506 roundabout to County boundary
B530	Bedford Borough Bdy to A507 Ampthill (Woburn Rd)	10.41	
B579	A5120 Fancott to Luton Boundary	6.07	
B645	C4 junction to Cambridgeshire Boundary	0.0	Cambs CC do Beds part
B653	Lower Harpenden Rd, Hyde, Luton Boundary to Herts Bdy.	4.43	
B655	A6 Higham Gobion Rbt through Herts to C146 Pegsdon	3.29	Bedfordshire salt part in Herts CC. Herts CC do C146 to Cty Bdy
B655	Bedford Road and Luton Road Baron. A6 Nth to A6 Sth	2.70	A6 Southbound approach is one way Southbound
B658	A600 North of Shefford to A1 Biggleswade	14.79	
B660	Avon Drive Rbt to A45 in Northants	18.32	Bedfordshire salt to B645 for Cambridgeshire
B1040	A6001 Biggleswade to Cambs Boundary	8.84	
B1042	Sandy to Cambs Boundary	13.59	
B4506	B489 junction to A4146 in Buckinghamshire	2.87	Bedfordshire salt part in Bucks CC
B4540	B4506 junction to A5	6.37	
B4540	Bridge under M1 to Herts boundary at Slip End, Caddington	2.00	
B4541	Dunstable Boundary to Whipsnade cross-roads	3.08	
<b>SUB TOTAL 'B' ROADS</b>		<b>98.59</b>	
C4	C5 Melchbourne to B645	4.97	
C5	Northants Bdy to C40 Wilden	21.78	
C5	C56 Great Barford to UC59 Blunham	1.53	School Bus Route
C8	C26 Bletsoe to C5 Swineshead	7.91	
C12	Hinwick Crossroads to Rushden	5.50	
C15	Hinwick Crossroads to C46 Oakley	15.70	
C22	B660 Ravensden to UC33 Thurleigh	2.40	
C22	Robbins Folly, Thurleigh	2.14	
C26	A428 in Bucks to B660 Bolnhurst	21.93	Beds salt part in Bucks Part dual C/W from C32 to UC33
C26	B660 Bolnhurst to Cambs County Bdy Eaton Socon	8.12	
C28	A428 Turvey to C15 Carlton	4.41	
C28	Felmersham to A6 Milton Ernest	3.66	
C32	A6 Milton Ernest to C26 junction	2.63	
C40	Bedford Boundary to C5 Wilden	4.89	
C43	B660 Ravensden to C40	2.21	
C44	A428 to C40 Renhold	3.21	
C45	C46 Bromham to C15	5.03	
C46	A5134 Bromham to A6	6.38	Includes A428 slip road
C47	B660 to C5 Colmworth	1.08	
C51	Girtford Underpass and St Neots Road Sandy	1.25	West side accessible from A1 Nbd. East side accessible from A1 Sbd
C54	A1 Blunham Turn to A1 Tempsford	2.52	
C54	A1 Tempsford to County Boundary Little Barford	4.69	
C56	A603 Willington to A421 Roxton Hill	4.59	
C58	Tempsford to UC177 Myers Road	7.24	
C61	Sandy to Everton	3.53	
C70	A5134 junction Kempston to C76 Salford	18.37	Includes Bowstring Road

C70	C76 Salford to Milton Keynes boundary	1.76
C73	Cranfield to Bucks County Boundary	3.77
C74	C73 junction Cranfield to UC327 junction	2.33 Buckinghamshire salt from UC327 to Cty Bdy
C75	Bucks Boundary to C70	1.20
C76	A507 Ridgmont to Bucks County Boundary	7.77
C77	C70 Cranfield to A507 Millbrook	6.08
C79	B530 Stewartby to A421	3.34
C81	Manor Road, Kempston	2.05 School Bus Route
C82	Broadmead Road, Stewartby	2.17 School Bus Route
C83	B530 to Millbrook	2.65 School Bus Route
C85	C77 Marston to A507 Lidlington	3.61
C87	Mill Road (M1 diversion route) H Crawley to Ridgmont	1.43
C94	Woburn Sands to A507 Husborne Crawley	2.70
C100	A4012 Woburn to A507 Clophill	16.03
C103	Fordfield Road Millbrook	2.49
C103	C100 Steppingley to A5120 Flitwick	1.52
C107	A5120 Westoning to C100 Eversholt	5.63
C109	A5120 Westoning to C199 Harlington	1.87
C109	C199 Harlington to C198 Lower Sundon	4.53
C109	C198 Lower Sundon to Luton BC boundary	0.70
C112	A5120 Flitwick to A6 Silsoe	7.40
C118	C112 Silsoe North to A6 Silsoe (both ends)	0.64
C123	A6 to Maulden	3.99 School Bus Route
C123	C112 Flitwick to C100 Maulden	3.43
C127	A6 Wilstead (Two points) to A600 Eastcotts	4.57
C136	UC135 to C140 Upper Gravenhurst	0.41
C136	A507 Chicksands to Henlow	4.96
C140	A6 Barton to UC145 Apsley End	4.05
C140	C136 Upper Gravenhurst to C142	1.36
C140	Bury Road Shillington to Hillfoot End	1.04 School Bus Route
C142	A507 Shefford to C146 Shillington	4.73
C142	Shefford to A507	0.78 School Bus Route
C146	B655 Pegsdon to A600 Henlow Camp	9.08
C156	A603 to C210 Upper Caldecote	12.38
C167	A1 Beeston to A603 Sandy	0.39 Only accessible from A1 Northbound
C168	Edworth Road Landford	3.42 Part School Bus Route + peak hour rat run
C189	Church Lane loop past Rly Station to Stotfold Rd Arlesey	0.99 School Bus Route
C169	A507 Arlesey Bypass to Herts County Bdy	6.18
C170	C169 junction to Herts County Boundary	0.60
C171	Herts County Boundary to C174	2.21
C174	A507 East end of Stotfold to C169 Arlesey	3.10
C184	B1042 Potton to A1 Edworth	9.00
C185	A6001 Biggleswade to B1042	7.44
C193	A5120 Toddington to A5 Hockliffe	4.38
C194	A4012 Woburn to SBDC Boundary	7.08
C198	B579 Chalton to A6 Streatley	5.26
C199	A5120 Harlington to B655 Barton	6.96
C204	A5120 Toddington to B579 Fancot	1.53
C207	Hitchin Rd Clifton Rd to A 507	1.52 School Bus Route
C208	Stagsden Village loop	1.24 School Bus Route
C210	B658 Upper Caldecote to A603 Sandy	4.05
C211	Goswell End Rd Harlington	1.03 School Bus Route + route past middle school
C212	West Hyde Rd	2.24
C212	Chiltern Green Rd	2.02
C212	Dane Street	1.33
C213	Tharles End Road	1.05
C219	A5 to Luton Borough	4.58
C220	Clay Hill Road Kensworth	1.01 School Bus Route
C220	Byslips Rd Studham	2.08 School Bus Route
C225	A4146 Studham to B4540 Whipsnade Crossroads	5.56
C228	B489 Eaton Bray to A505	5.15
C238	A5 Tebworth to Leighton Buzzard Boundary	5.51
C238	Link Road from C238 to A505	0.90
C249	C238 Stanbridge to Dunstable Boundary	5.14
C280	Marston Village loop	1.30 School Bus Route
<b>SUB TOTAL - 'C' ROADS 403.63</b>		
UC10	Staughton Rd	1.53 School Bus Route
UC13	Wymington to A6	1.36 School Bus Route
UC16	A6 Souldrop to C26 Sharnbrook	3.38
UC29	C26 TO C28 Felmersham	0.85
UC29	Pavenham Rd C28 to C15	2.20 School Bus Route
UC33	C26 Thurleigh to C22 Thurleigh	2.11
UC42	C43 Ravensden to C40 Wilden	3.56

UC49	A428 W of Bromham to Bromham Bridge (inc. old A422)	2.22
UC52	UC52 Silver Street Great Barford	0.65 School Bus Route
UC59	C5 Blunham to A603 Moggerhanger	2.45 School Bus Route
UC72	C70 Wootton to UC68	1.64
UC68	UC72 to C70 Keeley Lane Wootton	1.27
UC78	Lower Shelton Rd	1.34 School Bus Route
UC80	Fields Road Wootton	1.09
UC88	Church St Liddington to A421	2.68 School Bus Route
UC111	A5120 Westoning to C112 Flitwick	2.31
UC113	A6 Barton to C112 Greenfield	4.15
UC124	B530 to UC125 Houghton Conquest	1.48
UC125	B530 Houghton Conquest to A6 Wilstead	2.19
UC128	UC130 junction in Haynes to A600 Hammer Hill	0.65
UC130	A6 Haynes Turn to UC128 junction	3.22
UC133	Clophill High St A6 to A507	3.03
UC135	A507 to C136 Upper Gravenhurst	1.99
UC144	Hillfoot Rd Shillington	0.65 School Bus Route
UC145	Shillington Apsley End	0.72
UC147	Old Warden to UC151 Southill Park	2.54 School Bus Route
UC150	Bedford Rd Old Warden	0.58 School Bus Route
UC150	Southill Village to B658	1.46 School Bus Route
UC151	Southill Park to UC150 Southill Village	2.16 School Bus Route
UC153	B658 to UC155 Stanford	0.76
UC155	UC155 Stanford to A6001 Henlow	2.36
UC157	Ickwell to UC 150	2.96 School Bus Route
UC171	Regent Street Stotfold	0.66 School Bus Route
UC173	Rooktree Lane and Queen St Stotfold	1.01 School Bus Route
UC177	Myers Road Potton	0.71
UC182	Hatley Road, Potton to Wrestlingtworth	4.77
UC190	A4012 to A5120 Milton Bryan	5.40 School Bus Route
UC203	Streatly Rd Sundon	1.13 School Bus Route
UC216	Grove Rd Slip End	0.62 School Bus Route
UC216	Front St Slip End and Half Moon Lane Pepperstock	1.83 School Bus Route
UC217	B4540 to UC218	0.31
UC217	Woodside Road	0.77 School Bus Route
UC218	Chaul End Lane Caddington	2.82
UC218	UC217 Caddington to C219	1.84
UC227	Studham loop (Church Rd, Valley Rd and part Common Rd	1.90 Added 2008/09
UC239	UC239 Eggington Loop	2.00 Added 2006/07
UC243	Miletree Road Heath and Reach	1.55
UC244	Eastern Way Heath and Reach	0.87
UC251	New Road Sandy	1.09 School Bus Route
UC327	C75 to Cranfield Technology Park	0.61 Dual carriageway
UC327	Link Rd at Cranfield Technology Park	0.32
UC327	Cranfield Technology Park to C74	4.14
UC370	Manor Rd Barton, Old A6 to B655	1.21 School Bus Route
UC392	Dells Lane, Holme Court Avenue, Sun St and Crabb Lane Biggleswade	2.22
	Sunderland Road, Sandy	3.07
	<b>SUB TOTAL – UNCLASSIFIED ROADS</b>	<b>104.93</b>

#### LEIGHTON BUZZARD AND LINSLADE

Appenine Way	1.12
Bassett Rd	0.44 School Bus Route
Bideford Green	0.50
Bideford Green	0.20
Billington Road	1.20
Brooklands Drive	0.81
Bunkers Lane	0.37
Ceders Way	0.23 School Bus Route
Church Street	0.33
Clarence Road	0.71
Cotefield Drive	0.30
Derwent Road	1.24
Grovebury Road	1.80 Busy Industrial Estate Rd
Heath Road	1.71
Himley Green	0.75
Hockliffe Road	1.30
Hockliffe Street	0.40
King Street	0.20 School Bus Route
Knaves Hill	1.09
Lake Street	0.45
Leighton Road	0.33
Leston Road	0.37
Meadway	0.50
Mentmore Road	1.14 School Bus Route
North Street	0.25

Old Linslade Road	1.62
Old Road	0.17
Plantation Road	2.15
Queen Street	0.23 School Bus Route
Shenly Hill Road	1.57
Soulbury Road	1.55
South Street	0.59
Southcourt Avenue	0.20
Southcourt Road	0.14
Springfield Road	0.26
St Marys Way	0.26
Stanbridge Road	1.55
Stoke Road	2.14
Vandyke Road	2.28
West Street	0.49
Wing Road	1.67

**PRESALTING NETWORK – LEIGHTON LINSLADE 34.61**

**DUNSTABLE AND HOUGHTON REGIS**

Bedford Road	1.33
Beech Road	0.33
Boscombe Rd including roundabout	1.39
Bowland Crescent	0.19
Brewers Hill Road	0.89 School Bus Route
Brittain St + part A5 slip road	0.35 School Bus Route + School
Bull Pond Lane	0.75
Canesworde Road	0.51
Canesworde Road Extension	0.37 School Bus Route + School
Chiltern Road	0.97
Church Street	0.65
Court Drive	0.27
Drovers Way	0.75
Eyncourt Road	0.35
Great Northern Road	0.59
Hillborough Crescent	0.12
Hilton Avenue	0.29 School Bus Route + School
Houghton Regis High Street	1.06
Houghton Road	0.88
Humpreys Road	1.15
Icknied St	0.13 School Bus Route
Jardine Way	0.38 School Bus Route
Kingsway	0.54
Kirby Road	0.25
Langdale Road	0.65
Langlade Rd Extension	0.27 School Bus Route
Lovett Way	0.21
Lowther Road	1.19
Luton Road	3.64
Mayfield Road	0.16 School Bus Route
Meadway	0.57
Northfields	0.59 School Bus Route + School
Oakwood Avenue	0.41 School Bus Route + School
Oldhill	0.64
Park Road North	0.77
Parkside Drive	2.39
Porz Avenue	1.68
Poynters Road	1.62
Priory Road	0.26 School Bus Route + School
Queensway	0.09
Queensway Hall Access Road	0.35
Ridgeway Avenue	1.00
Sandringham Drive	0.26
Station Road	0.12
Sundon Road	2.00
Thorn Road	1.67
Tithe Farm Road	1.41
Tring Road	1.38
Vernon Place	0.06
West Street	1.23
Whipsnade Road	0.60
Wilbury Drive	0.48
Windsor Drive	0.55

**PRESALTING NETWORK - DUNSTABLE/HOUGHTON REGIS 40.55**

4.2. AREAS WITHIN BEDFORD & KEMPSTON Treated by Bedfordshire Highways

	A6 KINGSWAY fr Ampthill Rd Rbt to central island	207
	A6 KINGSWAY fr central isle bearing L to JW Cauldwell St	120
	A6 KINGSWAY fr central isle bearing R to JE Cauldwell St	115
	A6 KINGSWAY From SN35 to SN30	46
	A6 KINGSWAY link rd fr JE Kway to JW Kwav(at J Melbne St)	22
	A6 CAULDWELL ST (E part)fr JW Ksway to J Saint Mary's St	254
	A6 ST PAUL'S SQUARE J High St S J Horne Ln	150
	A6 HORNE LANE J St Pauls Sq/Harpur J Commercial Road	177
	HORNE L/RIVER ST RBT Horne Lane/River St Roundabout	102
	A6 RIVER STREET J Commercial J Midland Rd	140
	A6 GREYFRIARS J Midland Rd Hassett St Rbt	143
	A6 GREYFRIARS Hassett St R'bout Hassett St R'bout	156
	A6 GREYFRIARS J Hassett St R'bout J A428 Bromham Rd	288
	A6 UNION STREET J A428(T) Bromham Rd J A6(T) Tavistoc	272
	A6 ST PAUL'S SQUARE S SQUARE J Horne Ln 'S SQUARE J High	133
	A6 CLAPHAM ROAD BEDFORD: Dual Cway Southbound C15 Clpaham Road	277
	A6 CLAPHAM ROAD BEDFORD: Dual Cway Northbound Manton Lane Rbt to C	280
	A6 Manton Lane R'bout	130
	A6 Manton Lane R'bout Roffe Avenue Rbt	627
	A6 Roffe Avenue R'bout	143
	A6 Roffe Avenue R'bout Harper St.	422
	A6 Harper St. A428	218
	A6 A428 St Pauls Square Sout	386
	A6 St Pauls Sq S Juncti Cauldwell St	277
	A6 Cauldwell St. St Johns Roundabout	241
	A6 St Johns R'bout	215
	A6 St Johns R'bout Britannia Rd	361
	A6 Britannia Rd to Kempston Rd Rbt	1453
	A6 Kempston Rd R'bout	92
	A6 Kempston Rd R'bout Elstow Road Rbt	116
	A6 Elstow Rd R'bout	145
	A6 B530 Elstow Roundb't Progress Park Rbt	276
	A6 Progress Park Rbt	125
	A6 Progress Park Rbt to A421 Bypass Rbt	345
	A428 Denham Roundabout	188
	A428 Denham Rbt to Gold Lane Roundabout	636
	A428 Gold Lane/Deep Spiney Roundabout	123
	A428 Gold Lane Rbt Biddenham Turn	1389
	A428 Biddenham Turn Ashburnham Rd	910
	A428 Ashburnham Rd Union St.	366
	A428 Union St. Harper Street	451
	A428 Harper St. High Street Westbound	122
	A428 HARPER ST Dame Alice to A6 Tavistock St	159
	A428 High St St Cuthberts St	248
	A428 St Cuthberts St Gyratory System	51
	A428 Gyratory System E'bound	290
	A428 Gyratory System W'bound	177
	A428 Gyratory System Newnham Avenue	1167
	A428 Newnham Avenue Tesco R'bout	1392
	A428 Tesco R'bout	122
	A428 Shuttleworth Rd Dual E'bound	971
	A428 Shuttleworth Rd Dual W'bound	974
	A428 Norse Rd R'bout	192
	A428 Norse Rd R'bout Culvert ( NBBC Bdy)	141
	A428 BBC Bdy Culvert-A421 Bypass Roundabout	1084
	A600 LONDON ROAD J A6 R'bout J A5134 R'bout	1507
	A600 MILE ROAD 'bout A5134 Mile Rd 'bout A5134 Mile	212
	A600 HARROWDEN ROAD J A5134 Mile Rd R'bo J Eastcotts R	746
	A600 EASTCOTTS RD R'bout Eastcotts Rd	110
	A600 NORTH OF BYPASS Cambridge Rd Rbt- Bypass North Rbt	240
	A603 ROPE WALK 'bout Rope Wlk 'bout Rope Wlk	191
	A603 CARDINGTON RD J Rope Wlk R'bout J Tesco Rbt D/C E/B	567
	A603 CARDINGTON RD J Tesco Rbt-Rope Wal k Rbt D/C Westbound	582
	A603 TESCO RBT BEDFORD	157
	A603 CARDINGTON RD Tesco Roundabout to J Eastcotts Rd	720
	A603 CARDINGTON ROAD J Eastcotts Rd-A5134 Link Rd Rbt	952
	A603 CARDINGTON ROAD A5134 Link Road Rbt	189
	A603 CARDINGTON RD A5134 Link Rd Rbt- A421 Bypass Rbt	398
	A5134 MILE ROAD A600 R'bout Elstow Rd	1223
	A5134 MILE ROAD Mile Rd/Elstow Rd/ Progress Way Rbt	156
	A5134 PROGRESS WAY Fr Elstow Rd Rdbt to West End La Rdbt	468
	A5134 PROGRESS WAY Progress Way/West End La Rdbt	138
	A5134 PROGRESS WAY Progress Way/West End La Rdbt-A6	291
	A5134 WOBURN ROAD J A421 R'bout J Wosley Rd R'bout	263
	A5134 WOBURN ROAD Wosley Rd Rbt	161
	A5134 WOBURN ROAD J Wosley Rd Rbt J Bunyan Rd R'bout	1043
	A5134 BUNYAN ROAD Bunyan Rd R'bout Bunyan Rd R'bout	112
	A5134 ST JOHNS ST J Bunyan Rd R'bout J Bedford Rd	282

A5134 LINK RD-A603 A603 Rbt - Cambridge Rd Rbt	171
A5134 CAMBRIDGE RD A603 Link Rd Rbt	161
A5134 CAMBRIDGE RD Rbt Link Rd to A603 A600 Harrowden Rd	795
A5140 ROPE WALK J A6 R'bout J Cardington Rd R'bo	408
A5140 LONGHOLME WAY J Cardington Rd R'bo J The Embankme	881
A5140 NEWNHAM AVE J The Embankment J Barkers Lane Rbt	181
A5140 BARKERS LANE Barkers Lane Rbt	128
NEWNHAM AV FROM BARKER'S LN RBT TO A428 GOLDINGTON RD	638
A5141 SHAKESPEAR RD J A6 R'bout J Bromham Rd	708
A5141 ASHBURNHAM RD J Bromham Rd J Midland Rd R'bout	552
A5141 MIDLAND ROAD Midland Rd/Ashburnha Midla	66
A5141 MIDLAND ROAD J Ashburnham Rd R'bo J Prebend St R	126
A5141 MIDLAND RDOAD: Prebend St/Midland Road Rbt	75
A5141 PREBEND STREET J Midland Rd J Cauldwell St	534
A5141 CAULDWELL ST J Prebend St to J Britannia Rd	147
A5141 BRITANNIA RD J Kempston Rd J Amphill Rd A6(T)	258
A5141 CAULDWELL STRE J Prebend St J West Kingsway	115
B530 AMPHILL RD J A6 Roundabout- J Polofield Wy Rbt	682
B530 INTERCHANGE PK Roundabout Polofield Way	154
B530 BYPASS LINK Interchange Retail Pk Rbt-A421 Byp Rbt	444
B531 KEMPSTON RD J Britannia Rd J Spring Rd	1098
B531 KEMPSTON ROAD J Spring Rd J Saint John's St	1388
B562 EASTCOTTS ROAD J A603 Cardington Rd J A5134 R'bout	587
B660 KIMBOLTON ROAD J A428 Loop (opp 16) J Polhill Av	892
B660 KIMBOLTON ROAD J Polhill Av J Putnoe La	292
B660 KIMBOLTON ROAD J Putnoe La J Wentworth Dr R'bou	1279
B660 WENTWORTH DR Wentworth Dr R'bout Wentworth Dr R'bo	158
B660 KIMBOLTON RD J Wentworth Dr R'bou Agency Boundary	364
CHURCH LANE J A428 J Putnoe St R'bout	878
CHURCH LANE Putnoe St R'bout Putnoe St R'bout	108
CHURCH LANE J Putnoe St R'bout J Wentworth Dr R'b	772
CHURCH LANE Wentworth Dr R'bout Wentworth Dr R'bo	234
CHURCH LANE Wentworth Dr R'bout Agency Boundary	53
C15 High Street Clapham: A6 rdbt to Green Lane	1380
C15 High Street Clapham: Green Lane to Oakley Road (Fox & Hounds)	1161
OAKLEY ROAD J High St Clapham to Roundabout A6 Southbound Slip Road	319
C46 Milton Road Clapham: Highfield Road rdbt to Twinwood Road rdbt	945
C46 Milton Road Clapham: Twinwood Road rdbt	143
C46 Milton Road Clapham: Twinwood Road rdbt to C15 Oakley Road	557
Bunyan Rd J Bedford Rd J Woburn Rd R'bout	587
ELSTOW ROAD KEMPSTON J A6 R'bout J Spring Rd Kempston	209
SPRING RD KEMPSTON Fr B531 Bedford Rd to Elstow Rd Kempstn	937
ALEXANDRA ROAD J Woburn Rd J Midland Rd	245
BUSHMEAD AVENUE J A428 Goldington Rd J Castle Rd	324
BUSHMEAD AVENUE J Castle Road J The Embankment	320
CARDINGTON ROAD J Saint Mary's St J Rope Wlk R'bout	538
CASTLE ROAD J Newnham Av J Rothsav Rd R'bout	954
CASTLE ROAD Rothsav Rd R'bout Rothsav Rd R'bout	197
CASTLE ROAD J Rothsav Rd R'bout Saint Cuthbert's	255
CASTLE ROAD Saint Cuthbert's R'b Saint Cuthber	201
COMMERCIAL ROAD J River St J Prebend St	216
CONDUIT ROAD J A428 Bromham Rd J Woburn Rd	219
DE PARYS AVENUE J Park Av J A6 The Broadway	638
DE PARYS AVENUE Spur 1: J SN00 to J A6 Broadway	51
ELSTOW ROAD BEDFORD J A600 J Mile Rd	1112
THE EMBANKMENT J Saint Mary's St J Newnham Av	1368
HARPUR STREET J Dame Alice St J St Loyes St	75
HARPUR STREET J Midland Rd-Horne L (Pedestrian Area)	145
MIDLAND ROAD Prebend St to River Street	251
MIDLAND ROAD River Street to Harpur Street	229
MILL STREET J Saint Cuthbert's S J High	232
PARK AVENUE (C ROAD) J B660 J Foster Hill Rd R'b	1035
PARK AVENUE (C ROAD) Foster Hill Rd R'bou Foster Hill Rd	102
POLHILL AVENUE (C RO J Kimbolton Rd J Goldington Rd	1261
ROFF AVENUE (C ROAD) J Foster Hill Rd R'b J Clapham Rd	422
ST CUTHBERT'S STREET J Castle Rd R'bout J A428 Saint Pete	241
ST LOYES STREET J A428 J Harper St	143
<b>TOTAL</b>	<b>63.35</b>

#### 4.3 BEDFORD BOROUGH - Arranged independently by Bedford Borough

Description	Kms
Abbey Road	0.19
Acacia Road	0.32
Alamein Avenue	0.32
Arundel Drive	0.48
Avon Drive	1.45
Balliol Road	0.48
Barford Avenue	0.80



Barkers Lane	2.40
Barnburgh Drive	0.64
Barnstable Road	0.32
Barton Road	0.16
Beaconsfield Street	0.32
Beverley Crescent	0.48
Biddenham Turn	0.80
Bowhill	0.48
Brackley Road	0.48
Breacon Way	0.48
Brickhill Drive	3.06
Broad Avenue	0.32
Brookfield Road	0.48
Carvin Way	0.48
Cardington Road	7.06
Caves Lane	0.40
Caxton Road	0.56
Chantry Avenue to the Briars	0.64
Chantry Road	0.32
Chester Road	0.80
Chestnut Avenue	0.32
Chiltern Avenue	0.80
Clarendon Street	0.16
College Street	0.48
Collins Road	0.64
Coventry Road	0.64
Curlew Crescent	0.64
Dawlish Drive	0.48
Dove Road	0.32
Dover Crescent	0.80
Eastcotts Road	0.48
Edison Road	0.48
Elliott Crescent	0.16
Eugster Avenue	0.64
Falcon Avenue	1.44
Fenlake Road	0.64
Ford End Road	1.28
Foster Hill Road	0.64
Fulmar Road	0.32
Gainsborough Rise	0.32
George Street	0.28
Gladstone Street	0.16
Gold Lane	0.48
Gostwick road>Berkley Road	0.32
Hammond Road	0.40
Harter Street	0.32
Hassett Street	0.16
Hawk Drive	0.32
Haylands Way	0.64
Heronscroft	0.48
High View	0.16
Highbury Grove	0.80
Hill Rise	0.56
Hillgrounds Road	2.41
Honeyhill Road	0.80
Howard Street	0.14
Hudson Road	0.56
Hurst Grove	0.80
Iddesleigh Road	0.48
Kennett Rise	0.16
Kestrel Road	0.16
Knights Avenue	0.32
Landsdowne Road	0.32
Larkway	0.48
Linden Road	0.32
Linet Way	0.32
Lovell Road	0.32
Lurke Street	0.16
Main Road	0.64
Mallard Hill	0.48
Manor Road	0.29
Manton Lane	0.48
Manton Lane	1.12
Mareth Road	0.32
Margetts Road	0.56
Mark Rutherford Road	0.16

Marlborough Road	0.32
Mendip Crescent	0.48
Merlin Gardens	0.48
Moulton Road	0.16
Mount Pleasant Road	0.48
Mowbray Road	0.48
Murdoch Road	0.32
Needwood Road	1.13
Newnham Road	0.16
Norse Road	4.02
Oak Road	0.32
Old Ford End Road	0.96
Olfield Road	0.32
Orchard Street	1.04
Overdale	0.16
Park Road North	0.32
Pearcy Road	0.32
Pembroke Street	0.16
Pennine Road	0.16
Philpotts Avenue	0.96
Pipit Rise	0.32
Postley Road	0.48
Prebend Street	0.32
Putnoe Lane	1.61
Putnoe Street	1.29
Queens Drive	2.25
Riverfield Drive	2.90
Robin Hill	0.16
Rosamond Road	0.74
Roundabout in to Kingsway	0.32
Rowallen Drive	0.32
Salisbury Street	0.16
Salt access to police HQ	0.16
Salt Fire Station Forecourt	
Selsey Way	0.16
Shaftsbury Avenue	0.24
Shuttleworth Road	0.48
Singer Way	0.35
Southfields Road	0.16
Stancliffe Road	0.32
Stanley Street	0.64
Straight over St Cuthberts	0.16
Sunbeam Road	0.16
Taxi Rank, De Parys	0.16
The Elms	0.32
The Embankment	2.90
The Links	0.64
The Spinney	0.16
Torrige Rise	0.16
Turn around Hastingsbury School	0.16
Turner Way	0.32
Tyne Crescent	1.29
Victoria Road	0.32
Waveney Avenue	0.32
Wendover Drive	0.88
Wentworth Drive	4.02
West End Lane	0.64
Westbourne Road	0.32
Williamson Road	0.32
Wilstead Road	0.97
Windrush Avenue	0.28
Winnifred Road	0.08
Wolseley Road	0.48
Wroxham Way	0.16
<b>PRESALTING NETWORK – BEDFORD / KEMPSTON / ELSTOW / CLAPHAM / BIDDENHAM</b>	<b>70.15</b>

**TOTAL ROUTE KILOMETRES OF PRESALTING NETWORK IN BEDFORDSHIRE 1042.65**

## **Appendix 5 Reciprocal Arrangements**

### **Reciprocal arrangements currently exist with the following Councils**

Northamptonshire County Council  
County Hall  
Bedford Rd  
Northampton

Cambridgeshire County Council  
West Highways Division  
Stanton House  
Stanton Way  
Huntington  
Cambridgeshire  
PE29 6XL

Hertfordshire County Council  
Highways Department  
'Goldings'  
North Street  
Hertford

Milton Keynes Council  
Environment Directorate  
PO Box 113  
Civic Offices  
1 Saxon Gate East  
Central Milton Keynes  
MK9 3HN

Buckinghamshire County Council  
Engineer's Dept.  
Park Street  
Aylesbury  
Bucks  
HP20 1DU

## Current Reciprocal Agreements

<p><b>BEDFORDSHIRE treats for NORTHAMPTONSHIRE</b></p> <p>Avenue Road Newton Bromswold from County Boundary to A6 A6 from County Boundary to Rushden Bypass C5 from County Boundary to A6 Rushden (via Avenue Road)</p> <p><b>NORTHAMPTONSHIRE treats for BEDFORDSHIRE</b></p> <p>C12 from UC13 to County Boundary B645 from UC1 to County Boundary</p>	<p>2009/10 Confirmed by David Grindley Northamptonshire County Council</p>
<p><b>BEDFORDSHIRE treats for CAMBRIDGESHIRE</b></p> <p>B660 from County Boundary to the B645</p> <p><b>CAMBRIDGESHIRE treats for BEDFORDSHIRE</b></p> <p>B645 from UC1 to County Boundary</p>	<p>2009/10 Confirmed by Richard Kingston Cambridgeshire County Council</p>
<p><b>BEDFORDSHIRE treats for HERTFORDSHIRE</b></p> <p>B655 between Barton and Pegsdon Hitchin Road, Arlesey from County bdy to jct with Arlesey New Road Arlesey New Road from junction with Stotfold Road to County Bdy</p> <p><b>HERTFORDSHIRE treats for BEDFORDSHIRE</b></p> <p>B655 from C146 Pegsdon to County Boundary Norton Road, Stotfold B4540 (Pt) from County Bdy to junction of Woodside Road, Slip End B653 from Country Bdy to East Hyde crossroads</p>	<p>2009/10 Confirmed by Derek Twigg Hertfordshire County Council</p>
<p><b>BEDFORDSHIRE treats for MILTON KEYNES COUNCIL</b></p> <p>A422 from County Boundary to C53 Astwood C26 (Bucks C.C. C10) from County Boundary to A428 Lavendon A421 from County Boundary to A5130</p> <p><b>MILTON KEYNES COUNCIL treats for BEDFORDSHIRE</b></p> <p>C28 (Bucks C.C. C14) from A428 Turvey to County Boundary C74 (Bucks C.C. C127) from UC327 (College Turn) to County Boundary]</p>	<p>2009/10 Confirmed by Ian McGregor Milton Keynes Council</p>
<p><b>BEDFORDSHIRE treats for BUCKINGHAMSHIRE</b></p> <p>B4506 from County Boundary to A4146 Dagnall cross-roads A4146 from County Boundary to B4506 Dagnall</p> <p><b>BUCKINGHAMSHIRE treats for BEDFORDSHIRE</b></p> <p>A418 from A505 Wing Road roundabout to County Boundary B489 from B4506 Plough roundabout to County Boundary</p>	<p>2009/10 Confirmed by Simon Dudley Buckinghamshire County Council Council</p>

## Appendix 6 Icelert Ice Detection System

### Icelert Ice Detection System

Amey operates the Icelert Bureau, a web-based system hosted by Findlay Irvine. The Icelert Bureau will receive and archive weather forecasts from the Met Office and enables access to nine outstations installed at the following locations and recording the data as listed below.

Locations of outstations (OSGR)	A507 Ridgmont	97800 36300
	A6 Sharnbrook	00660 60210
	A428 Biddenham	03312 50219
	B1042 Deepdale, Potton	20716 48918
	B660 Between Keysoe and Pertenhall	08212 64435
	A507 Arlesey / Stotfold Bypass	20726 35995
	A603 Moggerhanger	14264 49196
	A4012 Milton Bryan	97744 28446
	B4540 Whipsnade	50143 21802

Outstation telephone numbers	A507 Ridgmont	01525 - 288841
	B4540 Whipsnade	01582 - 873349
	A6 Sharnbrook	01234 - 782850
	A428 Biddenham	01234 - 350891
	B1042 Deepdale, Potton	07786 - 856946
	B660 Between Keysoe and Pertenhall	07786 - 856947
	A507 Arlesey / Stotfold Bypass	07786 - 856944
	A603 Moggerhanger	07786 - 856948
	A4012 Milton Bryan	07786 - 856945

Data collected at outstations	Surface condition
	Road surface temperature
	Road surface trend over last half hour
	Air temperature
	Dew point temperature
	Relative humidity
	Precipitation (Ridgmont, Whipsnade only)
	Wind speed (Ridgmont, Whipsnade only)
	Wind direction (Ridgmont, Whipsnade only)
	Time

**The Icelert Bureau will store and archive predicted and actual temperatures together with the salt status of the carriageway. This information will be kept for 21 years.**

## Appendix 7 Salt Bin Locations

Parish	Location
<b>Bedford Borough</b>	
Bolnhurst	B660 Bolnhurst
Bromham	New Road/Lime Close
Carlton	Turvey Road opp High Street junction
Carlton	School Lane (3no)
Cotton End	A600
Eastcotts	A600 Hammer Hill
Farndish	Irchester Rd
Felmersham	Marriots Close
Honeydon	Honeydon Lane
Keysoe	Keysoe Row West (Ashwood Lodge)
Keysoe	Keysoe Row West (opposite Fernlea)
Keysoe	Risley Road (o/s Brook Farm Cottage)
Knotting	Melchbourne Rd opposite Church
Knotting Green	Near Telephone Box
Oakley	Westfield Road
Odell	High Street
Odell	Horsefair Lane
Odell	The Church
Pavenham	Mill Lane
Pavenham	The Bury
Podington	Gold Street
Podington	C12 – Airfield Road junction
Ravensden	Top of Ravensden Hill
Ravensden	Bottom of Ravensden Hill
Riseley	Outside Lower School – Church Lane
Riseley	In drive to number 59
Riseley	High Street / Gold Street junction
Roxton	Park Road - near High Street junction
Sharnbrook	Colworth Road
Sharnbrook	A6 Dual Carriageway Southbound
Shelton	Shelton Road
Staploe	Dubloe Butts
Swineshead	C8/C5 junction
Thurleigh	Mill Hill (near windmill)
Thurleigh	Village Shop
Upper Dean	The Ford
Upper Dean	High Street
Wyboston	The Lane
Wymington	School Lane junction
<b>Central Bedfordshire</b>	
Ampthill	Russell Road Shops
Ampthill	Station Road junction Dunstable St
Ampthill	Station Rd/Ampthill By-Pass end
Ampthill	Glebe Road/Flitwick Road
Ampthill	Park Hill
Ampthill	Maulden Road near Ailesbury Road Roundabout
Aspley Guise	The Mount, off West Hill

Aspley Guise	San Remo, off Mount Pleasant
Aspley Guise	Mount Pleasant / Bedford Rd Jcn
Aspley Guise	Salford Road/Browns Way Jcn
Aspley Heath	Outside No.15A Church Road
Aspley Heath	Outside School at top of Church Road (nr dead end)
Barton	Manor Road junction A6
Biggleswade	Holme Crescent
Biggleswade	Mead End
Biggleswade	Northfield
Biggleswade	Rowan Crescent
Biggleswade	C B.C Office Yard
Billington	Billington Hill on either side (2)
Brogborough	Highfield Crescent
Broom	Jordans Mill
Caddington	Chaul End Lane, near Test Track
Caddington	Crosslands, off Mancroft Road
Caddington	Caddington Hill off A5
Caddington	Dunstable Rd / Holly Farm Close Jcn
Chalton	Chalton Heights (verge o/s house 66. corner o/s 60)
Clophill	Mill Lane
Cockayne Hatley	Village Road
Cranfield	C70 Marston Hill outside Lower East End Farm
Dunstable	Furzen Close
Dunstable	Kingsbury Court
Dunstable	Dunstable Road
Dunstable	Marina Dr/Harvey Road
Dunstable	Kirkstone Drive (Hilton Ave End)
Dunstable	Bowman Drive (near flatlets)
Eaton Bray	Eaton Bray Ford
Eggington	High Street/Stanbridge Road/Mill Road
Eversholt	Berry End, Eversholt/Ridgmont Road
Eversholt	Berry End junction C100
Everton	C58 - Top of Hill
Everton	C58 - Bottom of Hill
Everton	C58 - Double bend by Railway
Flitwick	Vicarage Hill/Townfield Road junction
Flitwick	Temple Way/Eagle Drive junction
Flitwick	Temple Way/Manor Road junction
Flitwick	The Avenue / Easton Rd Jcn
Gravenhurst	Clophill Road
Gravenhurst	High Street junction
Gravenhurst	Lower School
Harlington	Horse Hill near Goswell End
Harlington	Lincoln Way junction Monmouth Road
Harlington	Bunyan Walk / Foster Road
Harlington	Goswell End Rd by Harlington Upper School
Haynes	UC130/UC129 junction
Haynes	Plummers End Lane
Haynes West End	Limbersley Lane
Heath & Reach	Birds Hill / Gig Lane junction
Hockliffe	Goose Green
Houghton Regis	Bedford Rd/Roslyn Way Junction
Houghton Regis	Drury Lane
Husborne Crawley	Bedford Road near Pond
Kensworth	Lynch Hill
Kensworth	Isle of Wight Lane entrance Chalk Pit

Kensworth	Isle of Wight Lane on double bend
Kensworth	Clayhall Road nr Clayworth Cottage
Marston	Lower Shelton Road, Stratford Way
Maulden	Green End
Maulden	Silsoe Road nr Great Farm
Milton Bryan	A4012 between Battlesden Turns
Milton Bryan	Reddings Hill, Eversholt/Milton Bryan Rd
Old Warden	Junction UC157/UC158
Potton	Old Peoples Home, Royston Street
Potton	Outside Doctors Surgery
Pulloxhill	Hillfoot Hill
Ridgmont	Entrance to Beckerings Park
Salford	Opp No. 9 Brittons Lane
Shillington	The Plantation junction Upton End Rd / High Road
Slip End	New Street/Summer Street
Stanbridge	Highbanks
Stanford	UC155/Mill Lane junction
Stondon	C146/Fakeswell Lane junction
Streatley	Moleskin Hill-Sharpshoe/Streatley Rd
Streatley	Stanley Road junction Sharpshoe Road
Studham	Dunstable Road/Holywell junction
Studham	Dunstable Road, Bell Hill
Studham	Church Road/School Lane junction
Studham	Valley Road junction Common Road
Sundon	Common Lane near 'The Crown' P H
Sundon	Streatley Road near Village Hall
Sundon	Streatley Road pop 'White Hart' P H
Sundon	Harlington Hill between Harlington & Sundon (2)
Sutton	Sutton Ford
Tebworth	Lords Hill
Tebworth	Wingfield Road
Tebworth	opposite the Queens Head PH
Tilsworth	Bury Rise
Toddington	Long Lane
Totternhoe	Castlehill Road/Chapel Lane junction
Westoning	Sampshill towards Milk Tankers
Westoning	between A5120/Wood End on hill
Westoning	Greenfield Rd by Dycol's entrance
Wingfield	Hill Close
Wrestlingworth	Church Lane
Wrestlingworth	The Church

## **Appendix 8 Snow Fences**

### **Snow Fences**

There are currently no sites where snow fencing is erected.



## Appendix 9 Audit Commission Benchmarks

### Standards and Performance Monitoring: Definition and Calculation of Unit Costs

#### 1. Coverage Factor

The Priority 1 network kilometerage as a percentage of all road kilometerage:

$$\frac{\text{total kilometerage of priority 1 routes}}{\text{total kilometerage of all roads}} \times 100$$

#### 2. Coverage Factor Excluding Trunk and Principal Roads

The priority network kilometerage (less trunk and principal roads) as a percentage of all road kilometerage (less trunk and principal roads):

$$\frac{\text{kilometerage of priority 1 routes (less trunk and principal roads)}}{\text{kilometerage of all roads (less trunk and principal roads)}} \times 100$$

#### 3. Route Length (Salting)

The average number of kilometres salted per route:

$$\frac{\text{total kilometres salted}}{\text{total routes}}$$

#### 4. Route Efficiency

The kilometres salted as a percentage of the total route kilometerage:

$$\frac{\text{total kilometres salted}}{\text{total route kilometerage}} \times 100$$

#### 5. Vehicle numbers per Priority Route

The average number of vehicles per route:

$$\frac{\text{number of vehicles}}{\text{number of routes}}$$

#### 6. Vehicle capacity per 160 Kilometres Salted

The average payload of the fleet:

$$\frac{\text{total capacity of fleet}}{\text{total salted kilometres}/100}$$

**The following is a summary of the Audit Commission target figures**

Audit Commission Guidelines

Coverage Factor (%)		24-38
Ave Route Length (Miles)	30	
Ave Route Efficiency (%)	75	
Fleet Numbers	1.3	
Fleet Capacity (m3) Per 100 miles	25	

During the summer of 2004, Bedfordshire County Council had its salting routes optimised by Viasala. This has reduced the length of dead running and therefore has increased route efficiency.



### Appendix 11 Actions and Temperatures

Night of		Duty Eng	Met Office – Ridgmont Graph			Met. Office - Ridgmont Graph			Snow ?	P1 Action	Comments and/or other actions
			Forecast Min. Air	Actual Min. Air	Diff.	Forecast Min. Gnd.	Actual Min. Gnd.	Diff.	Ave.Dly. Depth ?	Yes? Time ?	
Fri	23/10/2009										
Sat	24/10/2009										
Sun	25/10/2009										
Mon	26/10/2009										
Tue	27/10/2009										
Wed	28/10/2009										
Thu	29/10/2009										
Fri	30/10/2009										
Sat	31/10/2009										
Sun	1/11/2009										
Mon	2/11/2009										
Tue	3/11/2009										
Wed	4/11/2009										
Thu	5/11/2009										
Fri	6/11/2009										
Sat	7/11/2009										
Sun	8/11/2009										
Mon	9/11/2009										
Tue	10/11/2009										
Wed	11/11/2009										
Thu	12/11/2009										
Fri	13/11/2009										
Sat	14/11/2009										
Sun	15/11/2009										
Mon	16/11/2009										
Tue	17/11/2009										
Wed	18/11/2009										
Thu	19/11/2009										
Fri	20/11/2009										
Sat	21/11/2009										











# Bedfordshire Highways Winter Maintenance Decision Details

Winter maintenance decision for (DATE)

Duty Engineer ..... Decision agreed by ..... Time .....

Met office forecast

Are any Icelert stations showing wet or ice?

Yes/ No If 'Yes' Details

Are road temperatures predicted to be around or below zero?

Yes/ No If 'Yes' Details

Is a hoar frost predicted?

Yes/ No If 'Yes' Details

Proposed Action

Is your action decision based on residual salt?

Yes/ No If 'Yes' Details

Dates, times and details of any discussions

