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Winter Maintenance Survey 2013

Briefing 13/40
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Winter Maintenance

Introduction

APSE conducted an on-line survey during summer 2013. A series of questions were asked covering a range of issues of interest to those officers and councillors responsible for winter maintenance services. 63 responses were received from local authorities throughout the UK. This report identifies the key findings of the survey.

APSE has produced a state of the market report for highways, street lighting and winter maintenance for the last 4 years and this document builds on the intelligence within those, whilst concentrating on winter maintenance operations.

Context

The recent 3 severe winters which have resulted in bad weather across the whole UK certainly prompted a significant response from local authorities, central government and suppliers. Although the basic winter maintenance responsibilities focussed on keeping traffic moving on gritted roads were largely met by local authorities, there were some significant problems along the way. There were also elements of the service which needed to be reviewed and improved. The lack of severe winter weather over the previous 10-15 years had resulted in some local authorities simply being out of practice in terms of this service and had lost experience in its delivery.

There is ample evidence that specific local authorities have invested in a number of areas in order to update their services but this is not the case in all. The Quarmby Review, alterations to guidance on spread rates and 'Ploughing on – a review of highway resilience in 2013' are examples of work done to inform and support the sector. Clearly historical levels of investment will differ between local authorities, there will be variations in seasonal weather as well as the level of in-house experience and expertise and these factors as well as others mean some local authorities have been in a position to provide a more effective winter maintenance service than some others. Naturally there has been greater scope for some local authorities to invest and improve their services than others but this research reflects that fact that the review of winter maintenance services remains a perennial exercise.

The financial constraints affecting local authorities will continue into the foreseeable future and how councils react over the next few years if the weather is not as severe as it has been recently is an interesting debate. The impacts of climate change including more snowfall and heavy rainfall mean it is vital that councils retain their capacity to deal with such incidents and the fact that emergency planning and response has a higher profile than ever means that these topics are taken seriously. More reasonable weather over the forthcoming winters may mean that resources are diverted away from winter services to other needy budgets leaving the service depleted when severe weather returns.

Results from the survey

Q1. How has the level of your salt stocks changed over the past 4 years?

This question was asked in order to highlight both the reaction of local authorities to recent severe weather and the availability of salt in the supply chain. There have been issues around supply side capacity in the marketplace for obvious reasons. Mining salt is an expensive business requiring specialised machinery and large levels of investment, it is limited to specific geographical locations and no one is really certain when, or even if, there will be a demand for the product and if it does come, the demand could vary massively. International suppliers are an option but again their supply will be affected by the weather in their own and other countries and the attractiveness of them as suppliers is impacted by the time it takes to deliver the salt by ship.

Of the 63 responses, 50 noted that they had increased their level of salt stocks over the past 4 years. Some of the local authorities hold quite small stocks so although a small increase may be significant for these organisations it has a negligible impact on the overall salt supply.

In terms of individual local authorities, responses to the level of salt they hold, 50 out of 63 or nearly 80%, said that they had increased their storage levels. A lot have made significant increases in their stocks, many more than50%, a number at 100% and one at 300%. The reasons for this include a desire to have enough salt to see them through a severe winter without the need for replenishment and to be less reliant on stock management systems offered by salt suppliers. Some are looking for more regular re-stocks throughout the season. A number have built new barns or extended existing ones with the intention of covering their entire stock. Others have stored extra stocks in new locations rather than retain higher stocks at existing sites. These increases have been made in response to guidance in the Quarmby Report, from the Welsh Government or SCOTS/SGoRR.

Of the 50 that have increased stocks, 35 have increased their stocks by more than 2,000 tonnes. Clearly the stock levels can only be increased if the supply is available and the suppliers have obviously increased capacity in order to deliver extra salt over recent years. This was a topic addressed the Quarmby Report and it appears that to date, suppliers have invested in order to secure improvements in the capacity delivered.

A further 11 councils retained the same level of salt stores over the period.

Only 2 councils had reduced their storage levels over the period. Both of these councils have made changes to depots and storage arrangements resulting in less capacity.

Q2. Have you changed the products that you stock over this time period? If so why have they changed?

With the extra snow fall and lower temperatures of the past few winters it would be expected that some local authorities would look to new products in order to maintain a good level of service and research new products. This is indeed what has been happening with 12 of the 63 local authorities, or 19%, who responded having changed the products that they stock. Some have changed the size of the salt they use whilst others have used new products in addition to salt and others have extended pre wet operations. Some have trialled new products but decided against their use subsequently whilst others have introduced them extensively on the network. Some have started to use new products exclusively on footways and town centres.

Reasons given for some of the changes include the cost of some of the products, reduced spread rates making some products uneconomic to use, the need to make savings by changing the products used and the Welsh Government matrix defining that there should be re-treatment after nine hours if sub-zero temperatures persist meaning that some products can't be used. Another has used grit to mix with salt for grit bins and footway treatment in severe conditions.

Q3. Have you changed you spread rates? If so, why?

28 of the 63 responses, or 44%, have altered their spread rates over the last 4 years. Bearing in mind updates to Chapter 13 and Appendix H of Well Maintained Highways and recommendations in the Quarmby Report, it is unsurprising that a large number of local authorities have altered spread rates. This was given as the main reason for altering the rates with other reasons being growing confidence in the products used meaning rates could be reduced and the need to conserve salt at times of heavy snow fall. One reason for not altering rates was that some older gritters do not have the capacity for precision adjustment.

Q4. Have you changed your storage arrangements? If so why?

38 local authorities, or 60% of responses, have changed their storage arrangements. These changes include building new storage barns both in existing depots and at new depots.

There have been a number of new builds reflecting the level of investment in the service with some councils building more than one. The alteration and extension of existing barns is also a change noted by a number of responses and putting roofs on salt bays is another example of investment.

Sheeting has been more widely adopted by local authorities as an alternative to barns. The sheeting maintains quality as well as reducing environmental risks. This enables more flexible coverage but one local authority raised the issue of health and safety concerns when plastic sheets were being put on and off. This concern led them to build a barn instead.

Other responses include quarries now being used for strategic stock piles, sharing of Highways Agency depots and use of the South East Wales storage facility. Some have split their stocks and store it at non-operational sites. One has 4 new stockpiles at non-operational sites and these piles are shipped to operational depots as needed or for summer restock to ensure the rotation of the stock as it may be held for 3 or 4 years before use.

Some have found further space within existing depots whilst others have purchased equipment to enable them to pile salt higher so fitting more salt into barns.

The general approach which has been adopted over the past 4 years by many local authorities is that all salt should be covered and a number of methods are being utilised to accomplish this. Some local authorities use a mixture of sheeting, existing and new barns and sharing other organisations storage facilities.

However some still leave 100% of their salt uncovered with no plans to change this arrangement.

25 local authorities have not changed their storage arrangements and these will no doubt have a range of storage options in place including leaving salt uncovered and open to the elements.

Q5. Has the length of the routes you salt changed? If so, how and why?

14 local authorities responded that they had changed their routes with all but two showing an increase. The remaining 49 have not altered the length of the routes or amount of the network they salt to any significant degree. There are of course some minor additions in the form of newly adopted roads, new developments and infrastructure, changes to bus routes and road layouts and routes near schools, social services buildings and health facilities.

A number of local authorities commented on the emphasis placed on school bus routes. One rural authority noted that their policy includes a section related to the number of passengers carried on school buses. As a result, there have been slight variations to the pre-treatment routes which were dependent on the annual review of school roles each September.

There have been changes in terms of reprioritised routes to meet revised policies with the introduction of primary and secondary routes enabling varied frequency of salting for some.

Tackling efficiency remains a major issues and route optimisation has been carried out by many local authorities to reduce or eliminate dead mileage. Others have optimised routes to bring routes close to new storage facilities to enable reloading if required during heavy spreads.

Engagement with users is noted by two local authorities one of whom has added two short streets to the network at the request of councillors as they have been identified as being problematic during winter conditions whilst another noted an additional 50kms added since 2010 as result of councillor consultation over routes and demands to increase lengths of bus routes routinely gritted.

One London borough commented that due to the extended periods of poor weather over recent years in times of severe weather minor roads are also treated.

Q6. Have you had access to extra funding over this period?

40 responses, or 63%, said that they had no access to extra funds over the 4 year period equivalent. 18 said they did have extra funding and 2 noted that they had less funding whilst 3 replied that the question was not applicable due to PFI arrangements.

A clear majority used no extra funds over this period which points to efficient services and good budget planning over a period of much higher demand for the service.

Some responses noted an increase in budgets over the period to cover the planned cost of new equipment and additional salt.

Of those that did have access to extra funds, sources include council reserves (the most common source), capital bids and extra funding available to purchase salt made available by Welsh Government. One council noted separate funding made available through the NHS to help in the prevention of slips, trips and falls.

Two local authorities noted that they have made a bid for extra funds under the Bellwin scheme and are awaiting the outcome.

A number of local authorities provided funding from council reserves to cover the extra costs of dealing with severe weather. Few however have seen increases in revenue budgets due to the unpredictability of the weather. The revenue budget setting process is clearly difficult when future demand is unknown and the use of reserves is an obvious solution. In one response, the council has recognised that weather related activities , mainly winter snow and ice but also wind damage and flooding, are unplanned reactive activities (in the broad sense). As a result, any additional expenditure over and above the allocated winter budget is covered by the council's central reserves as a corporate risk rather than a departmental cost pressure. This is an approach many take although some are not as formal in their arrangements. There is no doubt that winter maintenance is seen as an essential service and it appears councils will always provide funds to make sure that the service can be delivered effectively.

The impression from responses is that most would have any overspend due to severe weather covered by reserves or a corporate fund rather than from elsewhere in the highways budget – again a recognition of the unpredictability of the weather.

One response noted that their overspend had been funded from savings elsewhere within the council.

Some local authorities have a separation of budget responsibility with for example, the housing departments funding treatment of estate roads.

A small number of councils are looking to increase the base budget for the coming season but this is yet to be confirmed.

Q7. What other changes have you made to your service? (e.g. pavement salting, investing in new vehicles, community engagement)

Corporate issues

Winter service is more and more seen as a corporate issue alongside other emergency and high risk events such as flooding and serious traffic events. Responses noted that there is continual improvement to winter service operations across all parts of the local authority not just the highways department.

The development of local plans for snow clearing of minor roads and non-priority footways, parishes and rural areas is a more common feature. These plans involve consultation with elected members, community councils and other bodies such as sheltered housing and care homes and other local authorities and public services and business where necessary. One local authority has developed a community resilience initiative, the principles of which are communities and individuals harnessing and developing local response and expertise to help themselves during an emergency, in a way that compliments the response of the local authority and other emergency responders.

Service level agreements were introduced in one local authority in 2010 with all council services and community groups to ensure a council wide approach to winter and not just focused on roads.

Other departments are becoming more involved in winter maintenance with 2 examples being one highways department that purchased ploughs and spreaders for the fleet of tractors in the

leisure services department. They were and will be very useful in getting into side streets more quickly. In another local authority, pavement salting is carried out by the environmental services department at the request of the highways department with additional plant being allocated to them for the purpose.

Fleet

The purchase of new vehicles is a common theme amongst responses to the survey with a number replacing their entire fleet over the past 3 or 4 years and one having all of its 26 vehicles less than 1 year old. Both leasing and outright purchasing are used with some local authorities employing a mix of both. Needless to say running these vehicles is an expensive exercise and dual use vehicle are becoming a far more common occurrence.

In one local authority a new contract in 2011 included provision of vehicles for the winter service whereas they were previously owned and maintained by the authority.

Footways

There were quite a number of responses highlighting the extra work which has been undertaken on footways and pedestrian areas over the past 4 years. This has meant investment in quad bikes, MPVs such as Multihog or Kubota, towed gritters, brine tanks, snow blowers and other equipment to ensure heavily used footways are cleared. Others use mini tractors with front brushes rather than ploughs for footway and cycleway clearance and treatment which has massively reduced the labour requirement and the treatment times. A much greater emphasis on footways by one London borough is a response to an increased public expectation of what should be achieved when it snows or is icy. One council introduced the treatment of off-road cycleway routes in 2012/13. Other councils have hired additional vehicles to clear snow from car parks and hard to reach areas.

Engagement

Engagement with the community has improved over the period of the survey with responses including a number of new snow warden or ice buster schemes, both in urban and rural areas, far greater use of social media such as twitter and facebook to communicate about real time issues, road conditions and general warnings as well as information on websites such as treatment times, information around self-help and information for driver preparedness. One local authority is putting gritting vehicle tracking as a pilot on the web site.

Training has been provided to parish and town councils, partners, businesses and farmers in many councils as well as issuing self-help kits to community groups.

Salt is supplied to some parish councils for them to salt public areas within the parishes and free to neighbourhood watches for use by residents in a London borough. Another local authority advertise a few weekends when the depot is open for neighbourhood watch groups or resident associations to collect bags of salt so they can salt footways.

Rural area support is also a more significant issue than was previously the case in a number of areas.

Funding

Working with NHS funding, one local authority has been able to utilise the probation service to assist in gritting areas around supported housing.

Another response noted that town and community councils are encouraged to contribute towards the cost of new salt bins and to carry out the associated spreading of salt.

Another encourages their local parish councils to deliver self-help during extreme conditions through a locally developed emergency plan and a parish grant scheme through which funding is provided to pay for additional equipment and resources such as additional salt bins, footpath clearance equipment and the hire of equipment.

Salt bins

With regard to salt bins, a number of councils are reducing the number in their areas because they cannot guarantee that the salt is used on the highways and footway as expected and if it is, it does not last long. Alternatively others are adding extra salt bins following requests from the public. One response noted the proposed deployment of 1 tonne salt bags to augment the salt bins that are already located on-street across t during severe weather events.

One local authority will gather additional information about the usage of grit bins in future to better align needs with the locations that they currently use.

Staffing

The introduced of night shift operation in parts of the county are another initiative by one local authority. Carriageway nightshift gritting and snow clearing routes have been implemented during the main standby period by another.

Others provide winter seminars for all staff allied to regular gritter driver training.

Another has trained 3 new winter decision makers who will be used as verifiers for main duty controllers.

New technology

One contractor has carried out thermal mapping and upgraded the ice alert systems as well as using GPS tracking to defend claims about gritting not having taken place. Others have invested in additional weather stations to improve the accuracy of forecasts and so resulting in savings.

Another utilised a hire fleet of 9 cubic metre gritters rather than the historically utilised 6 cubic metres to establish whether time savings could be made by gritting for longer with larger capacity vehicles compared with previous years.

Other initiatives include use of VMS on carriageways and improved electronic record management.

Sustainability

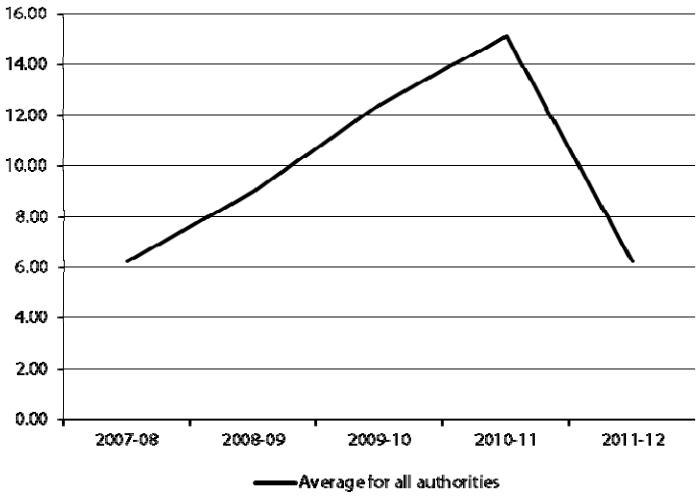
One response commented on a greater focus on sustainable service delivery which resulted in around a 30% reduction in salt utilisation.

Performance Networks

Performance Network is the largest public sector performance management and benchmarking service in Europe incorporating data from local authorities across the UK. APSE produces direction of travel reports which incorporate average data from all local authorities who submit. The following data covers winter maintenance activities.

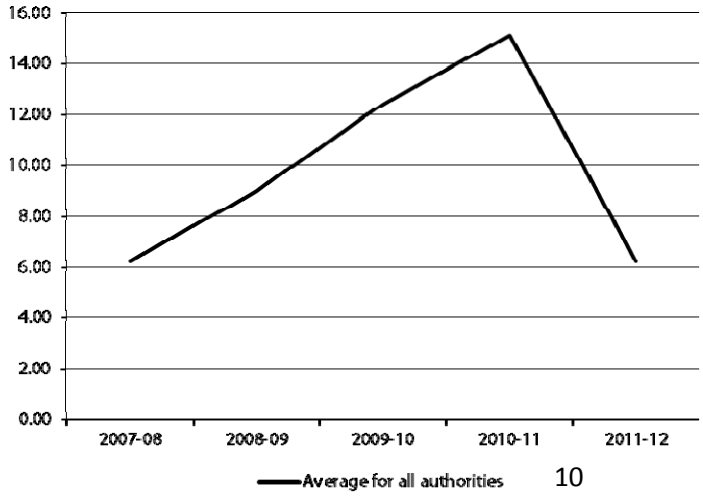
PI 111 Actual days per annum where non-planned winter maintenance was carried out. (This PI tracks the actual number of days per annum where non-planned winter maintenance was carried out. It refers to unpredictable events and includes snow and ice clearance).

The graph looks at the number of days of unplanned activity and highlights the changes in the scale of the service and the nature of the unpredictability of the weather. It clearly reflects the fact that there was less unplanned activity in 2011-12 when conditions were as bad as in previous years. This would appear to show that prediction arrangements improved over the timescale.



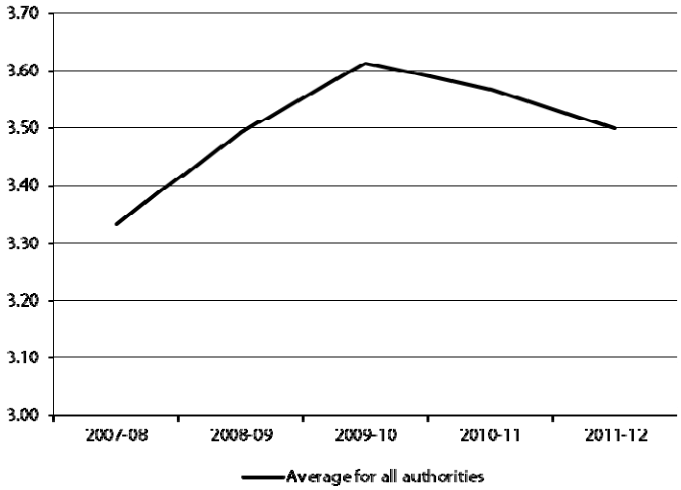
PI 117 –Actual response time for non-planned salting. It shows the average actual response time (hours) for completion of non-planned pre-salting covering the total operation up to completion of salting.

The following PI shows that response times stayed relatively stable with a range of less than 15 minutes over 5 years with an average response time of around 3.5 hours.



PI 107 – Annual cost of salting per km of network salted. This measures the annual cost and is calculated by using the total annual service provider / client cost for the winter maintenance function figure which includes profit, winter maintenance costs, overheads, charges for the vehicles and central establishment charges. This figure does not include asset rentals, debt charges and other capital charges or management and overhead costs of the service purchaser /commissioning organisation (e.g. client unit). The figure is then divided by the total km of the highway network which is covered by the salting regime.

The annual cost of salting per km increased significantly between 2007-08 and 2009-10 but subsequently dropped again. The increase coincided with a heavier demand on the service so is understandable as it included increased costs for items such as extra salt and the driver costs of extra runs. The costs then flattened out and decreased reflecting good practice in terms of efficiencies and reduced costs even though the weather was remained severe.



PI 112 Km length of footways where precautionary gritting was undertaken

A number of responses to the survey commented on the extra attention paid to salting footways and this is borne out by Performance Networks data. There was a dramatic increase in 2011-12 and no doubt this will be increased further in 2012-13. This will be as a result both of expanded routes and new equipment increasing productivity.

2008-09	**19 km**
2009-10	**15 km**
2010-11	**14 km**
2011-12	**61 km**

Conclusions

This survey covered a 4 year period and as such includes a wide range of developments within local authorities. It highlights the breadth of changes which have been made to services including significant investments, the use of new materials, engagement with the public and discussions with councillors amongst others. Of course some local authorities will have undertaken changes some years ago whilst others are just catching up.

What does emerge is a sector which perennially reviews elements of the service such as routes and salt stock levels and has enabled service improvement with a number of innovations and initiatives. Severe weather has forced the service to remain aware of developments by suppliers also and only 1 or 2 of the 63 responses provided details of no changes whatsoever to the way their services are arranged.

The development of winter plans as part of emergency planning arrangements reflect the corporate approach to the issue which includes cross departmental action, allied to work with other public sector providers and other local organisations. Winter maintenance is no longer a reactive response by the highways department to a one off snow incident.

The call for collaboration in public services is being acted upon by some of the local authorities who took part in this survey. Joint arrangements to procure salt, storage of salt stocks in other organisations depots and finance provided by other public organisations are examples.

Financial questions will continue to arise with regard to this service area. Snow and ice create problems in terms of highway and footway surfaces which lead to deterioration in the surface, cracks and potholes. Therefore it is imperative that snow, ice and water are removed from the highway as quickly as possible which reflects the importance of the service. Nonetheless all of the snow and ice which accumulates can never be removed which means the condition of the highway and footway (and drainage systems) needs to be in top condition so that water can't begin the process of deterioration. This is of course a circular argument – the roads and footways need to be well maintained to avoid the worst outcomes of snow and ice.

This is the perennial discussion highways engineers put forward at budget time highlighting the importance of asset management, planned maintenance and the economic value of the network.

As noted above, it will be interesting to see how winter maintenance budgets fare over the next few years if the weather is far less severe than over the last 4 years.

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