Association of Train Operating Companies

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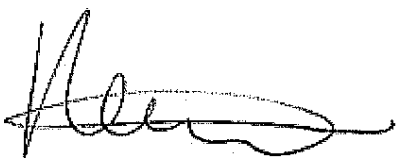
ATOC Guidance Note – Winter Arrangements for Stations

Synopsis

This Guidance Note provides advice and examples of good practice for keeping station areas free of snow and ice.

Authorised by



Chair, ATOC Safety Forum

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Part A

Issue Record

This Guidance Note will be updated when necessary by distribution of a complete replacement.

Issue	Date	Comments
One	June 2015	Original version - replaces ATOC/GPG019

Responsibilities

Copies of this Guidance Note should be distributed by ATOC members to persons responsible for ensuring compliance with the appropriate Railway Group Standards.

Explanatory note

ATOC produces ATOC Guidance Notes for the information of its members. ATOC is not a regulatory body and compliance with ATOC Guidance Notes is not mandatory.

ATOC Guidance Notes are intended to reflect good practice. ATOC members are recommended to evaluate the guidance against their own arrangements in a structured and systematic way. Some parts of the guidance may not be appropriate to their operations. It is recommended that this process of evaluation and any subsequent decision to adopt (or not to adopt) elements of the guidance should be documented.

Guidance Note status

This document is not intended to create legally binding obligations between railway undertakings and should be binding in honour only.

Supply

Copies of this Guidance Note may be obtained from the ATOC members' web site.

Part B

1. Background

In contrast to a long period during which there had been relatively little snowfall – at least over any prolonged period – the winters of 2009-10 and 2010-1 were characterised by much colder conditions. For 2009-10 the Meteorological Office commented that '*A generally mild first 10 days in December was followed by a colder period. This cold spell persisted for the first half of January, with some severe frosts. After mid-month, temperatures rose to around normal before a return to colder conditions. These persisted for most of February, with only a few brief milder interludes mostly in the west and south. Significant snowfalls occurred widely at times from mid-December until the end of February. These included falls of over 20 cm in southern England in early January and over 30 cm in central and northern Scotland in late February*'. Winter 2010-1 was described thus: '*Mean temperatures over the UK were 4.8 °C below average during December, 0.6 °C below average in January and 1.7 °C above average in February. The UK mean temperature for the winter as a whole was 2.4 °C, making it less cold than winter 2009/10 which was 1.6 °C but still the second-coldest winter since 1985/86 with* 2.3 °C*. December was exceptionally cold across the UK; the coldest in over 100 years, with the highest number of air frosts in at least the last 50 years. Chilly conditions persisted in early January, before a milder spell around mid-month then a return to colder weather.*' While there were widespread snowfalls in the first week of December and from mid-month until Christmas, amounts were significantly less than 2009-10.

While the pattern in subsequent years has been generally less severe[1], the period from 2009-11 was marked by two exceptionally severe winters occurring consecutively, and provides a reminder of the need to be fully prepared for such eventualities.

In common with many other sectors, the UK rail industry faced significant difficulties in maintaining normal operations during this period. The unusual circumstances presented many challenges – some of them unprecedented in a generation – and prompted a number of innovative responses.

Towards the end of January 2010, the National Task Force (NTF) ordered that a comprehensive and immediate review be undertaken of the impact of the severe weather on the ability of the railway to provide train services and accurate timely information to passengers. The review was to include Priority 1, 2 and 3 activities intended respectively to identify immediate, within a year and longer term amelioration actions. A number of separate workstreams were established, one such focused on the de-icing of stations and other public areas. The original Good Practice Guide ATOC/GPG019, which this Guidance Note updates and replaces, was intended to capture and promote the findings and recommendations from this.

[1] Winter 2011-12 saw a return to much milder conditions; 2012-3 was mixed but with a period of widespread snowfall across much of the country from mid to late January as frontal systems hit colder air, causing considerable disruption; 2013-4 saw the stormiest period of weather for at least 20 years (though very mild conditions meant that snow and ice were not an issue); and 2014-5 was for the most part fairly benign.

2. Purpose

This document is intended to provide guidance and advice on measures which may be taken to reduce or mitigate the hazards resulting from snow and ice build-up on and around stations - essentially the increased risk of slips, trips and falls to passengers and staff. These measures can be broadly categorised as:

- equipment/material related;
- process related; and
- manpower related

and can be focused on:

- avoiding the risk, i.e. by preventing or reducing the initial accumulation of snow and ice;
- removing the risk, i.e. removing snow and ice either by physical means (clearance) or chemically induced melting; or
- reducing the risk, i.e. either reducing the hazardous nature of snow and ice by rendering it less slippery, or providing additional forms of assistance to prevent slips, trips and falls.

In practice, the suitability of these various approaches will vary considerably according to individual circumstances and an effective overall response is likely to include a combination of elements from each.

The majority of this Guidance Note focuses on what can be achieved either with immediate effect or at least in the short term. However, Section 13 lists further initiatives and measures that might be considered in the longer term.

Overall, the aim of this document is to allow Infrastructure Managers responsible for stations (i.e. essentially TOCs and Network Rail) to be better prepared to respond to future severe winter weather conditions which affect their operation.

3. Scope

This Guidance Note applies to those responsible for the management, operation and safety of above ground railway stations on the UK's Network Rail managed infrastructure, henceforth in this document referred to as the SFO (Station Facility Owner).

It addresses the risks to these functions and activities posed by snow and ice and how these can most effectively be overcome or mitigated in areas generally intended for public use in and around stations, i.e. platforms, paths, walkways, footbridges and concourses, also forecourts and station car parks to the extent that these are the responsibility of rail industry Duty Holders. Though this document does not specifically address staff walking routes, much of its content will be equally valid (it should, however, be noted that the responsibility to keep these clear and safe for use will vary).

4. Winter weather plans

4.1 Company plans

SFOs should have in place winter weather plans which document the arrangements to be applied in the event of severe winter weather affecting stations. Such plans should include a basic assessment for every station covering:

1. Whether or not the station is staffed (additional considerations for unstaffed stations are provided in Section 11 below).
2. Average passenger numbers.
3. Exposed stairways/ramps, taking into account the number of stairs and inclination/length of slope.
4. Exposed platform surfaces in relation to passenger footfall.
5. Exposed station entrance/forecourt.
6. The presence and size of any car park.
7. Road access, i.e. arrangements for keeping approach roads open (in liaison with the local authority) and implications if these fail.

This approach should be used to identify those stations where the platform/train interface is most at risk from the effects of winter weather. It should be recognised that it is not necessarily the busiest stations that present the biggest risk as often these will have mitigating measures such as extensive platform canopies.

4.2 Station plans

Individual station plans should also be prepared and should include the following:

1. The various areas to be treated.
2. The length of platform to be treated (including the arrangements for trains of a length that exceed this – for example instructing train crew to make special announcements for those alighting and/or use selective door operation).
3. The products to be used.
4. When, how and by whom the products are to be applied.
5. How and where products are to be stored.
6. A site drainage plan.
7. A simple assessment of potential impacts on the water environment.
8. Specific arrangements for management of car parks should be explicitly addressed.
9. Risks associated with all the above and how these are to managed

Station staff should be involved in the development of plans to ensure that they are comprehensive and correct and to secure ‘buy in’.

4.3 Engagement with local authorities

Local authorities are generally responsible for roads and pavements (the exceptions being the motorway and trunk road networks for which the Highways Agency is responsible) and this includes snow and ice arrangements.

Maintaining safe road access to stations is key not just to customers but also to staff. In many cases, particularly on secondary and branch lines, road may provide the only access for those deployed to undertake snow and ice clearance, either because train services have themselves been suspended or because services are not scheduled to run at the times when treatment is most required (e.g. overnight or prior to the commencement of services).

Local authorities will have their own plans for prioritising the treatment of the roads for which they are responsible. As many stations are not served directly by main routes it follows that station approaches will not automatically be recognised by local authorities as being of high priority (the same issue applies to approach roads to maintenance depots where loss of road access may adversely affect delivery of essential engineering supplies and fuel). SFOs should accordingly seek to engage with local authorities during the development of the latter's winter weather response plans with a view to getting local authority agreement that station approaches should, where appropriate, be included among the roads identified as being a high priority for treatment.

4.4 Communication of plans

Plans should be made available to and must be understandable by all relevant staff.

5. Risks posed by snow and ice

The primary risk posed by snow and ice accumulations is the simple one of walking surfaces being rendered slippery. A secondary risk is that a covering of snow may disguise existing slip and trip hazards such as steps and uneven surfaces. In both cases the immediate consequence is an increased likelihood of slip, trip and fall type accidents, for both the public and staff. While the majority of these are likely to be of a minor nature, there is also a propensity for more serious injuries, such as broken limbs, with the additional risk that a fall close to a platform edge could result in the victim falling onto the track with potentially fatal consequences.

From a financial perspective, an SFO may therefore find itself facing an increased number of claims for compensation, the likelihood of success of which will be dependent on the SFO's ability to demonstrate that it has taken all reasonable steps to manage the risks, given the circumstances. Injuries to staff may also result in claims being made but will have a more immediate impact in terms of lost days. Finally, the ORR has indicated that it may direct an SFO to close a station completely if it deems it to pose an unacceptable risk to the public due to the presence of snow and/or ice.

6. Prevention of snow and ice

The optimum solution is to prevent the build-up/formation of snow and ice in the first place. Though in the short term there are likely to be few, if any, practical steps to achieve this beyond application of de-icing agents as a preventative measure (see Section 8 below), Section 13 suggests some longer term options which may be worth consideration.

7. Physical clearance of snow and ice

Physical removal of ice and snow, i.e. by manual/mechanical means, should always be considered as an effective and relatively simple response. Depending on the availability of manpower resources it can also be achieved at no or minimum cost as no specialist skills or equipment are needed. In considering the desirability/practicality of physical removal the following should be taken into account:

7.1 Equipment

For general considerations concerning supply and management of equipment please see Section 14.

In addition, the following apply specifically with regard to physical clearance of snow and ice:

- Simple shovels will generally be suitable for use on stations, particularly on platform edges.
- Robust, metal shovels should be used – experience with use of cheaper/plastic shovels has shown these to rapidly disintegrate if used on compacted snow and ice.
- For larger areas, shovels will be less effective and for car parks in particular specialist equipment of the sort used by local authorities for general road clearance is more appropriate. Where procurement of such equipment cannot be justified, options for hiring it in should be considered (taking into account the need for staff to be competent in its use).
- With the quality and amount of snow clearing equipment having been much improved in recent years there is a big difference in the type of equipment required based on the surface and how compacted the snow is as well as the physical amount of it.

7.2 Manpower

Subject to Sections 7.3 and 15 below on safe methods of working, and assuming only shovels or similar are being used, then no specific skill or specialist training is required. The non-specialist nature of the activity means it is possible to draft in additional manpower to assist from a wide variety of different sources. Examples, many of which have already been successfully deployed by railway undertakings, include:

- *From elsewhere within the railway undertaking*
    - booking office staff[2];
    - cleaning staff;
    - Revenue Protection Inspectors (RPIs);
    - train crew;
    - management staff;
    - HQ staff; and
    - Customer Action Teams (CATs).

[2] N.B. if it decided to suspend booking office duties in favour of snow and ice clearance, traincrew should be informed accordingly and instructed to sell a full range of tickets

- *From elsewhere within the rail industry*

    - Staff from other railway undertakings unable to reach their normal place of work and hence 'reporting for duty' at their local station (or elsewhere)
    - Permanent way gangs (found to be especially beneficial as they tend to have both the equipment and physical stamina to be particularly effective)
    - HQ staff

- *From outside the rail industry*

    - Contractor staff
    - Local authority staff
    - Volunteers from the local community (including 'station friends')
    - Remand prisoners
    - Probation service
    - Farmers

Visible progress of snow/ice clearance acts as an incentive and has been seen to increase productivity. As such larger teams are likely to be disproportionately more effective than smaller teams and a minimum team size of four is therefore recommended.

7.3 Safe method of working

For general considerations concerning identification of a safe method of working please see Section 15 below.

As noted above, snow and ice clearance using only manual tools is a relatively risk free activity and hence there should be no need for additional specific requirements in this respect. The most obvious areas of concern will be when clearing platform edges and other areas where train movements may pose a risk and there is hence a need to properly brief and manage/supervise individuals undertaking unfamiliar (manual) tasks.

7.4 Disposal of snow and ice

Consideration should be given to the disposal of snow and ice that is physically removed, taking into account the following:

- In many cases it will be sufficient to pile snow alongside the area being cleared, though care should be taken that any temporary thawing of such piles does not result in run off onto cleared areas that subsequently refreezes.
- Limited clearance may mean that such nearby piling of snow and ice may not be possible – this is most obviously the case for platform edges (where the area further back from the edge also needs to be kept reasonably clear to provide a safe zone in which passengers can stand well clear of non-stopping trains).
- Network Rail has reached an agreement with (at least) one SFO that snow may be disposed of onto the track, subject to the following:

    - only snow cleared from the immediate platform edge, i.e. in the area between the yellow line and the platform edge, may be so disposed of;

- snow must not be disposed of onto the third rail; and
- a safe method of working must be adopted, including specific requirements in respect of being able to sight oncoming trains.

7.5 Checking for residue

When ice and particularly snow has been cleared, a follow up check should be made to ensure that no thin coating of what may be almost invisible ice remains, not least as this may be more slippery and hence present a greater hazard than the material removed.

8. Use of chemical agents to clear snow and ice

8.1 Comparison with physical clearance

Use of de-icing agents in connection with snow and ice offers a number of advantages over simple physical clearance:

- It can be used as a preventative measure, i.e. to inhibit the initial formation of ice and build-up of snow.
- Effects are longer lasting than is the case for physical removal (which offers no mitigation to subsequent snow/ice beyond serving to reduce total accumulations).
- It is generally less labour intensive to apply than physical removal of snow.

Conversely, and depending on the product used:

- There may be a significant cost.
- There may be a requirement to comply with specific storage arrangements.
- There may be a requirement for specific Personal Protective Equipment (PPE).
- To be most effective, products need to be applied in accordance with manufacturer's instructions, hence staff need to be trained in and familiar with their use.
- Unlike physical removal of snow, the effectiveness of the product is not immediately and visually apparent, leading to a temptation to over-apply.

8.2 Types of chemical agent

Historically extensive and effective use has been made of rock salt (sodium chloride) to combat snow and ice both within the rail industry and more widely. However, the corrosive properties of rock salt, affecting both concrete and iron based metals (though much less copper), have long been recognised. These are a particular concern with regard to signalling systems, including track circuits. For this reason Network Rail has been keen to dissuade SFOs from using rock salt, particularly on station platforms, though with no Railway Group Standard in this area, it is not in a position to formally prohibit such use.

In recent years a variety of other products have appeared in the market, all generally seeking to deliver an equivalent (or greater) effectiveness to that of rock salt in inhibiting ice formation and melting existing snow and ice but without comparable undesirable side effects.

On behalf of ATOC, RSSB commissioned research in 2005 (T532 - Evaluation of Frost, Ice and Snow Precautions at Stations) to identify what products were available, their characteristics and their appropriateness and cost effectiveness for use in a railway environment (including environmental impact). Full details of the research and its conclusions are contained in ATOC Good Practice Guide TOSG/GPG014 – De-Icing Agents for On Station Use.

While the results of the research included clear recommendations for the type of product to be used in each of the three different station related environments, i.e. platforms, station areas other than platforms and car parks, the following should be borne in mind:

- The original research drew extensively on existing literature, manufacturer specifications and feedback from railway undertakings and others.
- It did not, however, involve controlled trials of any of the products in real station environments and conditions - it was intended that such trials would be included in further research but the need for this was largely overtaken by the experiences of SFOs during the 2009-10 and 2010-11 periods of severe weather.
- Notwithstanding the recommendations from the original research, a significant number of SFOs continued to make extensive or exclusive use of rock salt for all types of station environment as it was a) known to be considerably cheaper than proprietary alternatives and b) perceived to be more effective. Experiences during the severe winters of 2009-10 and 2010-11 served to confirm this – see below.

8.3 Effectiveness of different chemical agents – practical experience

The nature, longevity and wide geographical spread of the severe weather during winter 2009-10 in particular, provided a unique collective opportunity to compare the overall effectiveness of a considerable range of different products in use across the country.

Feedback from SFOs from this was both consistent and robust:

- A general consensus that rock salt is effective.
- A general consensus that non-sodium chloride based products were insufficiently effective.
- A mixed view concerning the effectiveness of sodium-chloride based products beyond rock salt itself.

8.4 Use of rock salt

As noted in sections 8.2 and 8.3 above, rock salt is cheap, easy to apply and effective as a de-icing agent but does have undesirable corrosive properties. In 2012 a further RSSB research project (T981 - Use of rock salt for de-icing of platforms and station surfaces) sought to investigate the appropriateness of using salt as a de-icer within the station environment by considering the whole life cost of salt use compared to non- or less corrosive de-icers.

In the event, Network Rail was unable to supply data on the long term effects of rock salt on its assets and hence it was not been possible for the research to prove conclusively that rock salt should not be used or that other products are practical and cost-effective alternatives.

However, the research did show that there are certain types of station environments which are far more susceptible than others to the adverse effects of using rock salt and a risk assessment framework was provided as a means of identifying such locations. SFOs are recommended to use this framework when considering the new, or continued, use of rock salt and should work with Network Rail to arrive at the optimal solution for all concerned, noting that the safety of passengers (and staff) must always remain the primary objective.

One option, adopted by at least one railway undertaking, is to put in place a process whereby on call managers can authorise use of salt if conditions become so bad that nothing else proves effective.

8.5 Supplies and suppliers

8.5.1 Supply and demand

Chemical agents – and rock salt in particular – are used widely by local authorities and other transport operators/modes in connection with snow and ice clearance and experience has shown that in the event of prolonged and widespread severe weather demand is liable to outstrip supply at a national level.

8.5.2 Salt Cell

In January 2010 the Government set up a so-called Salt Cell. Convened by the Department for Transport and including representation from the Cabinet Office, the Local Government Association, the Highways Agency and the devolved administrations in Scotland and Wales, its purpose was to assess which areas of the country needed salt the most, make recommendations to suppliers accordingly on how to prioritise their deliveries and generally facilitate mutual aid agreements. In practice, it was apparent that initially no consideration whatsoever was given to rail industry needs, priority being given exclusively to roads. This had the effect that a number of SFOs found that their suppliers were no longer able to honour what had been regarded as 'guaranteed supplies', having been obliged by the Salt Cell to redirect them elsewhere.

Though high level representation by ATOC to the DfT had some effect in getting rail industry requirements at least acknowledged within the Salt Cell, all indications are that road transport will continue to be seen as a higher priority should a national (or regional) Salt Cell again be set up in response to severe winter weather.

8.5.3 Other supply problems

In addition to the problems presented by the general shortage of supplies and activities of the Government Salt Cell as referred to above, the following difficulties in obtaining supplies have also been reported:

- Contractors were unable to deliver because of being snowed in themselves, or because road access to delivery points was blocked.
- Broken promises on the part of contractors.
- Failure of contractors to manage/supervise their own staff (where snow/ice clearance is contracted out).

8.5.4 Resilience of supplies

To reduce the likelihood and/or impact of the above, the following should be considered:

- Not relying on a single supplier - having contracts in place with different suppliers, particularly if in different geographical areas, provides flexibility in sourcing supplies.
- Making efforts to build positive relationships with suppliers.
- Setting up regional stockpiles so as to provide a degree of resilience in the event that supplies from contracted suppliers are interrupted or delayed.
- Putting in place an early warning mechanism to highlight any potential future supply problems in order that measures to preserve existing supplies can be taken at the earliest opportunity – see Section 8.9 below.

8.6 Equipment and storage

For general considerations concerning supply and management of equipment please see Section 14 below.

In addition, the following apply specifically with regard to chemical agents:

- Chemical agents may be delivered in either solid or liquid form.
- Storage of chemical agents should be as per any instructions provided by the manufacturer/supplier.
- Application of chemical agents should be as per any instructions provided by the manufacturer/supplier, including use of any specified spreading/spraying equipment.
- Protective clothing may be required – again manufacturer/supplier instructions should be followed.

8.7 Manpower and competence

8.7.1 Resources

As application of chemical agents is generally less labour intensive than physical clearance of snow and ice, manpower requirements will be proportionately lower. However the ability to call on additional staff will still be helpful in that it can allow more rapid treatment, more frequent treatment or provide cover in the event that rostered staff are unable to reach their normal place of work. The content of Section 7.2 above therefore remains relevant to use of chemical agents.

8.7.2 Training and competence

In all cases where chemical agents (including rock salt) are being used, a minimum of training of those involved is needed in order that the product is applied as efficiently and effectively as possible. Clearly application of too little of the product or insufficiently frequent application will reduce effectiveness, conversely over liberal/frequent use will be wasteful. The natural inclination to expect an immediate visible effect may well serve to encourage over-application.

In addition, specific competence may be required in any or all of the handling, preparation and application of the product, including in the use of any associated equipment. Prior to the onset of winter, the following tasks should therefore be undertaken:

- Existing competence requirements should be reviewed to ensure that they remain appropriate. This should take into account:
    - for existing products: any changes in manufacturer/supplier instructions and recommendations; any changes in equipment to be used; any changes with regard to where the product is to be used; and
    - for new products: requirements in respect of storage, handling and application
- Checks should be made to ensure that staff whose normal duties include snow clearance have (or retain) the necessary competence, with training provided as necessary

Additional staff (or other individuals) drafted in at short notice to assist with snow and ice clearance must similarly be competent. Whether or not it is practical for this competence to be gained will be dependent on circumstances (e.g. how much training is required, whether an appropriate person is available to provide it, the existing knowledge/experience of the individual, etc.).

8.8 Safe method of working

For general considerations concerning identification of a safe method of working please see Section 15 below.

8.9 Prioritisation and preservation of supplies

Ensuring that chemical agents are used efficiently so as to minimise wastage/cost represents good general business practice. However, in the event that the supply chain is compromised for whatever reason, preservation of remaining stocks to the greatest extent possible becomes a priority from a safety perspective.

Contingency plans with identified options for reducing usage should therefore be prepared in advance along with triggers for implementation of such plans. The following are all examples of measures taken by SFOs to reduce consumption rates:

- Restricting treatment to those stations where there is the greatest risk/benefit (see Section 4.1 above)
- Restricting treatment to those areas of an individual station where there is the greatest risk/benefit. In decreasing importance, priorities are likely to be
    - the platform/train interface, i.e. for 1m - 1.5m from the platform edge;
    - access routes;
    - other operational areas;
    - steps, footbridges and ramps;
    - station entrances and forecourts; and

- car parks (though depending on local circumstances there may be a need to assign these a higher priority).

- Limiting treatment to a certain portion of the platform only (e.g. up to the 4 car stopping mark rather than the 8 car), with on train staff asked to make announcements to the that passengers should alight from a certain part of the train only and station announcements encouraging passengers to wait within and join the train from cleared (or canopied) portions of platforms and then walk through inside the train to find seats.
- Limiting treatment to certain platforms only at multi-platform stations. This may require agreement with Network Rail for line diversions to concentrate stopping services on a particular platform or platforms.
- Cutting and maintaining paths as an alternative to treating larger areas.
- Ceasing to treat (and physically closing off) duplicate walking routes and entrances, e.g. a footbridge when a subway is also available.
- Undertaking dynamic risk assessments to determine which areas to treat and when through the use of local staff and/or managers to monitor the situation locally, including local weather conditions and air and ground temperatures.
- Station managers reporting in daily with details of areas treated and untreated, usage rates and supplies on hand when temperatures reach 3^{o} C or lower.
- Using CCTV to remotely monitor local conditions.
- Using on call managers to call in contractors when temperatures drop below a pre-set trigger.
- Using enhanced weather forecasting services, particularly to predict local conditions.
- Sending daily weather forecasts to all stations responsible for their own de-icing.
- Mixing chemical agents with other, more readily available substances such as sand or grit to reduce the amount of agent needed per treatment.
- Using physical clearance to supplement or replace use of chemical agents.

9. Reducing slipperiness of surfaces

Where it is not possible to remove or treat snow and ice it may be possible to apply one or more of the following measures to improve the skid resistance of surfaces and hence lower the risks of slips and falls:

- Applying sand. That routinely used in locomotive/traction unit sanding equipment has been found to be effective.
- How slippery ice and particularly snow are is dependent on the surface on which they form/fall. Therefore providing temporary surfaces (such as mats, strips of AstroTurf or equivalent, etc.) may be beneficial.

10. Other mitigation measures

Even with the most efficient arrangements in place to clear snow and ice, it is inevitable that extreme winter weather conditions - most obviously falling snow - are likely to increase the risk of slips, trips and falls. It is therefore appropriate to put in place mitigation measures additional and complementary to those targeted on clearance. These basically take two forms, those intended to warn and thus encourage greater vigilance among passengers and those comprising additional physical aids.

Warning and informing measures include:

- Providing posters on stations and in car parks warning of the need to take extra care given the conditions.
- Giving similar warnings by means of Public Address announcements on trains and at stations.
- Using on train and on station Customer Information screens and systems for the same purpose.

Physical aids include:

- Provision of additional staff at stations to assist those who are particularly vulnerable (e.g. persons with reduced mobility, blind/partially sighted persons, those with heavy luggage, those with young children, etc.) and also to respond promptly to anyone who does suffer a fall.
- Providing additional temporary handrails and/or grab poles.
- Providing additional lighting.
- Signposting cleared walking routes.
- Physically closing off untreated routes and areas.

11. Unstaffed stations

Unstaffed stations present additional challenges as far as snow and ice are concerned, most obviously in that there are no staff on site to assess local conditions or give assistance to passengers to prevent or respond to slips and falls. Measures which have proved effective in clearing snow and ice from such locations include:

- Deploying railway undertaking staff from Facilities departments in the form of Mobile Maintenance Teams travelling by road.
- Establishing a mobile gritting team assisted by managers and deployed by road.
- Station servicing teams travelling by road.
- Having contracts in place with two local suppliers to provide additional cover in severe conditions.
- Using contractors to apply treatment in the early hours with snow clearance undertaken subsequently by Station Cleaning Teams and RPIs travelling by rail.
- Station adopters used to assist with snow clearance in severe conditions as well as volunteers.
- Using a mix of staff from the nearest staffed station, staff from relevant 'hub' station, mobile Estates managed team and management volunteers under 'adopt a station' scheme.

It should be noted that many of the above rely on road transport to reach stations and an additional problem here is that unmanned stations are often in remote locations where approach roads are unlikely to be among those prioritised for treatment by local authorities. As such, access may be difficult or impossible, both for customers and for those (whether staff or contractors) endeavouring to undertake snow clearance.

Passengers should be made aware of stations at which snow and ice clearance is or is likely to be problematic by means of posters (both at the stations concerned and others on the same line or route) and/or on station and on train public address announcements and asked to take particular care.

12. Review

Both company level and individual station winter weather plans should be reviewed following any instances of severe winter weather to confirm that they are fit for purpose. Such reviews should explicitly consider processes, materials, equipment and staffing/resourcing issues and should involve local staff. Plans should be updated to reflect any lessons learned with consideration also given to whether local lessons learned have application beyond the location concerned.

13. Longer term options

The following have been identified as measures which might be implemented in the longer term to provide an enhanced response to severe winter weather, particularly with regard to preventing accumulations. As far as is known, no detailed assessment of their practicality or cost effectiveness has yet been undertaken.

- Provision/extension of canopies.
- Provision of temporary or pull out canopies (of the type used by some shops).
- Provision of heated platform surfaces – wiring could be incorporated as part of the design of coping stones or areas adjacent to them, especially for new build or refurbishment.
- Use of surfaces naturally resistant/retardant to the build-up of snow and ice.
- Use of surface coatings and/or colouring that may inhibit the build-up of snow and ice.
- Use of softer surfaces such as AstroTurf or similar on paths from e.g. car parks. Such surfaces – which can be distinctively coloured to support differentiation of routeing – also much reduce the chance of injury in the event that a person does slip/fall.
- Provision of air blowers to prevent frost formation and disperse accumulations. Would probably need to be at air temperature (blowing warm air might melt snow only for the resulting water to then refreeze as solid ice).

14. Equipment – general considerations

14.1 Pre-planning

It is recommended that the following be done:

- Prior to the onset of winter, an assessment of equipment requirements should be made (or a previous assessment reviewed), i.e. what and how much is needed and where. This should also include stocks of associated consumable items (including PPE and warm weather clothing).
- Checks should then be made to ensure that these requirements are being met, with damaged or broken equipment repaired or replaced.

14.2 After the event

It is recommended that the following be done:

- All equipment used should be inspected, with any that is damaged or worn out either repaired or replaced.
- All equipment should be cleaned, oiled, and given maintenance as appropriate prior to being put into storage for future use.
- An inventory of all equipment should be undertaken.
- Feedback from staff on the availability and effectiveness of equipment should be sought and adjustments to future requirements (amount and type of equipment) made accordingly.
- Equipment should then be stored for future use, ideally in a dry, secure environment so as to minimise rusting, general deterioration, etc.

15. Safe methods of working – general considerations

Arrangements for clearance of snow, ice, etc. from stations should be subject to risk assessment and safe methods of working (which may be generic or station-specific) identified and documented for these activities. Ideally these methods should be produced as localised plans incorporated within the station's contingency plans. Where they are generic, particular attention should be drawn to the need to consider local risk factors.

Risk assessments and safe methods of work should consider, as a minimum:

- Appropriate briefing of all those engaged in snow and ice clearance, including on all identified risks and how they should be avoided or mitigated, prior to commencing work.
- Use of staff, contractors and/or volunteers referenced in Section 7.2 who may be unfamiliar with the location and/or normally employed on other duties.
- The method of moving snow, the tools/equipment to be used and the extent to which this will bring staff into proximity to the platform edge.
- Physical capability of individuals to undertake the work
- Manual handling risks associated with the clearance of significant amounts of snow.
- Competence to use any mechanised equipment, including training where appropriate.
- Underfoot conditions.
- Requirements for provision of clothing, footwear and PPE, both for protection against the prevailing weather conditions and in line with the manufacturer's instructions if chemical products are being used.
- Provision of adequate breaks and welfare facilities, taking into account additional stresses from working in extreme cold conditions.
- Whether Network Rail permits snow to be cleared onto the track.
- Potential presence of conductor rail or overhead line equipment and risks of any inadvertent contact with this equipment.
- The potential risks of being struck by a train. Factors influencing the chance of being hit by trains, include:

- the frequency, speed and direction of train services;
- the likelihood of non-stopping trains passing through the platform (including as a result of service disruptions);
- the presence of bi-directional working;
- the proximity to junctions and the routeing of trains;
- the visibility of approaching trains, taking into account whether this might be affected by sharp platform curvature, bridges/tunnels, the presence of other trains, weather conditions, darkness or the wearing of bulky clothing;
- the audibility of approaching trains and the ability to hear warnings (e.g. impact of headwear, station announcements);
- the frequency of looking up for approaching trains; and
- how visible workers are to drivers of trains – those engaged in platform snow and ice clearance should wear high visibility clothing.

- The need at high risk locations for special arrangements such as the provision of an additional person to warn of the approach of trains or the closure of the adjacent line.

In general, snow clearance from platforms is not considered to be engineering or technical activity and hence can be carried out closer than 1.25m from the platform edge without being “on or near the line” (Rule Book G1 Section 6 refers). However the system of work should specifically take into account any risks for train movements and seek to reduce them so far as is reasonably practicable.