

13. Managing the Impact of Fleet Incidents



Some incidents can cause major disruption to the network .The impact may be lessened by following some simple guidelines that innovative TOCs have developed, and by planning for such occurrences.

13 Managing the Impact of Fleet Incidents on the Railway

13.1 Introduction

The purpose of this section is to give guidance on how fleet incidents can be better managed. It has been developed jointly by fleet and operations through a series of workshops and meetings to document how a joint approach to fleet incident management can reduce incident times and improve performance.

It should be noted that the best practice featured in this section is irrelevant to control type and is designed to be compatible with all TOCs following the “Plan, Do, Review” process.

13.2 Definitions

Primary delay: A Primary delay results from an incident that directly delays the train concerned, irrespective of whether it is to schedule (schedule includes booked platform or line) at the time the incident occurred, i.e. the delay is not the result of another delay to the same or another train.

Secondary delay: Secondary or Reactionary delay results from an incident that indirectly delays the train concerned, i.e. the delay is the result of a prior delay to the same or another train.

13.3 Plan

Good practice in planning for the management of technical incidents is having competent, well-trained individuals who can come together as an incident team supported by the elements of good practice described below.

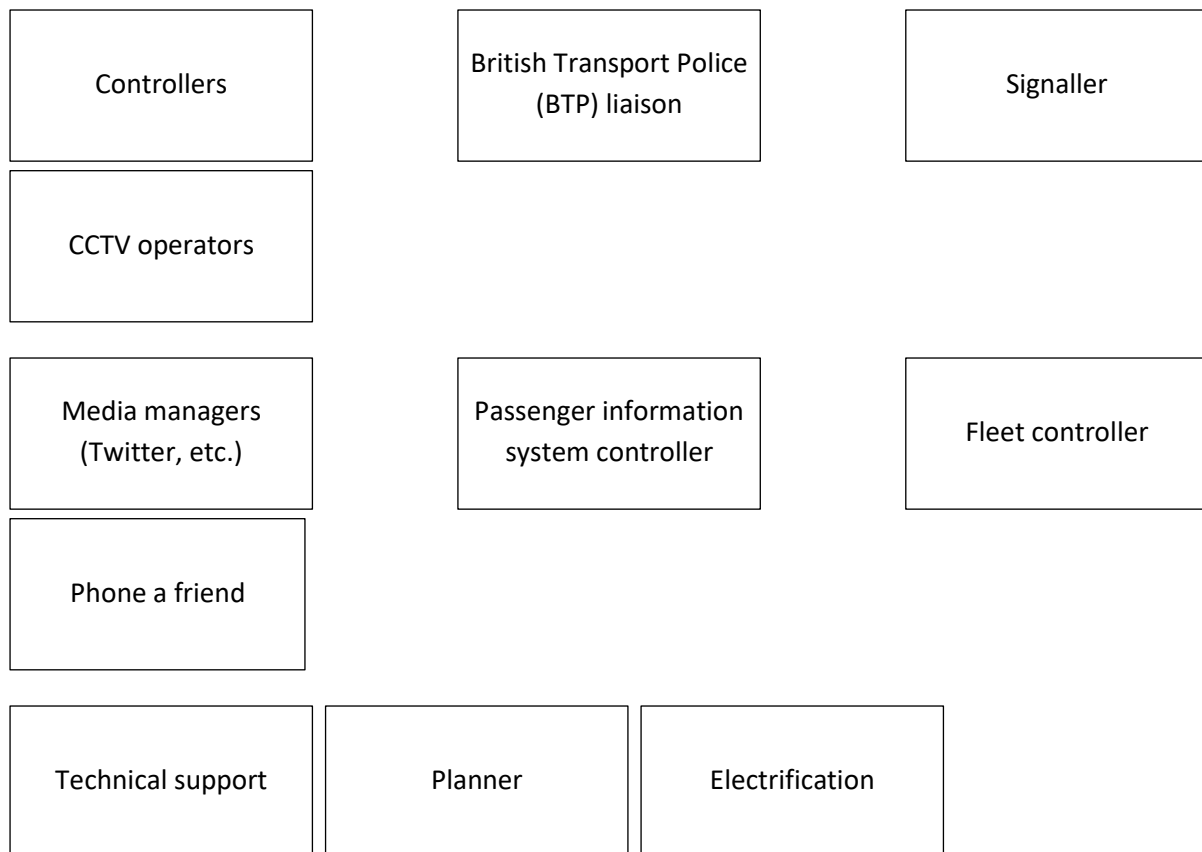
13.3.1 Roles and responsibilities

It is important that all staff are clear on their position in the incident management team, what their and others' roles and responsibilities are. They should be fully trained and assessed regularly. It may be helpful to produce a [RACI](#) for the incident management team so members know who is Responsible, Accountable, Consulted and Informed for each task.

Incident management can be an intimidating environment for the driver and is a reactionary situation. Some drivers will be unfamiliar with certain incidents which can lead to panic and in turn an extended overall incident time. It is critical to have good plans in place which are regularly practiced and point the driver or controller in the right direction.

Example: A number of train operators employ a 'phone a friend' policy, where the driver is expected to contact control for technical support within a few minutes. It is important that these friends have up-to-date knowledge of the traction and recent incident alerts. For the friend to be as approachable and helpful as possible, Southern have recruited the expertise of a call centre trainer to develop clear protocol for dialogue between the driver and the technical expert 'friend'.

Potential roles within the team are shown below:

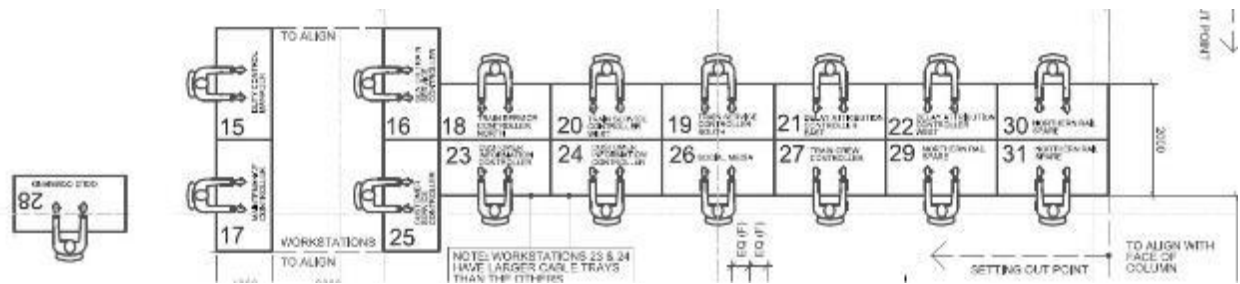


Example: LNW Route has found it beneficial to liaise closely with BTP and a 'police on bikes' initiative has been implemented. In areas with high incidences of fatalities, this close liaison limits the delay by having BTP on site sooner and a BTP officer familiar with railway operation reducing the chance of the location becoming a crime scene with increased line closure time. Forward facing CCTV (FFCCTV) has helped significantly in this respect and has also made a significant contribution to identifying the root cause of OHLE failures.

Example: Southern, Virgin Trains East Coast (VTEC) and Northern have noted benefits from having a Network Rail presence within control. Southern have taken an integrated approach with NR staff sitting with TOC staff. VTEC and Northern are co-located with NR, sitting separately but in the same room.

It is important when designing roles and responsibilities that staff are protected from distractions in order to perform their specific role in an incident without disruption. Team members should be able to communicate quickly and easily ([see 12.3.2](#)).

Example: Southern and Northern benefit from a strategic seating plan. It demonstrates a clear line of authority with service delivery managers at the head of the tree (in both cases separated from the main spine of control to prevent frequent interference and micromanagement). The rest of the main spine positions staff next to relevant personnel for handling an incident. The layout and the added benefit of sound ergonomics makes communication easier. Northern's layout is illustrated below.



Important roles that an incident team needs to have:

- **Passenger management.** It is critical to keep passengers informed of and updated on disruption to ensure that they remain calm and avoid uncontrolled evacuation and prolonged delay.
 - Excessive passenger loadings on trains may influence the way an incident is managed and recovered. On some types of train, excessive passenger loadings may inhibit access to cupboards and equipment located in public areas.
 - Excessive passenger loadings on platforms may influence the way in which an incident is managed due to restricted access underneath the train.
 - It is important to remain consistent when managing periods of disruption, particularly when communicating with customers. Inconsistency can lead to a lack of confidence in the TOC's ability to manage incidents.
 - Social media should be used to its maximum potential. Using Twitter and Facebook to distribute details of incidents, particularly via photographs, can improve the response from customers, resulting in fewer social media complaints and increased customer acceptance.
 - Throughout an incident and its management, the impact on customers should be considered a priority.
- **Events planning.** Every TOC should ensure that control centre staff making decisions on managing incidents have access to information that provides details of events that may cause passenger loadings to be outside normal levels, e.g. large sporting events. This may change the way in which an incident is managed.

Driver availability is crucial to delivering any plan and can have a pronounced impact, particularly at night when fewer drivers are available.

13.3.2 Clear lines of communication

In an incident, clear lines of communication should be established with a good infrastructure using email, telephone and other electronic format. The use of legacy technologies such as fax machines and paperwork should be avoided.

Web conferencing may also be a useful tool where incident management team members are not co-located, enabling them to share and interact with information. Some essential features to consider when sourcing a web conference package are:

- Recording
- Outlook integration
- Simultaneous user capacity
- Mobile device compatibility
- Document/media sharing
- Desktop sharing

Example: There are many packages available online but a good free one is [Free Web Conferencing](#).

Example: Southern have a visualisation area formed of whiteboards relevant to each department,

including a route diagram board. These make members of the team aware of all current activities. The board is updated as and when new information is available prior to weekly updates.

Southern also use a fleet incident management flowchart, detailing all process from incident conception through to review. This document describes all the necessary actions/tools at each stage of the management process.

Example: Virgin Trains West Coast (VTWC) and Alstom have positioned a visualisation board within the control that illustrates weekly maintenance plans. This board is updated as incidents occur or as other alterations are required. Every member of the team is aware of updates on technical or non-technical issues as and when they arise, thus ensuring adequate information at all times to avoid miscommunication. The clarity of the board allows control staff to quickly assess the availability of units in the event of a set swap or other such service alterations.

Driver/signaller relationship: Many TOCS have trained drivers to standardise communications with signallers. The driver simulators and voice recordings ensure that correct protocols are used, and colloquialisms are avoided. In addition, voice recordings are reviewed by control to ensure that the standard is being maintained. The standard should focus only on key areas which cause train delays. This would not be necessary between drivers and fleet.

Example: GTR apply a similar standard to communication between drivers, fleet engineers and train managers in terms of language and terminology used.

13.3.3 Training and competence

Incident management team member training should cover not only their roles and responsibilities but also those of others in their teams. All staff members should be familiar with the company's procedures and the Rule Book. The aim should be for team members to demonstrate [unconscious competence](#) such that they can maintain a level of [situational awareness](#).

Examples of some online competence assessments are:

[Train driver](#)

[Assure-management systems](#)

[Railway Group Standards](#)

In high-pressure scenarios with complicated tasks, it is inevitable that mistakes will happen. Decision support tools and [checklists](#)¹ for incident management can help reduce the likelihood of these mistakes. Extensive work has been performed by the fleet community in this regard and good practice is detailed in [Appendix I](#).

Fleet engineers in control centres will be covered by the TOC Competency Management System (CMS) and assessed as per the TOC standards. They should have sufficient opportunity to spend time on depots and on the route, in order to maintain their competence and refresh their fault-finding skills and fleet knowledge. There are a number of ways this can be achieved. One example would be

¹ [Atul Gawande](#): The Checklist Manifesto

to use spare days, planned refresh days or other competent staff to cover the office role. Any new staff in the role would undertake a training needs analysis and be passed as competent prior to undertaking the role. There must be a process in place to ensure CMS is kept up-to-date.

RDG's Good Practice Guide (GPG005) on Controller Recruitment - Training and Competence exists to encourage the consistent application of established good practice across TOCs. It sets out the following two objectives:

- Act as a good practice guide that TOCs can use as a benchmark for controller CMS
- Provide good practice suggestions for recruitment assessments

Example: Virgin Trains East Coast use exact imitations of control desks and role-play of past incidents involving all members of the incident management team for team-building and new staff training.

Example: Southern has deployed an extranet to guide technical staff through decision trees during the phone a friend process. It also helps keep track of time, provides quick links to the "Defective On Train Equipment (DOTE)" and recovery procedures and can be audited. Systems such as this enable staff with less technical experience to talk on-train staff through processes during an incident.

The most effective decision trees are designed so that the most likely scenarios are eliminated first. It is vital that decision trees are updated as soon as incidents happen.

Example: Southern's Three Bridges ROC features a simulator to enable the rigorous training of new members of staff in a real-life scenario using the same equipment on the control floor. This ensures that staff are fully equipped to handle the situation quickly, effectively and professionally.

Example: South West Trains introduced a checklist approach focusing on lead measures called the Right Time Railway Assurance Check. The principle is to identify no more than five activities within a person's job description which are critical to performance and ensure, through teamwork, that the individual delivers these. The approach has been standard practice in aviation since 1942 and is used by pilots to ensure planning is in place before a flight. Appendix H contains a sample checklist developed by SWT for fleet depot staff.

Example: East Midlands Trains ensure technical support staff return to depot to undertake shop floor work to reinforce competencies on a regular basis. This enables fleet knowledge to be fresh in their minds and improves their ability to deal with faults during a phone a friend scenario.

Line of route fitters should ensure that they are fully equipped with the relevant tools and equipment. They are primarily employed to get the vehicle moving at the earliest opportunity. Several incidents have been recorded where the line of route fitter has extended an incident by trying to fix the train. The West Coast mainline has engaged in a work stream which allows the MOM to carry the equipment to site. This allows all personnel to work together by ensuring tools are on site quicker and rescue locos can get to site. It also wants drivers to have flexibility to drive alternative rolling stock for short movements.

Example: In order to minimise incidents, East Midlands Trains employ a Defective On Train Equipment (DOTE) procedure. This allows for the expedient management of incidents with rules for isolations and running rolling stock in a degraded mode, allowing the stock to continue without

incurring or exacerbating a delay. This approach is employed by several other TOCS where the DOTE may be identified as something else.

13.3.4 Resources

In an incident, a number of resources should be available for staff to use.

Disruption during the middle of the day may allow 'peak period' units to be brought into service in lieu of displaced units. If substitute/displaced traincrew are not available, this contingency plan is not viable. Timely recovery of the train plan is dependent on the availability of replacement traincrew/vehicles and well-managed manipulation of disrupted resources. The ease with which replacements can be provided is dependent on factors unique to each location in addition to time of day, weather conditions and other such issues.

The 'cut and run' procedure is then invoked. The objective is to return the running line to normal safely and as quickly as possible in the event of a train failure. With safety considerations being of the highest priority, this will cause customers the least possible overall inconvenience and disruption and help maintain the highest possible performance level.

In some scenarios, using such a procedure may not be possible, e.g. where numerous TOCs operate through a highly congested area. It is therefore advisable to plan for the worst case scenario. Where multiple TOCs are likely to be affected, Network Rail should lead the development of the cut and run policy, bringing all affected parties together to develop contingency plans. Consideration should also be given to the inclusion of FOCs into such discussions as incidents regarding freight services can often cause significant delays or exacerbate existing ones.

Example: Northern face causing substantial delays if a unit fails on the approach to Manchester Piccadilly. Due to the layout of the approach to the station, limited opportunities are available for units to be routed around any stranded unit causing a significant accumulation of delays. The variation in rolling stock operated in the region (as much as 5 types) prevents the possibility of rescuing the failed unit with nearby stock.

Northern and First TransPennine Express have, over the past 2 ½ years, developed a joint contingency plan to mitigate the impact of an incident. This document details according to certain route sections how services should run under categories including total blockage, reduced capacity and one line running. On top of this, specific instructions are given on how to handle any special circumstances.

An example is between Manchester Victoria and Milner Royd Junction where Biomass freight services to Drax power station are given priority during periods of reduced freight operation due to the nature of their cargo. These cannot be treated like traditional coal trains and must run sooner rather than later.

Example: Virgin Trains (West Coast), London Midland, Cross Country and Chiltern have been working together to discuss contingency plans for the LNW route. This has been led by Network Rail, taking a lead from the the Anglia route.

The contingency plan not only details actions for partial/full line blockages (including actions for the am and pm peaks), but also roles and responsibilities during an incident, such as route control managers, shift signalling managers and TOCs. Special instructions are also given regarding items such as holding trains at stations, light engine/empty coaching stock moves and engineering possessions. Communication is also detailed regarding what should be relayed both internally and

externally to customers, including alternative transport arrangements.

There has, however, been limited consideration by NR of diagram complexity or fleet implementation.

Thunderbird concept – a fleet of locomotives specifically equipped to rescue a TOC’s main fleet of trains. The fleet is not normally used for traffic but is deployed at strategic locations to minimise the time it takes for the locomotive to reach the failed unit. It can also cover for infrastructure failures where AC or DC electrification has failed (dropped wires, etc.).

Example: VTEC has a set of strategically positioned thunderbird locomotives on their route. Due to the relatively linear nature of their operations, the location of these locomotives is perhaps more evident than for TOCs such as those south of London. They are positioned at Edinburgh, Newcastle, Doncaster and London Kings Cross. At 90 minutes apart, this means that a failed unit will be reached within 45 minutes. These Class 67 thunderbirds are leased from and maintained by DB Schenker but driven by VTEC staff. In the event of a failed unit retrieval, a relay takes place.

For example, a failed unit at Edinburgh will be taken by the Edinburgh locomotive to Newcastle, where the driver will take the Newcastle locomotive back to Edinburgh, and the Newcastle driver takes the locomotive and unit to Doncaster where a similar process is repeated until the unit reaches Bounds Green depot. The rolling stock controller is responsible for the deployment of these thunderbirds.

A consistent starting point for incident mitigation is vital for managing the impact of fleet incidents efficiently. Having an initial framework means that all involved know their responsibilities and changes depend solely on the nature of the incident.

Example: Southern use a system whereby each section of the route is pictorially represented on a slide with details of the incident management process for each area. These are mounted on a transparent stand on which anything can be written, from the nature of the incident to any changes in the management process. This has been found to yield a measurable improvement in the impact of an incident.

13.4 Do

A number of processes need to be implemented when an incident occurs and several of these are detailed below. Details on decision support tools can be found in Appendix I.

To use these processes effectively, it is imperative to clearly identify the common goal (e.g. moving the train or fixing the fault) so that a critical path can be established. The route control manager must ensure the plan is communicated effectively to all staff involved.

Where an incident may be managed in one of two ways, depending on the outcome of an event (e.g. a technical examination), it is good practice to develop the two plans in parallel in order to minimise the overall length of the incident rather than starting with plan A and moving to plan B.

- Promote practice of early notification of defects/issues (“Report it first!”)
- Clear the line and use cut and run
- Assume worst-case scenarios and take action accordingly
- Mobilise or prime maintenance staff at earliest opportunity
- Whilst maintenance staff are working to recover a unit to operation, control staff can be preparing for other eventualities such as rescue (e.g. via use of thunderbirds)

- Balance long-term and short-term objectives, e.g. it may be better to incur a slightly longer delay today in order to return units to depot for maintenance and allowing a return to planned service tomorrow
- Use of train location information
- Use of remote condition monitoring (RCM)
- Emergency services may be required to assist in certain instances; where this is the case, it must be remembered that the emergency services will give priority to the passengers and the scene. This may prolong the incident and, therefore, increase the time for recovery of the network
- Huddles – bringing the relevant personnel together to discuss incidents and the plan of action

Example: Southern bring the control personnel together into a 5-minute huddle covering details of the incident and what each person's responsibilities will be to recover service.

13.4.1 Avoiding incidents and robust maintenance

Ad-hoc maintenance requirements (e.g. unit defects, modifications, component changes) are prioritised according to their urgency. An internal contract ensures that the delivery of fleet engineering's depot requirements align with the service delivery requirements of operations. The contract for planned delivery will aim to maximise the notice period of any work to be undertaken and be agreed between engineering and operations according to the diagrams available.

Example: A challenge for Northern Rail is their fleet of 8 3-car Class 158s. All are allocated to Neville Hill (Leeds) depot Monday – Friday and there is a requirement for seven units to be in passenger service with one unit in routine maintenance. With the exception of one unit, six end their working day at another location. The arriving unit is delivered on 5T93 2209 Leeds – Neville Hill 2220 (NL197 diagram). It is therefore necessary to plan sufficiently in advance that any unit requiring maintenance is allocated to the correct diagram so that it returns to 5T93 on the correct date.

Example: VTWC are limited to 6 units out of service to undergo maintenance. It takes careful planning and communication between the fleet engineers and control staff to ensure the whole team is aware of which units are scheduled for maintenance, where they need to be and when.

Deferred maintenance must be carefully managed with regular dialogue internally within engineering and externally with planning and control staff. The crucial link here is the maintenance controller who acts as the intermediary between engineering and operational colleagues in the control centre.

13.4.2 Dynamic risk assessment

Primary delay - if the fault is catastrophic and brakes require isolating for movement, ensure that any movement fits within the Special Moves Plan (SMP) and that the NR representative informs Network Rail control. When a controlled evacuation is required, all on-site personnel must agree a plan and inform Network Rail; emergency services may be required to assist. When planning for evacuation, where possible consider moving the unit (under assistance) if necessary to a safe point, i.e. siding, station or away from the main line and any rail traffic. As previously detailed, cut and run policies allow for the affected unit to be isolated in some incidents to minimise the disruption the unit may cause to the overall network.

Emergency coupling – it is critical that the emergency coupler is pre-fitted/extended to the failed unit prior to recovery. Some TOCS have emergency couplers strategically located across the network.

Assisting a train from the front using a wrong direction move is normally faster than trying to assist in rear with a non-compatible unit. The emergency coupler is often the first port of call rather than a wrong direction move.

It should also be remembered that not all emergency services will be familiar with the rules of the railway and communication between all parties is critical.

13.4.3 Monitoring plans and possible changes

Ensure live monitoring of the initial recovery plan is in place, be in touch with the staff on site and have a primary contact. Confirm that Network Rail understand the safety implications involved in DOTE when dealing with a significant failure. When estimated times for movement are available, use communications systems to relay this information to all concerned and, when robust estimates are achievable, communicate this to ground staff. A faster recovery will be achieved when a proactive stance is taken from the outset.

13.5 Review

Following an incident, it is important to evaluate the management and processes used to reduce the impact and restore service to normal. This section provides good practice for reviewing a technical incident with the aim of improving future response to similar incidents.

- Agree only a few timely actions from an incident review
 - These should be leading, measurable and carried forward
- Merge technical and operations reviews (focusing on the right area)
- Always use targeted, meaningful and (if possible) tailored feedback
- Education: offer explanations, in particular to traincrew (e.g. why engineers have given certain advice or control have cancelled a specific service)
 - Share the mission using a customer focus

Example: Southern examine routes to identify areas of high disruption to understand which customers have been affected and why.

Example: Southern perform a 'hot review' less than 6 hours after an incident.

Example: VTEC perform cross-function mock-ups of incidents for all levels of staff, from crew to senior management. These not only build confidence but allow cross-functional teams to develop their relationships in a low-stress environment.

Example: Within the South Western Railway control, Incident Learning Reviews (ILR) are utilised by Network Rail to review significant performance-impacting incidents. ILR replaces the SPIR (Significant Performance Incident Review) and is triggered by incidents of 1000-minute delay or more. It can, however, be used for any incident where it is agreed there are lessons to learn.

An ILR template is completed as part of the review and aims to capture 6 key learning points and 8 key actions.

SWR use an alliance action tracker to report open and overdue actions at both performance group (head of functions forum) and performance board (exec forum) level. All ILRs are approved by the most appropriate functional director, ensuring value is added in each instance.

13.5.1 **Incident review**

A final review and feedback to local operations managers and all staff involved serves learning and best practice sharing. Creating a knowledge pot comprising contingency plans can lead to a one stop advice shop where ideas and experience can be shared. It is crucial to use all available tools when reviewing incidents and implement recommendations from third parties such as the Rail Accident Investigation Branch (RAIB).