

Investigators' Handbook

Part 3 – The investigation report

Part 3B



This Part 3B includes the following sections:

- Report – step-by-step guidance

Part 3 – The report

Part 3B

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Report – Step-by-step guidance

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Data protection

Any evidence that contains personal data/information (such as the name, address, date of birth or details of injuries sustained) of any individual involved must be kept secure in accordance with Network Rail's [Data Protection Policy](#).

General

Always download a new template before starting to write a new remit, report or Names document.

Do not keep copies of the templates on local or network drives – the templates may change over time.

This section of the handbook provides step-by-step guidance on writing a report.

Most of this section of the handbook applies to both Local and Formal Investigation reports but some (and this is indicated within the text) is relevant only to either a Local or a Formal Investigation report.

The templates are designed to achieve consistency of content, layout and style. The “styles” and formatting are used to give consistency and numbering throughout the remit or report.

The investigation report templates must not be altered or amended without the permission of the Head of Corporate Assurance and Accident Investigation (HoCAAI).

If you have any suggestions to improve the template then pass these to the HoCAAI at Network Rail headquarters. All suggestions will be considered and the template will be updated from time to time to benefit from these suggestions.

The report must be produced in black and white but colour may be used in the following circumstances (but note the black and white alternatives):

Colour may be used	Black & white alternative
To highlight specific text	Bold text, or underlining
Where diagrams and photographs, etc. are included	N/A
Where text is copied from another document into the report	Italics and quote marks

If colour is used, check that the relevant text, diagrams and photographs are readable when the report is printed in black and white.

An [Investigation Report Checklist](#) is available from the Investigators' Handbook page on *Connect* to assist lead investigators and DCPs in checking the completeness of the investigation report.

Report template

Always download a new template before starting to write a new report or Names document.

Do not keep copies of the templates on local or network drives – the templates may change over time.

The Accident Investigation page on *Connect* has links to the investigation remit and report templates (click here [Templates](#)).

The current version of the relevant report template must always be used.

File-naming convention

Each Word file should have a unique file name; do not just use the default name provided by the system.

The aim of the following guidance is to standardise the file-naming to provide a rational and organised structure to aid the archiving and retrieval of documents, particularly where a large number of documents will be held.

There is no need to differentiate between formal and local investigations.

Category A SPADs

The report should be named in accordance with the following convention:

[Signal number] SPAD [Event Type (Optional)] [Date (YYYY-MM-DD)]

Examples:

Event type	Example
A simple Category A SPAD	CO183 SPAD 2009-10-15
An additional event type keyword may be used to indicate a subsequent event, such as a collision, derailment or runaway.	CO183 SPAD Derailment 2009-10-15
For incidents involving stop boards or limit of shunt signals (LOS), which are not numbered, the location should be added.	Norwood Stop Board SPAD 2009-10-15 Norwood LOS SPAD 2009-10-15
Where a report is re-issued, the version number should be included.	CO183 SPAD 2009-10-15 v2

Table 1 – Event type examples (Cat A SPADs)

Other accidents/incidents

Reports for events other than SPADs should be named in accordance with the following convention:

[Location] [Event Type Keyword] [Date (YYYY-MM-DD)]

Examples:

Event type	Example
A simple event	Windsor Derailment 2009-11-11
Accident (other than including fatality)	Cheshunt Staff Accident 2010-03-31 Esher Public Accident 2009-07-04
Fatality (Staff or public)	Seven Kings Staff Fatality 2007-12-03 London Bridge Public Fatality 2009-07-04
An additional event type keyword may be used to indicate a subsequent event.	Windsor Collision & Derailment 2009-11-11
Level crossing incidents should include the abbreviation "LC"; the level crossing type may also be included.	Windmill Lane LC near miss 2008-02-11 Victory LC collision 2009-08-12
Where a report is re-issued, the version number should be included.	Windsor Derailment 2009-11-11 v2

Table 2 – Event type examples (Other events)

A list of the keywords to be used is shown below:

Keyword	Meaning/comment
Staff Accident	Staff/contractor accidents (excluding fatalities)
Public Accident	Public accidents (excluding fatalities)
Staff Fatality	Includes contractors
Public Fatality	Includes passengers
SPAD	Normally Cat A or D; Cat B is normally signal(ling) irregularity
Collision	Includes collisions at LC and train striking objects
Derailment	
Runaway	
WSF	Wrong side failure (usually signalling)
RRV	Road rail vehicle
Possession Irregularity	Events involving T3/T4 possession only
Protection Irregularity	Events involving T12/T2 protection only
Signalling Irregularity	Irregular operation of signalling caused by human action
Signal Irregularity	Irregular operation of signalling with technical cause
Irregular Working	Anything not covered by the preceding four keywords

Table 3 – Keywords

Structure of a report

The following table identifies the structure of local and formal investigation reports:

	Local	Formal
Event summary:	✓	✓
Brief description of event	✓	✓
Immediate and underlying causes	✓	✓
Other safety related issues	If any identified	
Recommendations and local actions	✓	✓
Details of the event investigated	✓	✓
The investigation remit	X	✓
Description of the location, the trains/vehicles/equipment involved and the infrastructure.	✓	✓
Details of the people involved	✓	✓
Sequence of events	✓	✓
List of evidence	✓	X
Summary of evidence	X	✓
Factors discussed	✓	✓
Details and signatures of the investigation team and details of any observers	✓	✓
Appendices	As required (see the Appendices sub-section below)	
Incident Factor Causal Analysis	✓	✓
Feedback to consultation comments	②	✓

Table 4 – Report structure

② See the [Feedback from consultation](#) sub-section below.

Cover

Do not add photographs or logos to the front cover.

Much of the information to be shown on the report cover will be shown on the remit cover.

Organisations involved

The names of the organisations involved, i.e. participating in the investigation, need to be shown on the cover as follows:

The lead organisation	The lead organisation's name (i.e. area, route, delivery unit, asset or project) and function should be shown on the cover.
Other participating Network Rail functions	<p>Do not show these on the cover.</p> <p>Whilst more than one area/route/delivery unit/function/asset/project of Network Rail may be participating in the investigation, only the lead organisation needs to be shown on the cover.</p>
Other involved organisations	<p>Each organisation involved in the investigation needs to be shown on the cover.</p> <p>For railway undertakings (e.g. train operators), i.e. those organisations with a safety certificate, use the name shown on the safety certificate. For other organisations use the company name.</p> <p>The safety certificates of railway undertakings can be found on the Network Rail Portal.</p> <p>Go to the 'Applications' tab and select 'National' and 'Safety' and under 'References' click on 'ROGs – Safety Certificates/Authorisations'.</p>

Table 5 – Organisations involved

Lead organisation

Examples of how to show the lead organisation are provided below:

Report of a Local Investigation	
held by	
Network Rail	XYZ delivery unit, Infrastructure Maintenance



Report of a Local Investigation	
held by	
Network Rail	ABC area, Operations & Customer Services



Report of a Local Investigation	
held by	
Network Rail	Enhancements, Infrastructure Investment



Single area routes (e.g. Wessex, Sussex, Anglia and Kent) – show the route name and function.

Multiple area routes – show the area and function only, and not the route.

Other involved organisations

An example of how to show the other organisations involved are provided below

Report of a Local Investigation

held by

Network Rail

ABC area, Operations & Customer Services

DB Schenker

DEF Consulting Co. Ltd.

Event description

Include a brief description of the event being investigated. For example:

Report of a Local Investigation

held by

Network Rail

ABC area, Operations & Customer Services

DB Schenker

DEF Consulting Co. Ltd.

into the following event

Midtown : 6D22 19.20 Somewhere to Newtown passed signal MN21 at danger :
Thursday 20 May 2010

SMIS reference

SMIS reference

If not shown on the investigation remit, this should be obtained from the relevant SMIS Input point (details of these can be found on [Connect](#)).

Footer

Summary of event	<p>Include a short summary of the event in the following format: <i>Location : Brief description of event : Date: (in DD/MM/YY format).</i></p> <p>Ideally, this should be kept to a single line of text.</p>
Report status	<p>The status should be marked as Draft A when first drafted and progress through Draft B, Draft C, etc. as the report goes through each drafting/review stage.</p> <p>The status should be changed to 'Issue 1' when the report is to be signed by the investigation team.</p> <p>If it is necessary to re-issue a published report, e.g. in the light of new evidence, the footer should be changed to 'Issue 2'.</p>

Table 6 – Footer content

See example below.

Report of a Local Investigation	
held by	
Network Rail	ABC area, Operations & Customer Services
DB Schenker	
DEF Consulting Co. Ltd.	
into the following event	
Midtown : 6D22 19.20 Somewhere to Newtown passed signal MN21 at danger : Thursday 20 May 2010	
SMIS reference	MNO/123456

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Template Version 1

Midtown : 6D22 passed signal MN21 at danger : 20/05/09 Draft A Page 1 of 1

Status

Do not use 'Final' for the status of a completed report.

Event summary

The report is not necessarily written in the sequence that it is read.
Section A, the 'Event Summary', is better completed last.

This section should enable a reader to gain a reasonable understanding of what happened, why it happened, and the areas where remedial action is proposed.

Summary of the accident/incident

This should be a brief summary – two or three paragraphs – of what happened – but not a sequence of events (this will be shown at section E).

Include	Do not include
The time (if known) the event occurred	Any discussion of the evidence
The date of the event in full, including the day	The causes – these will be shown below.
The description of any train involved, i.e. headcode, departure time from origin, origin and destination	Details of the train operator – this will be shown in the 'Details' section.

Table 7 – Summary of event

For formal investigations, the 'Event Summary' will be used by the Safety Reporting Team at Milton Keynes to complete an Inquiry Summary report in SMIS (see the 'SMIS' section in Part 7 of this handbook).

It is important, therefore, that the 'Event Summary' is accurate and of good quality.

Confirmation of SPAD categorisation

This sub-section:

- a) must be deleted for events not involving a SPAD, and
- b) must be used to confirm the SPAD category as shown in the [Confirmation of SPAD Category](#) sub-section of Appendix B of this Part 3B of the handbook.

Immediate causes/underlying causes

This is the only section where the causes will be shown.

These should be the causes identified by the investigation team.

These need to be:

- a) supported by relevant discussion in the 'Factors discussed' section of the report;
- b) cross-referenced to the relevant paragraphs containing such discussion.

Causes should be determined using the tools and techniques covered in investigation training. As a minimum, the principles of the 'Why? Because' technique, provided in the investigation training, should be applied.

See the 'Identifying the causes' section in Part 4 of the handbook for details of the 'Why? Because' technique, and how to identify the causes.

Figure 1, on the next page, aims to assist lead investigators once the causes, etc., have been identified, in determining which sections of the investigation report are affected.

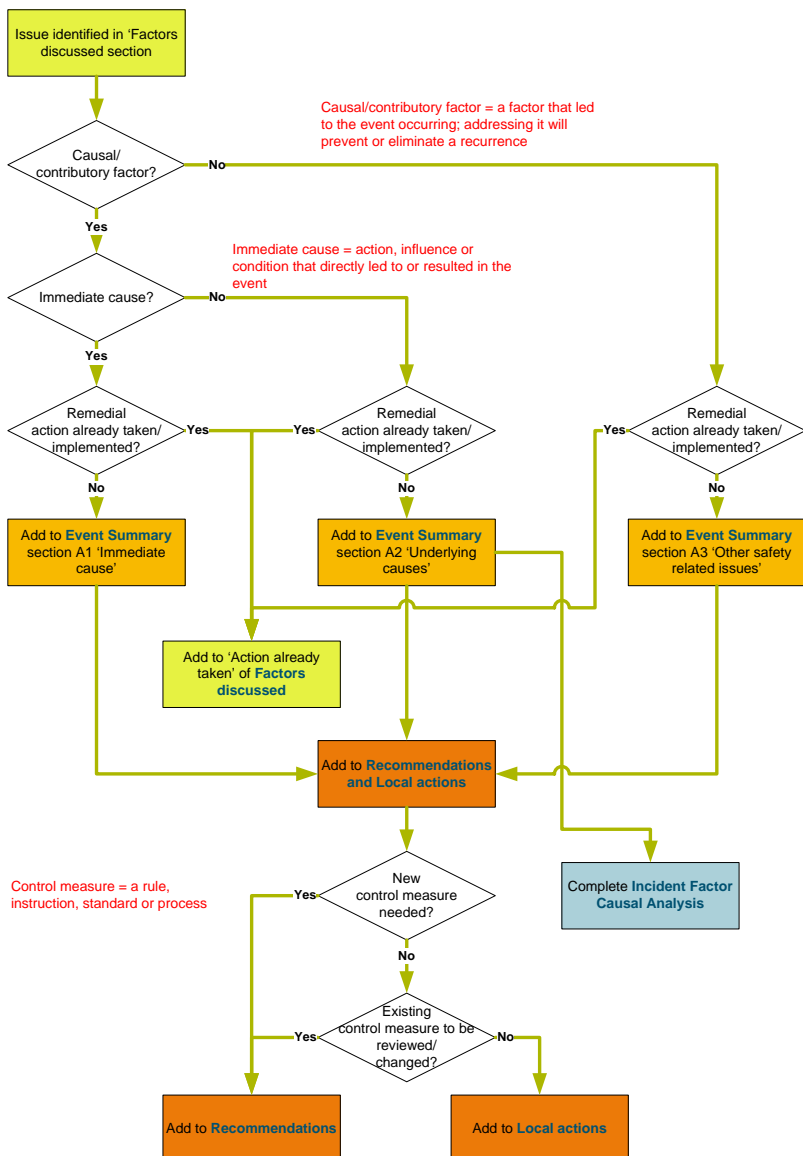


Figure 1 – Event summary flow diagram

Immediate cause

The immediate cause will be the action, influence or condition that directly led to or resulted in the event.

In most cases there will be only one immediate cause, but in some cases – and these are not common – there may be more than one.

In the case of a Category A SPAD, the immediate cause should be the most appropriate of the immediate causes listed at Part 13 of the [SPAD Data Collection form RT3119B \(Railway Undertakings\)](#).

Do not simply state what is being investigated or what the accident/incident was.

For example, do not record the immediate cause as: “The driver failed to stop at the signal” when investigating a Category A SPAD.

Underlying causes

These must include those issues/factors that the investigation team considers were:

Causal	When it is most likely that because of this the event occurred.
Contributory	When ‘causal’ does not apply but the issue/factor increased the likelihood of the event.

The split between causal and contributory will, to some extent, rely on subjective judgement. Anything that is not considered to be a ‘causal’ or ‘contributory’ issue/factor must be included under ‘Other safety related issues’ (see below).

The underlying causes may, therefore, include:

- unsafe acts;
- unsafe conditions;
- failures, including organisational failures (i.e. associated with the overall management systems or organisational arrangements), from which all other failings initiate – these may often be remote (in time and space).

These should be identified using the ‘Why? Because’ technique – see the ‘Identifying the causes’ section in Part 4 of the handbook.

Other safety related issues

The investigation may identify a safety related issue which, whilst not a 'causal' or 'contributory' issue/factor in the event, needs to be addressed and for which it may be appropriate to make a recommendation or local action to address it.

Such an issue may be considered to be one which, if addressed, would not prevent a recurrence but which may mitigate the consequences or reduce the likelihood of recurrence. This may include, for example, issues related to the post-incident management of the event such as:

- a) evidence preservation or collection;
- b) 'for cause' testing of the staff involved;
- c) recovery operations.

Such an issue should still be in the context of the event itself, rather than any other – and, possibly, separate – issue that happened to be identified during the course of the investigation.

In such cases, the issue should be discussed in the 'Factors discussed' section of the report and, where appropriate, should be clearly and separately listed as an 'Other safety related issue' in the 'Event summary' section of the report.

As with the immediate and underlying causes, an 'Other safety related issue' will need to be:

- a) supported by relevant discussion in the 'Factors discussed' section of the report;
- b) cross-referenced to the relevant paragraphs containing such discussion.

This sub-section may be deleted if no 'Other safety related issue' was identified during the investigation.

Wording of the causes (and 'Other safety related issues')

The following should be observed when wording the causes and, if there are any, the 'Other safety related issues':

Simple and specific	Try and keep the wording simple and specific to, for example, what was done or was not done.
Single sentence	If possible keep the wording to a single sentence, although there may be times when it will need to extend beyond that.
Avoid discussion	The discussion, justification or reasoning for the causal statement should be contained within the 'Factors discussed' section of the report – the cross-referencing will enable the reader to identify where this can be found.
Add the relevant rule, standard or instruction	Where the causal statement relates to, for example, the non-compliance with a rule, standard or instruction, the rule, standard or instruction should be specified (including, where appropriate, the title of the standard or document containing the instruction).
Cross-reference	Added at the end of the causal statement, to identify the section(s) where the discussion, justification or reasoning for the causal statement can be found in the 'Factors discussed' section of the report.

Table 8 – Wording of causes

Recommendations and local actions

See the '**Error! Reference source not found.**' section of Part 3A of the handbook for details of how to word these and who to assign them to.

Any recommendation and/or local action will, unless action has already been taken (see the [Action already taken](#) sub-section below), need to be:

- a) supported by relevant discussion in the 'Factors discussed' section of the report;
- b) cross-referenced to the cause(s) and/or 'Other safety related issues' that it is intended to address.

Where action has already been taken to address a cause (or 'Other safety related issue') this will need to be included in the 'Action already taken' sub-section of the 'Factors discussed' section and does not need to be included here.

No recommendations or local actions to make?

In rare cases, the investigation may reveal that the causes of the event:

- a) couldn't have been prevented; or
- b) relate to the actions of individuals (e.g. members of the public) or circumstances beyond the control of the organisations involved in the investigation and the railway industry in general.

In such cases, there may be no recommendations or local actions to be made and this should then be made clear within the report.

Remit (Formal Investigations only)

Insert, i.e. copy and paste, the latest issue of the formal investigation remit beneath the heading 'Remit'.

The report must contain some indication that the DCP has signed the remit. It does not have to be a scanned signature (although this would be preferable) and the following would be acceptable:

'Signature' box	'Signature on file' or 'Held on file' will suffice.
'Date' box	Enter the date the remit was signed.

Table 9 – Remit signature/date

The remit provides the terms of reference and can help resolve differences as to what should and should not be included in the report.

The lead investigator must retain a signed copy of the remit on the investigation file.

Details

This should provide background information on the location or premises where the event took place; the trains/vehicles/equipment; the infrastructure; and the people involved to enable the reader to understand the sequence of events.

The amount of background information provided will be dependent on:

- a) the level of investigation – more detailed descriptions are required for formal investigations;
- b) the complexity of the event under investigation.

The descriptions of the location, trains/vehicles/equipment and the infrastructure should only contain details relevant to the event.

It should be factual information only – discussion of such details should be contained in the 'Factors discussed' section of the report.

Photographs are normally readily available and can do more than a text description to help the reader “set the scene”. The text of the report – either above or below the photograph – should indicate what the photograph is showing.

Maps, sketches, diagrams and photographs should be annotated, where appropriate, to identify particular features referred to in the report and to further aid understanding.

For example:

- Maps may need to include arrows indicating direction to the nearest city, town, etc.
- Photographs may need to identify particular features not readily apparent, such as individual running lines, route of a movement, signals, etc.

B1.16. A photograph of the signal is shown below:



Use, for example, the ‘call-out’ AutoShapes (these have been used in the example above) available in Microsoft Word for this.

When including maps, sketches, diagrams and photographs check that they are:

- informative and relevant to the event and location, train, etc.:
- legible and understandable when the report is printed in black and white.

Further guidance on what may need to be included in each of the following sub-sections is provided in [Appendix A](#).

Description of the location

This sub-section should include a description of the location including, where relevant:

- a) its mileage and the mileages of other places identified, e.g. stations, junctions, etc.;
- b) a map and/or sketch/diagram of the location to aid understanding.

A single paragraph simply stating the mileage and/or its proximity to a known feature, e.g. a station, is not sufficient. However, a simple listing of the relevant details may suffice.

Description of the train(s) and rail vehicles involved

This sub-section should include a description of the train(s) or rail vehicle(s).

A photograph/diagram of any rail vehicle should be included where appropriate and where this would be helpful to understand what was involved.

Description of the infrastructure and equipment involved

Details of the ownership of any infrastructure or equipment should be added only if this is other than Network Rail.

This sub-section should include a description of those infrastructure elements that are relevant to the event, e.g.:

- a) signalling system details;
- b) track details;
- c) electrification details;
- d) level crossing type;
- e) any other equipment involved.

For events related to a T3 possession(s), it may be appropriate to add a sub-section providing details of the possession(s) and the work involved.

People involved

This sub-section should include only a list of the roles and/or job titles of the people involved, their employer and where they are based.

Do not use the names of the people involved within the report.

A separate Names document containing the names of the people involved should be prepared. See the 'Once the investigation is completed' section of Part 2B of the handbook for details of how to prepare the Names document.

Each person, mentioned in the investigation report as playing a part in the events leading up to the event and its subsequent management, should be identified by using only the post or job title for the role they were undertaking. This means of identification should be consistently used throughout the report.

Details of the railway employment history and competence of the people involved should be included in the 'Factors discussed' section of the report.

Sequence of events

This section should provide:

- a reader, who has never heard of the event before, an account of what happened;
- a chronological list of the relevant events both in the lead up to and after the event.

It should be written in the past tense, i.e. what happened, not what is happening.

Stick to the facts! Any discussion of what this evidence shows or of any conflicts in such evidence should be contained in the 'Factors discussed' section of the report.

The 'Sequence of events' should start at a suitable point prior to the accident/incident. Deciding what this should be will depend on the nature of the event.

For example:

Cat A SPADs or operating incidents	Begin when those involved, e.g. the driver and/or signaller, booked on duty. This will enable details to be added of how the person booked on duty and where, work performed prior to the accident/incident and any other events that may have occurred since booking on duty, etc.
T3 possession related events	Begin with when and where the possession was to commence. This will enable details to be added of when and by whom the possession was taken and, where appropriate, when work sites were created.
Derailements	Begin with the point where the train originated. If it involved a shunt movement, it might be necessary to begin prior to the actual movement taking place. This would enable details to be included of the train's transit to the point of derailment.

Table 10 – Starting the sequence of events

For complex accidents/incidents, where it may be difficult to merge all relevant events in a chronological order, or those with elements that extend over a long time period, it may be desirable to have sub-sections covering different elements but the aim should be to provide a complete sequence of events.

List of evidence used (Local Investigations only)

It is sufficient to state how it is known what happened, i.e. the source from which the information came, so a list of the evidence available to the investigation team is all that is required.

For example:

- Driver's report;
- Log entry;
- Interview with signaller;
- SPAD Data Collection forms RT3119A and RT3119B;
- SSI data download analysis;
- OTDR data download analysis;
- Voice communications.

This list is not exhaustive.

See the 'Evidence' section in Part 2 of this handbook for details of evidence that may need to be collected and which will be needed for certain types of events.

All evidence obtained by and used as part of the investigation needs to be retained with the investigation file.

See the 'Once the investigation is completed' section of Part 2B of the handbook for details of what needs to be included in the investigation file.

Summary of evidence (Formal Investigations only)

General

This section should summarise the evidence that will later be used to support the discussions and arguments in the 'Factors discussed'.

It should include, for example, the following:

- a) witness statements/reports, including notes of interviews had with them, including by their line manager;
- b) other investigations, including those made by other organisations/functions and technical investigations;
- c) technical evidence, e.g. OTDR and SSI data analysis, technical examinations/inspections, signal sighting, etc.;
- d) details of the results of any post-incident testing of trains/rail vehicles, etc.;
- e) for individuals involved, details of employment history, competence held, etc.

Each item of evidence should be presented under its own sub-heading, e.g. Driver's report, OTDR analysis, etc.

If a witness has provided more than one report, or been interviewed on more than one occasion one of the following options should be adopted:

- a) Summarise each under a separate sub-heading (e.g. Driver's report (1), Driver's report (2), etc.) and explain, if necessary why or when they were provided before summarising the evidence they contain.
- b) Include the evidence under the one sub-section heading in a sequential order and include from the 2nd or subsequent report, etc. any evidence that differs from the first or evidence that is new or additional.

This section only summarises the evidence – it does not discuss its meaning or significance to the cause(s) of the event.

Personal information

The evidence collected may contain some personal issues relating to the individual(s) involved which the investigation team may consider to have been a causal or contributory factor in the accident/incident.

Such information may relate to:

- domestic or non-work related issues;
- medical or health-related issues;
- job/work assessment information or results, which may identify educational/learning issues.

Whilst the names of the individual(s) are not included within the report, it may be relatively easy for colleagues to identify who was involved from the report's contents. For example, it would be relatively straightforward to identify who was on duty at the time or working on a particular train.

Disclosure of such information within the report may, therefore, prove to be embarrassing to the individual(s) concerned.

The lead investigator must therefore exercise care in deciding what to include in this section of the report, viz.:

- a) what information is necessary to enable the issues relating to the causes of the event (or any 'Other safety related issues') to be identified and subsequently discussed in the 'Factors discussed' section; weighed against
- b) including information that may prove to be embarrassing to the individual(s) should the report or its contents become available to their colleagues.

A balance may need to be struck and, unless the personal issue was important in understanding what happened and why, it may simply be a case of identifying, for example, that the individual had stated or admitted to a domestic or non-work related issue, rather than providing full details of the issue.

See also Network Rail's [Data Protection Policy](#) relating to personal data/information.

Summarising the key facts

If the 'Sequence of events' has been compiled with sufficient detail, it may only be necessary to summarise the key facts, the justifications given by individuals for their actions, etc.

Summarising the evidence may take more effort, but it should cause the lead investigator to think – What are the key facts? **Just summarise the key points.**

With this in mind, note the following points:

Type of evidence	How and what to summarise
Witness reports/statements	<p>There is no need to quote large sections from these.</p> <p>Where a group of witnesses has given very similar statements or evidence, these may be collectively summarised.</p>
Notes of interviews with witness by line manager (prior to investigation)	<p>It is not necessary to repeat the notes of such interviews – summarise the relevant points – but retain the notes of the interviews on the investigation file.</p>
Notes of interviews with witness by the investigation team	<p>A verbatim transcript is not necessary – summarise the relevant points.</p> <p>If a tape/digital recorder is used to record witness interviews the tape/digital recording must be retained with the investigation file.</p> <p>The summary of the evidence should indicate when the witness was interviewed. For example: "XX was interviewed by the investigation team on 20 October 2010."</p> <p>If a witness was interviewed on more than one occasion, show all interview dates.</p>
Technical, or other reports (e.g. Signal Sighting Committee reports)	<p>There is no need to quote large sections from these.</p>
Standard forms (e.g. RT3119A or RT3119B, RT3189, RT9909, etc.)	<p>There is also no need to summarise the contents of these unless they contain facts that it may be necessary to specifically refer to later.</p>

Type of evidence	How and what to summarise
Voice communications recordings	A verbatim transcript is not necessary – a summary showing time and duration of each call and who was involved may be needed.
Downloads obtained from data recording systems (e.g. OTDR, SSI, etc.)	In most cases the report's audience will not understand printout or graphs from data recorders, etc. so it will be necessary to explain how the evidence should be interpreted. It is normal to include the relevant items from the analysis of the data as a summary; if the evidence needs to be shown in full then it can be included as an appendix to the report (e.g. OTDR print).
Recommendations made in reports of other supporting investigations	For example, a train operator's SPAD investigation. These should be recorded in this section and evaluated in the 'Factors discussed' section.
Intelligence from relevant audit/assurance activity	Both are included within the investigation remit's 'General objectives'.
Previous events of a similar nature	It is not necessary to include these in the 'Summary of evidence' but any relevant information or similarities with previous events should be included in the 'Factors discussed'.

Table 11 – Summarising evidence

This section only summarises the evidence – it does not discuss its meaning or significance to the cause(s) of the event.

Factors discussed

General

This section requires the interpretation or discussion of the evidence gathered – and presented in the earlier sections of the report – and the identification of its significance.

The interpretation or discussion of the evidence must identify all relevant issues or factors and each will need to be justified, using clear, logical reasoning or arguments, to identify which were and were not relevant to the causes of the event.

More than one possibility may exist as to how the event occurred. The analysis of the evidence should identify how the investigation team reached their final conclusions.

These issues/factors should then support the 'Causes' and any 'Other safety related issues'. It may also be necessary to provide some explanation for the 'Recommendations' and 'Local actions' identified in the 'Event Summary'.

Any facts or evidence called upon in this section should already have been presented in 'Details', 'Sequence of events' and evidence sections.

Depending on the nature of the event being investigated, it may be better to begin by stating what SHOULD have happened and then identifying what ACTUALLY happened.

Personal information

The evidence collected may contain some personal issues relating to the individual(s) involved which the investigation team may consider to have been a causal or contributory factor in the accident/incident.

Such information may relate to:

- domestic or non-work related issues;
- medical or health-related issues;
- job/work assessment information or results, which may identify educational/learning issues.

Whilst the names of the individual(s) are not included within the report, it may be relatively easy for colleagues to identify who was involved from the report's contents. For example, it would be relatively straightforward to identify who was on duty at the time or working on a particular train.

Disclosure of such information within the report may, therefore, prove to be embarrassing to the individual(s) concerned.

The lead investigator must therefore exercise care in deciding what to include in this section of the report, viz.:

- c) what information is necessary to enable the issues relating to the causes of the event (or any 'Other safety related issues') to be identified and subsequently discussed in the 'Factors discussed' section; weighed against
- d) including information that may prove to be embarrassing to the individual(s) should the report or its contents become available to their colleagues.

A balance may need to be struck and, unless the personal issue was important in understanding what happened and why, it may simply be a case of identifying, for example, that the individual had stated or admitted to a domestic or non-work related issue, rather than providing full details of the issue.

See also Network Rail's [Data Protection Policy](#) relating to personal data/information.

Style of writing

The discussion may be in a slightly more relaxed style than that used in the 'factual' sections of the report – much more like a conversation between writer and reader.

However, the overall guidelines of report writing should still be respected, i.e. avoid the use of colloquialisms, vague statements, generalisations, assertions, etc.

Sub-section headings

Select suitable headings for each sub-section, e.g. competence of the staff implicated, condition and operation of the signalling, etc. – it is neither necessary nor desirable to use the headings in the remit for the subject headings.

Some lead investigators follow the headings on the remit and, whilst this may make it easier for DCPs and lead investigators to see that the investigation remit has been achieved, setting out a report in this manner may prove to be restrictive, as the remit headings will not necessarily correspond with the factors considered. Non-remit based headings make it easier to write a report that is clear and readable.

Quoting a rule, instruction or standard

When stating that an action did not comply with a rule, instruction or standard, always quote the rule, instruction or standard involved and clarify what was actually required. For example:

“There was, therefore, a failure to comply with section 9.3 of Rule Book Module T7 by ...”

and:

“There was, therefore, a failure to comply with clause 7.7.1 of Network Rail company standard NR/L2/SIG/19608 Level Crossing Infrastructure (Inspection & Maintenance) Handbook by...”

A key point to note is that a failure to follow a rule, instruction, procedure, etc. is not, by itself, a cause of the event. The cause is WHY the compliance failure occurred. This should be identified using:

The Generic Error Model for Rail (GEMR)	See the 'Human error classification' section in Part 4 of the handbook.
The 10 Incident Factors	See the 'Identifying the causes' and the '10 Incident Factors' sections in Part 4 of the handbook.

Expressing opinions

Where opinion is expressed, the report should clearly indicate who is expressing the opinion, and on what basis the opinion has been formed. For example:

"Having examined the evidence, the investigation team considered that..."

Incomplete or conflicting evidence

In some cases, the evidence gathered may be incomplete and it may not be possible to conclude with certainty what actually occurred. In these situations it may be appropriate for the investigation to express an opinion as to what it believes occurred "on the balance of probabilities". Where this is so, it is necessary for the report to explain how this decision was reached.

Similarly, analysis of the evidence may identify areas of conflict (normally between witness evidence). In such cases, the area of conflict should be discussed within this section of the report and the investigation team will need to explain which evidence it considers is the more reliable or accurate, and why.

SPAD investigations

In the case of an investigation of a Category A SPAD, see Appendix B for details of what will need to be included in the 'Factors discussed' section of the report.

Irregular working investigations

In the case of an investigation relating to an event that involved irregular working and which was subject to an Irregular Working Risk Ranking (IWRR) in accordance with [NR/L3/INV/0110](#), the IWRR results should be reviewed and discussed by the investigation team, i.e. it will be necessary to explain what the results mean, in terms of actual risk, and whether the IWRR methodology accurately reflects the level of "real world" risk.

Where the investigation identifies new evidence that the investigation team considers:

- a) would alter the IWRR results; or
- b) indicates that irregular working was not involved;

the lead investigator must inform the DCP and request the IWRR to be revised.

Details of such discussions should be included in the 'Factors discussed' section of the report.

Urgent safety related matters

Details of any urgent safety related matter identified during the investigation will need to be included in the investigation report.

Where an urgent safety related matter has been advised to others in accordance with Railway Group standard GE/RT8250 and/or Network Rail standard [NR/L2/OPS/035](#) the details may also need to be included in the [Action already taken](#) sub-section (see below).

See the 'During the investigation' section of Part 2A of the handbook and the 'Progress of the investigation' sub-section for more information on 'urgent safety related matters'.

Previous accidents/incidents of a similar nature

See the 'Evidence' section in Part 2A of the handbook for details of what may need to be considered and where to obtain such information/data.

The remit's 'General objectives' require the investigation team to consider previous accidents/incidents of a similar nature. This should include consideration of the following:

Previous events

This includes:

- a) investigation reports of previous similar events (at the same location or elsewhere, or involving the same traction unit/rail vehicle) and, where appropriate, events with similar causes;
- b) records that relate to previous safety events involving the same persons, location or rail vehicles, etc.

Recommendations

Recommendations and local actions relating to previous similar events may also need to be evaluated/assessed against the following criteria:

Efficacy	Did we do what we said we would do (i.e. was the action plan fully carried out?)?
Efficiency	Was the best use made of available resources?
Effectiveness	Was the problem actually solved? How great was the risk at the start and how much of that risk has been reduced?

Relevant audit/assurance activity

The remit's 'General objectives' require the investigation team to consider the findings/intelligence from relevant audit/assurance activity.

See the 'Evidence' section in Part 2A of the handbook for details of what may need to be considered as relevant audit/assurance activity.

This section of the report will need to discuss the audit/assurance activity findings, if any are available, and identify whether:

- there were opportunities to prevent the event occurring through, for example, correcting deficiencies, poor practices, non-compliances, etc.; and if so
- why preventive/corrective action had not been taken.

Action already taken

This sub-section should be the last in the 'Factors discussed' section of the report.

There may be occasions where remedial action, i.e. a proposed recommendation or local action, has been commenced or completed before the report is completed.

In such circumstances the following should apply:

- a) The recommendation or local action should not be made. However, details of the action already taken should be included in the 'Factors discussed' where indicated in the report template.
- b) It is not necessary to include details of the actions commenced or completed in the 'Event Summary' section of the report (under 'Recommendations and Local actions') but details must be included in the 'Factors discussed' section.

Details of actions or initiatives in progress that may address the issues (and which may have been initiated as part of a separate workstream) should also be included here.

It is not necessary to cross-reference the causes (or 'other safety related issues') to the 'Action already taken' sub-section of the report.

It is sufficient to record in this sub-section:

- the cause or 'other safety related issue' (as identified in the 'Event Summary' section of the report) that has been addressed by the action taken;
- what action has been taken;
- where this has been recorded; and
- the post title of the lead manager who has commenced or completed the action.

This sub-section of report must relate only to the causes and/or 'other safety related issues' of the event under investigation – it must not be used to record actions taken following previous similar accidents/incidents.

Anything shown in this sub-section of the report should address one or more of the immediate and underlying causes and/or 'other safety related issues'. All correspondence relating to action already taken should be retained on the investigation file.

Do not include commenced or completed action(s) in the recommendations or local actions of the 'Event Summary' section.

Signatures

The names of all investigation team members, their job titles and the organisations they represent need to be added in the relevant boxes.

The signatures of the lead investigator and other investigation team member(s) are required for **the completed report only**.

When the report is complete (see guidance below), it will need to contain an indication that it has been signed, or otherwise agreed/accepted, by the members of the investigation team.

This can take the form of:

- the original or faxed signature(s) scanned into the report;
- the following statement in the 'Signature' box where an original or faxed signature has been obtained: "Signature held on file";
- The following statement in the 'Signature' box where the investigation team member has e-mailed their acceptance of the completed report: "E-mail acceptance on file".

The date of signature or agreement needs to be recorded in the space provided.

Below is an example of how the signatures/agreement may be recorded:

G. Signatures

G1.1. The investigation team members agree with the body of the report, conclusions and recommendations:

Fred Smith

Signature: Signature held on file

Lead investigator and
Operations Manager, ABC area
Network Rail, Operations &
Customer Services

Date: 01/06/2010

Bill West

Signature: E-mail agreement on file

Production Manager,
DB Schenker

Date: 04/06/2010

Dave Ball

Signature: Signature held on file

Contracts Manager,
DEF Consulting Co. Ltd.

Date: 03/06/2010

G1.2. The following observers also attended the local investigation:

None

Signed or faxed 'Signature' sheets and hard copies of e-mails of acceptance must be retained with the investigation file.

Observers

Observers are not required to sign the investigation report. The names of the observers and the organisations they represent must be shown after the investigation members' signatures and in the space provided in the template.

Trade union observers

The report must include an indication of whether trade union observers attended the investigation. Where they did not, the report should also indicate whether:

- the relevant trade union(s) was invited to send an observer; and if not
- the reason why they were not invited to attend (e.g. witnesses were not to be interviewed by the investigation team).

For example:

No observers attended the formal investigation. Trade union observers were not invited to attend as the investigation team did not interview witnesses as part of this investigation.

The templates may provide a means for recording this information.

When is a report 'complete'?

Local investigation reports	This will normally be after the DCP has reviewed the draft report and has <u>signed</u> the completed report, i.e. the 'Issue 1' report.
Formal investigation reports and any local investigation report that has been sent for 10-day consultation	This will be after the consultation has been completed and the DCP has reviewed the revised draft report and has <u>signed</u> the completed report, i.e. the 'Issue 1' report.

DCP review and/or signature

Once the lead investigator has produced the draft report – which has been agreed by the investigation team – the DCP will review it in order to determine:

- whether the investigation has been adequately carried out;
- whether the remit objectives – General and Specific – have been met;
- whether the immediate and underlying causes have been correctly identified;
- whether the report has a cohesive structure, i.e. whether the causes and recommendations/action plans relate to issues discussed in the 'Factors discussed' section of the report;
- that any proposed recommendations are appropriate, meet the SMART criteria (see below), and have been directed to the correct organisation;
- that any local actions have been correctly identified;
- that spelling and grammar are correct, abbreviations and terms are consistently used, and the format of the report complies with the template and house style.

An [Investigation Report Checklist](#) is available from the Investigators' Handbook page on *Connect* to assist DCPs (and lead investigators) in checking the completeness of the investigation report.

If the DCP deems that the draft report is not of an acceptable standard, the DCP must advise the lead investigator as to what needs to be done to bring the report up to the required standard.

Where a draft report has undergone a 10-day consultation period the DCP must pass any feedback/comments received to the lead investigator for the report to be amended as necessary.

See the [Feedback from consultation](#) sub-section below for more details.

Once the report has been amended, the lead investigator should circulate the completed draft – which should be shown as 'Issue 1' in the footer – to the investigation team, with a request for them to sign/agree the report.

Then, once the investigation team members' signatures/agreements have been received, the report should be passed to the DCP to sign and date.

DCP sign-off

When the DCP signs the investigation report the DCP is certifying and accepting the local actions contained therein.

Such local actions should then be implemented (if this has not already been done) without being subject to any further review.

The onus is therefore on the DCP to check, before signing off the report, that any local actions:

- address the cause(s) or 'Other safety related issues';
- are appropriate;
- have been directed to the correct person.

Where a local action falls within the responsibility of another Network Rail function, the DCP must contact the DCP of the function concerned to make sure the local action is acceptable to that function.

Appendices

In general, items should only be included as an appendix to the report where:

- it is absolutely necessary;
- they are needed to support discussions, arguments or conclusions made in the report;
- it is considered necessary to highlight specific evidence or relevant features of the evidence;
- it is not possible to summarise the evidence (e.g. diagrams or plans);
- it is easier to include the item as an appendix rather than describe the issue within the 'Factors discussed' (e.g. an incorrect entry on a report form or record).

It is not necessary to append copies of witness statements, reports, etc. as appendices to the report.

Sub-headings

Use a different sub-heading for each item of evidence, etc.

Category A SPAD investigations

The investigation report for a Category A SPAD investigation must include the following as appendices:

- a) the summary of the SPAD Risk Ranking (SRR) results;
- b) the Signal Sighting Committee (SSC) report, where appropriate.

The above are included as standard items in the investigation report templates and should be deleted for non-Category A SPAD event types.

The SRR summary

This may be produced as a Word or Excel file from the SRR tool.

The Word version would be best to copy and paste into the investigation report – if necessary, contact the relevant Operations Risk Control Co-ordinator to obtain this.

Where the SRR has been revised to take account of new evidence presented at the investigation, etc., the revised SRR results should be included.

The SSC report

It is sufficient to include the two-page Signal Serial form prepared by the SSC within the investigation report.

However, it may be necessary, depending on the nature of the event, to include, for example, the obscuration diagram/findings, etc.

Incident factor causal analysis

This table must be completed by the lead investigator when drafting/revising the report.

For each underlying cause identified, the lead investigation must add the following information:

Column No.1	Add the underlying cause number – from Section A of the report – against the applicable incident factor(s).
Column No.3	<p>Identify who made the error relative to the applicable incident factor(s) shown in Column 2, i.e. driver, signaller, PICOP, ES, etc.</p> <p>Where more than one person is identified against a particular underlying cause and incident factor, enter all persons identified (do not show the person's name). In the case of 'Equipment', where the investigation has identified issues related to the design of the equipment involved it may be appropriate to enter 'Manufacturer' or 'Designer'.</p> <p>This will be particularly appropriate where the manufacturer/designer of the equipment did not attend the investigation.</p>

Feedback from consultation

The DCP should arrange for the draft report to undergo a 10-day consultation period, where this is necessary. See the 'General guidance for DCPs' section in Part 9A of the handbook for more details.

Where a local investigation report undergoes a consultation period, any feedback received should be dealt with as for a formal investigation.

When feedback/comments are obtained from the 10-day consultation period this must be added to this final section of the report. Please note the following when deciding what to include and what not to include:

Type of feedback/comment	Include? And how to respond
Typographical spelling errors and other minor errors	These should be corrected in the text of the report but not listed in this section.
All other comments	These should be included.
Comment accepted and noted only by the investigation team	Indicate in the 'Response' column that the comment is accepted and noted.
Comment accepted by the investigation team and report amended	Indicate in the 'Response' column that the comment is accepted and indicate that the report is amended. Where, in response, a change is made to another or a different part of the report to that suggested, the feedback response should explain where the change has been made and, if necessary, with an explanation.

Type of feedback/comment	Include? And how to respond
Comment not accepted by the investigation team	<p>The reasons for not accepting the comment need to be explained in the 'Response' column.</p> <p>It is polite for the lead investigator to discuss this with the person who made the comment:</p> <ul style="list-style-type: none"> • to explain why it is being rejected; and • to gain their agreement that the comment may be removed.
Comments received from more than one person in the same organisation	<p>Group them under the organisation they came from – not the individual that provided them – and by section number order.</p> <div data-bbox="339 599 973 694" style="border: 1px solid black; background-color: yellow; padding: 10px; text-align: center;"> <p>Do not identify the name or post title of the author of the comment(s).</p> </div> <p>All references should be to section numbers and not page numbers.</p> <p>Only those organisations that provide comments should be listed.</p> <p>It is not necessary to include a table for each organisation sent the draft report as part of the 10-day consultation.</p>
Comments received from only one organisation	<p>Group them under the organisation – not the individual that provided them – and by section number order.</p> <div data-bbox="339 1093 973 1188" style="border: 1px solid black; background-color: yellow; padding: 10px; text-align: center;"> <p>Do not identify the name or post title of the author of the comment(s).</p> </div> <p>All references should be to section numbers and not page numbers.</p> <p>Delete the 'unused' tables and sub-section headings.</p>

Type of feedback/comment	Include? And how to respond
No comment or feedback received	Amend the first paragraph of this section to read: <i>"No feedback was obtained during the 10-day consultation period described in Network Rail company standard NR/L3/INV/0205."</i> Delete the unused tables and sub-section headings.

'Serious accident' formal investigation

In the case of a 'serious accident' formal investigation, feedback/comments received from the Head of Legal Services, Litigation should not be included.

Appendix A

Description of the location

A large part of the target audience may not be familiar with the location so it is necessary to explain the relevant key features:

- Start by stating where the location is, and what route it is on.
- Give the basic characteristics of the location, such as junctions, the number and names of running lines, the direction of "Down", etc.
- Quote the mileage (in miles and chains, e.g. XX m YY ch) where relevant.
- Quote the gradient and speed limits.
- Give any other relevant characteristics.

Add a map or diagram of the location, or indicate where a map can be found (e.g. in an appendix).

Map, sketch or diagram

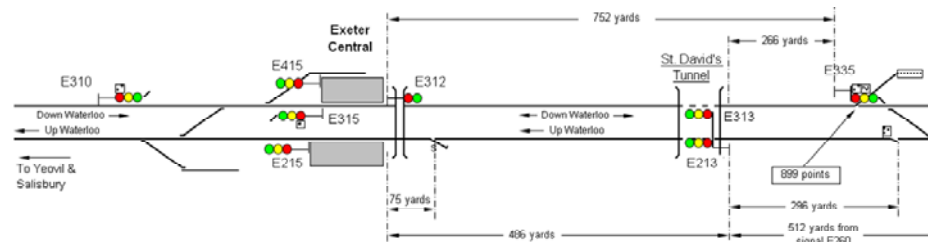
A map showing the location's relationship to other known features, e.g. stations, junctions, should be included. A map may be obtained from the GI Portal which is available to all Network Rail employees.

A sketch or diagram of the location should always be provided for formal investigations. This will aid understanding of the event.

A diagram may be obtained from the 5-Mile Line diagrams available on the Network Rail portal **but check these are suitable for the report.**

A sketch or diagram should show only those features which are pertinent to the event being investigated.

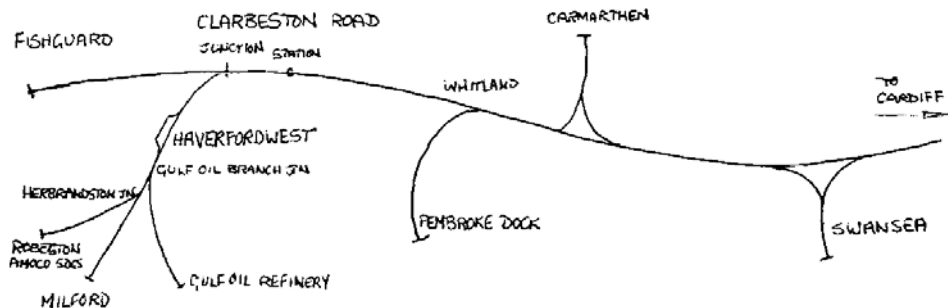
Sketches and diagrams may be specially drawn for the report using available information, e.g. signalling diagrams, etc. Below is an example of a diagram that was drawn using previously prepared symbols in Microsoft Excel (similar drawings can be produced using Microsoft PowerPoint).



A Microsoft Word document containing guidance for drawing line diagrams, and illustrations of signals, may be obtained from the senior investigators.

Although it may take some practice, once the basics have been learned, such diagrams can provide an efficient and effective way of completing the description of the location and help provide a professional report.

It is also possible to produce a hand-drawn sketch map quite quickly and scan it into the report. An example of this is given below:



Description of the train(s) and rail vehicles involved

This should include details of the train(s) and rail vehicle(s) involved in the event. This should include, as a minimum:

- a) where relevant, the description of any train involved, i.e. its headcode, departure time, origin and destination;
- b) the class or type and number of the train or rail vehicle;
- c) the company operating the train/rail vehicle (i.e. the company with the necessary safety certification) and, where relevant, who owned it or where it was hired from.

The safety certificates of railway undertakings can be found on the Network Rail Portal.

Go to the 'Applications' tab and select 'National' and 'Safety' and under 'References' click on 'ROGs – Safety Certificates/Authorisations'.

For example, in the case of a train:

The train involved in this incident was 5C89 20.14 Bristol Temple Meads to Bristol Temple Meads via West Junction, an empty coaching stock (ECS) movement formed by a class 150 two-car diesel multiple unit (DMU) number 150221. The train was operated by First Great Western.

In some cases, e.g. a Category A SPAD, and in order to give the reader a good idea of the event, some basic information should be included even where the train, or its performance, may not be relevant to the event or the outcome.

Formal investigations

In the case of a train, it will be necessary, depending on the nature of the event, to describe the following:

	For example:
The type of braking system	<i>"Class 455 units are fitted with a three-step electro-pneumatic brake that operates through discs on each wheel."</i>
The safety systems available	<ul style="list-style-type: none"> • Automatic warning system (AWS) • Train protection & warning system (TPWS) • Automatic train protection (ATP) • European rail traffic management system (ERTMS) • Driver's reminder appliance (DRA)
Whether on-train recording systems are fitted	<ul style="list-style-type: none"> • On-train data recorder (OTDR) • Closed circuit TV (CCTV) – forward facing and/or passenger compartment
The types of communication equipment available	<ul style="list-style-type: none"> • National radio network (NRN) • Cab secure radio (CSR) • GSM-R
Its permitted speed	

Description of the infrastructure and equipment involved

This should include a description of those infrastructure elements, e.g. signalling, track, electrification, level crossings, etc. relevant to the event, and/or any equipment involved.

Add details of the infrastructure/equipment ownership if this is other than Network Rail.

Signalling

Where the investigation is into an issue not involving the signalling, details of the signalling system, the method of control, and types of signal may not need to be included.

For those investigations where the signalling is a key feature in the event and the conclusions, it will be necessary to describe:

- a) which signalling location controls the signalling at the location and the system of signalling, e.g. track circuit block, tokenless block, etc.;
- b) the type of signal, i.e. controlled or automatic, gantry or straight post, colour light, semaphore, position light or 'Stop' board and whether it is provided with junction/route indicator, etc. or position light signal.
- c) whether AWS, TPWS, etc. is provided at the signal;
- d) any unusual features, e.g. positioned to the right hand side of the line.

For Category A SPAD incidents it may also be necessary to describe any preceding signals in the aspect sequence leading up to the SPADed signal.

If any other signalling equipment is involved, e.g. a ground frame, point detection equipment, train operated points or signalling equipment associated with a level crossing, and this is pertinent to the event, then a brief description of this should also be given. This description should enable a reader with only a basic understanding of signalling equipment to understand:

- what the equipment is for;
- how it is worked/operated.

Where the event occurred within a T3 possession, it may be sufficient to describe which signal box controls the area and the normal method of signalling, but that normal signalling was suspended for the duration of the T3 possession.

For events relating to a T3 possession(s), it may be appropriate to add a sub-section providing details of the possession(s) and the work involved.

In the case of a Cat A SPAD investigation a photograph of the relevant signal(s) should also be included.

Track

If a sketch/diagram is provided as part of the 'Location' description and this identifies the relevant lines, points, etc. at the location, then very little is required to be added in this sub-section unless the track is a key feature in the event and the investigation's findings.

Complex track systems are very difficult to describe and a sketch/diagram will suffice in most cases where the track is not a key feature in the event.

Where the event involved the failure of track equipment or where it may be implicated in the cause(s) of the event, then details of the track systems should be provided.

Electrification

Unless the event actually involves the electrification system, it is generally not necessary to include more than the fact that there is AC or DC electrification equipment at the location.

Where the electrification system is involved in the event, details should then be provided which will enable a reader with only a basic understanding of electrification systems to understand:

- what the equipment does;
- how any parts of it involved in the event inter-relate;
- how it is isolated, when applicable;
- how it is re-energised, when applicable.

Level crossing

Unless the event actually involves a level crossing, it is generally not necessary to include more than the fact that there is a level crossing at the location.

Where the level crossing is involved in the event, details should then be provided which will enable a reader with only a basic understanding of level crossings to understand:

- the type of level crossing, including its status, e.g. public, occupation/accommodation;
- whether the level crossing is automatically or manually operated and, if the latter, whether this by the user or rail industry staff;

- how the level crossing is supervised, e.g. supervising signal box;
- method of operating the barriers or gates at the level crossing.

Other equipment

The detail to be provided will be dependent on what equipment (other than train/rail vehicle, signalling, track, electrification or level crossing related equipment) was involved.

If other types of equipment were involved, details should be provided which will give a reader a basic understanding of:

- what the equipment does;
- how it was involved in the event.

People involved

This should include a list only of:

- a) the role of any person involved;
- b) their employer; and
- c) where they are based.

This information may be presented in a table. For example:

Role	Based at	Employed by
Driver of 5W01	Reading	First Great Western Trains
Signaller	Reading PSB	Network Rail
Person in charge of possession (PICOP)	Westbury	
'Blocked road man' 1 (BRM1) – Reading	Reading	
'Blocked road man' 2 (BRM2) – Slough		
Possession Coordinator (PC)		
Possession Delivery Manager (PDM)		
Area Delivery Planning Manager (ADPM)		

Appendix B – Category A SPAD – Additional details to be included in the 'Factors discussed' section

The following identify the issues that will need to be discussed within the investigation report of a Category A SPAD.

SPAD Risk Ranking (SRR) results

The initial SRR results should be reviewed by the investigation team to confirm that the correct scenario and conflict point have been used, as well as the other data used.

If the investigation team agrees that the results reflect the circumstances of the incident then this should be stated.

The investigation team should also consider whether the results gained through the application of the SRR methodology actually reflect the "real world" scenario, or whether any other factors not included in the SRR methodology mean that there is actually a lesser or greater risk. A comparison should also be made with the signal's SAT score (where applicable).

If nobody on the investigation team is competent in the SRR methodology, the relevant Operations Risk Control Coordinator (ORCC) should be invited to join the investigation team when reviewing the SRR results.

Revision of SRR

Where the investigation team considers the SRR does not correctly reflect the incident's circumstances or new evidence is identified that it considers may alter the SRR results, the ORCC should be advised and arrangements made for the SRR to be recalculated.

The revised SRR results should be included in the 'Factors discussed' section and the revised SRR Summary included as an appendix to the report (see the [Appendices](#) sub-section above).

Signal Sighting Committee (SSC)

It is not acceptable for the investigation report to be issued prior to an SSC being held and to then recommend that an SSC be carried out.

Where an SSC was convened following the accident/incident, the drafting of the investigation report cannot be completed until:

- a) the SSC report is available; and
- b) the conclusions and recommendations of the SSC have been included and reviewed within the 'Factors discussed' section of the report.

This does not mean that the investigation team cannot comment in the report on whether an SSC recommendation will actually address an issue identified by the investigation team. The SSC may not have the same facts or understanding of the event as the investigation team and may therefore draw different conclusions and make a recommendation that, whilst appropriate for the issues identified by the SSC, may not address the factors and causes identified by the investigation team.

The investigation report should not be issued until the SSC report, signed by the (RAM(S&T)), is available.

Where an SSC was not held the reasons why and who agreed this should be included in the 'Factors discussed' section.

Technical Instruction TI 011 *Post Cat A SPAD Signal Sighting Committees* provides the criteria for when an SSC does not need to be held.

The SSC report should be included as an appendix to the report (see the [Appendices](#) sub-section above).

Re-categorisation of Category A SPAD incident

Where the investigation was held into a Category A SPAD incident but the incident is subsequently re-categorised, in accordance with Operations Manual procedure 5-08, to other than a Category A SPAD the 'Factors discussed' section of the report should include:

- a) that re-categorisation was sought and agreed;
- b) the reasons for re-categorisation; and
- c) the amended incident categorisation.

Similarly, the 'Factors discussed' section should include where re-categorisation was sought but was not agreed, together with the reasons why it was sought and why it was rejected.

Confirmation of SPAD Category

Whilst the event will have been initially assessed as a SPAD event, with a provisional category identified prior to the investigation being held, this categorisation will be based upon information available at the time. Subsequent investigation will either confirm or change the initial, provisional categorisation and is then necessary to confirm the status of that original decision.

If the original decision to identify the incident as a SPAD, and/or its given category is subsequently changed as a result of the investigation, then the investigation report must clearly indicate this outcome.

In all cases the lead organisation should, in confirming or changing the SPAD category, use the list of confirmed SPAD categories shown in the following table. The 'Factors discussed' section should be used to confirm the SPAD category or explain the reasons for it being changed.

Operating irregularity

The investigation may conclude that the circumstances of the event do not accord with any of the details contained in the table below. In such cases the event should be recorded as an operating irregularity.

There are many types of event that have the potential to be considered as operating irregularities and it is not practical to provide a list of them but such events might result from a failure to comply with a rule, regulation or instruction.

There is no category for an event where a signaller (or his authorised agent thereof) gives incorrect authorisation to a driver to pass a signal at danger. Such an event cannot be a SPAD as the driver could have no logical basis for questioning what, to the driver, should be a proper authorisation. If the investigation discovers that an incorrect authorisation was passed to the driver then that event should be treated as an operating irregularity.

This should not be confused with a Category A3 SPAD where a signaller's authorised agent, e.g. a handsignaller, gave permission to pass a signal at danger without the authority of the signaller.

Categories and sub-categories

The following table provides guidance on each of the SPAD categories/sub-categories. There is no implied degree of importance or severity between the categories and sub-categories. In all cases they specify events that have, or might have, led to a signal being passed at danger without authority in the circumstances described.

The distinct sub-categorisation of SPAD types is intended to enable more accurate analysis of SPADs and help to better understand the circumstances of the event.

The categories are not in themselves intended for the purposes of blame or liability.

Cat/ Sub-cat	Description	Guidance on sub-category
A	The four Category A SPAD sub-categories shown below match the provisional SPAD categories that will be used when an event is initially reported.	
A/A1	When a SPAD has occurred and, according to available evidence, a stop aspect, indication or end of in-cab signalled movement authority was displayed or given correctly and in sufficient time for the train to be stopped safely at it.	To be used to describe an event where the signal passed at danger was displayed or indicated correctly, and with any correct preceding indications (such as cautionary aspects and AWS warnings).

Cat/ Sub- cat	Description	Guidance on sub-category
A/A2	<p>When a SPAD has occurred and, according to available evidence, the stop aspect, indication or end of in-cab signalled movement authority concerned was not displayed or given correctly, but was preceded by the correct aspects or indications.</p>	<p>To be used to describe a SPAD where the signal passed at danger was not displayed or given correctly, but where the preceding indications were present and correct (such as cautionary aspects and AWS). The reason for the signal not displaying correctly might be because it was, for example, obscured (or partially obscured) by foliage, snow or other obstruction; where the signal lighting had totally failed (dark signal) and the driver had had all the correct preceding warning signals, or no signal shown where there should be one.</p> <p>In all cases, the principle is that the driver should have reacted to preceding warnings (including instances where a signaller may have actually informed a driver that a certain signal he was approaching was not displaying correctly) and had the train under control accordingly for the signalled stop. The driver's route knowledge would normally be expected to be sufficient for him to sight such signals in time to slow down and stop.</p>

Cat/ Sub- cat	Description	Guidance on sub-category
A/A3	<p>When a SPAD has occurred and, according to available evidence, verbal and/or visual permission to pass a signal at danger was given by a handsignaller or other authorised person without the authority of the signaller.</p>	<p>To be used in situations where permission has apparently been given to a driver by a person who does not have the correct and proper authority of the designated signaller for the signal or indication concerned.</p> <p>It should be noted that, in full accordance with the text in the Rule Book, a Person In Charge Of the Possession (PICOP) and Engineering Supervisors (ES) are not handsignallers. Therefore, a situation where a driver passes a signal at danger in a possession without the authority of the PICOP or ES should be sub-categorised as an A1 SPAD (and not an A3 SPAD). Similarly, Level Crossing Attendants (LCAs) should not be construed as handsignallers, as they cannot authorise drivers to pass signals at danger.</p> <p>The term 'other authorised person' stated in this sub-category might, for example, refer to a designated pilotman.</p> <p>The Rule Book gives clear requirements for situations where defined persons might or might not give permissions and authorities to drivers. The categories and sub-categories shown in this table support the activities described in the Rule Book.</p>

Cat/ Sub- cat	Description	Guidance on sub-category
A/A4	<p>When a SPAD has occurred and, according to available evidence, a stop aspect, indication or end of in-cab signalled movement authority was displayed or given correctly and in sufficient time for the train to be stopped safely at it, but the train driver was unable to stop his train owing to circumstances beyond the train driver's control (for example, poor rail head adhesion, train braking equipment failure or malfunction etc.).</p>	<p>To be used to describe an event where the signal passed at danger was correctly given or displayed, and where the preceding indications were present and correct (such as cautionary aspects and AWS), but where the driver was unable to stop his train in time owing to circumstances that were outside his control.</p> <p>This might have been because of poor rail head adhesion, train braking equipment failure or malfunctions etc. In all cases it should be where the driver will not have had any reasonable way of preventing his train from passing the signal or indication showing danger.</p> <div data-bbox="487 836 969 961"> <p>Care should be taken not to confuse sub-Category A4 SPADs with Category B or C SPADs.</p> </div>

Cat/ Sub- cat	Description	Guidance on sub-category
B	<p>In all Category B SPADs, the driver will not have been able to stop his train in time (or may not even have been aware of or seen the actual signal or indication reversion).</p> <p>In such circumstances the driver will probably not have received any cautionary indications (either visual or audible).</p>	
B/B1	<p>When a SPAD has occurred because a stop aspect, indication or end of in-cab signalled movement authority, that previously showed a proceed indication, was displayed because of infrastructure failure (for example, signalling or level crossing equipment has failed or malfunctioned).</p>	<p>This sub-category should be used for events where a signal or indication had been displaying a proceed aspect, indication or movement authority which then changed to a danger aspect or indication as a result of equipment or infrastructure failure or malfunction.</p> <p>A B1 SPAD should have occurred automatically as a result of the mechanical, electrical or software related failure and not as a result of any human error, which sub-category B2 describes.</p>
B/B2	<p>When a SPAD has occurred because a stop aspect, indication or end of in-cab signalled movement authority, that previously showed a proceed indication, was displayed because it was returned to danger or displayed in error.</p>	<p>This sub-category should be used for events where a signal or indication had been displaying a proceed aspect, indication or movement authority which then changed to a danger aspect or indication as a result of human error, such as a signaller having returned the signal to danger mistakenly, or perhaps as a result of a mistake by technicians working on equipment.</p> <div data-bbox="490 1196 969 1322"> <p>Care should be taken not to confuse a sub-category B2 SPAD with a Category C SPAD.</p> </div>

Cat/ Sub- cat	Description	Guidance on sub-category
C	<p>When a SPAD has occurred because a stop aspect, indication or end of in-cab signalled movement authority was not displayed in sufficient time for the train to be stopped safely at the signal, indication or end of in-cab signalled movement authority as it had been returned to danger automatically or in an emergency in accordance with GE/RT8000 Rule Book.</p>	<p>Such events are the result of either:</p> <ul style="list-style-type: none"> a) the deliberate change of a previously, correctly displayed or given proceed signal or authority to one that means stop/danger, or b) equipment operating correctly to display a stop/danger aspect or indication as an automatic, fail-safe consequence (such as a train passing a signal at danger on another line or maybe the application of track circuit operating clips). <p>The term in this category for “<i>returned to danger in an emergency in accordance with GE/RT8000 Rule Book</i>” refers specifically to situations where a signaller has manually returned a signal to danger (including the withdrawal of movement authorities) in full and correct accordance with specific instructions shown in the Rule Book.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>Care should be taken not to confuse a Category C SPAD with a sub-category A4 SPAD.</p> </div> <p>Category C SPADs are where the presentation of the danger signal or indication did not give the train driver sufficient time to respond and safely stop his train at it.</p>

Cat/ Sub- cat	Description	Guidance on sub-category
D	When a SPAD has occurred because vehicles without any traction unit attached, or a train which is unattended, had run away past the signal at danger or without an in-cab movement authority.	This category is specifically intended for vehicles without a traction unit attached or unattended vehicles or trains that pass a signal at danger, and known colloquially as a 'run-away'. Such events are clear and distinct from all other types of SPAD.

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