ORR protects the interests of rail and road users, improving the safety, value and performance of railways and roads today and in the future

OFFICE OF RAIL AND ROAD

Track – Strategic Risk Priority Chapter update

Richard Thomas

RIHSAC

18th February 2020

Track Strategic Risk Priority Chapter

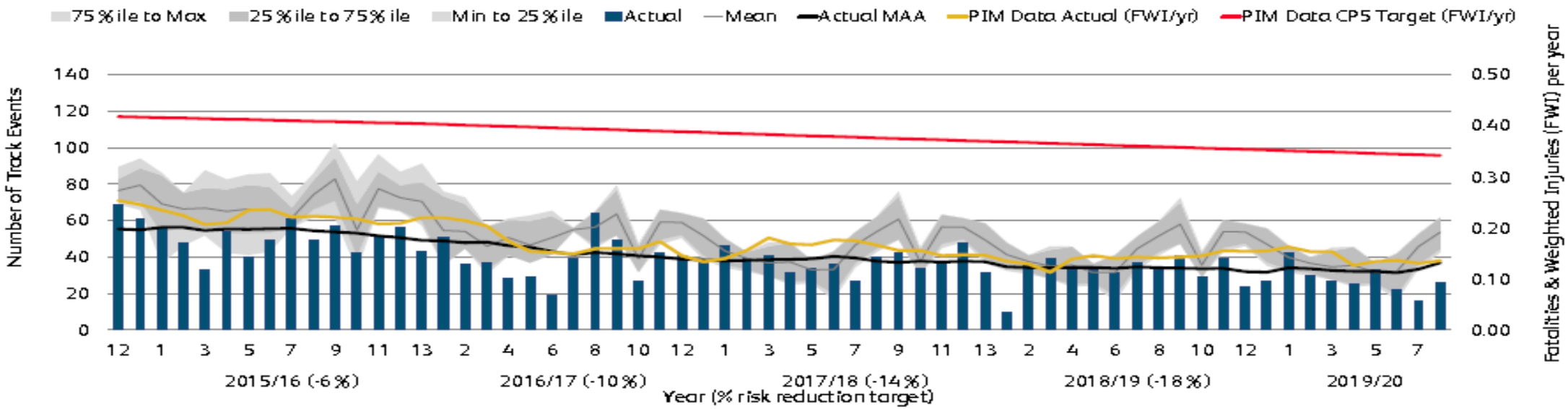
- Background
  - The current version of the track chapter was drafted in 2016 and was a new document focussing specifically on the track asset. (Previously part of an infrastructure chapter)
  - It was a ground up review of our strategy and approach to the track asset and reflected ORRs increased focus on the track asset through the Track Project Team
  - Consequently we considered that a fundamental revision of the document was not required but a refresh and update would be beneficial to reflect change over the last 3 years
  - The risk landscape in relation to track is one of evolution with gradual, and currently sustained improvements in performance, but with challenges on the horizon.

Track Strategic Risk Priority Chapter

- Key Challenges ahead
  - Network Rail – Putting Passengers First and devolving of responsibilities from the centre to the regions
    - Need to ensure that each region, as it takes up these devolved responsibilities, maintains the focus on safety management to ensure the gains made to date and the process of continuous improvement are sustained. -- Relevant for track and lineside assets
  - TFL - The funding challenges to renewals & maintenance budgets; the maintenance modernisation programme; and the ongoing transformation programme provide challenges to the management of the track asset moving forwards.

Track Risk – recent trends

Track System PIM Control Chart- One Period in Arrears

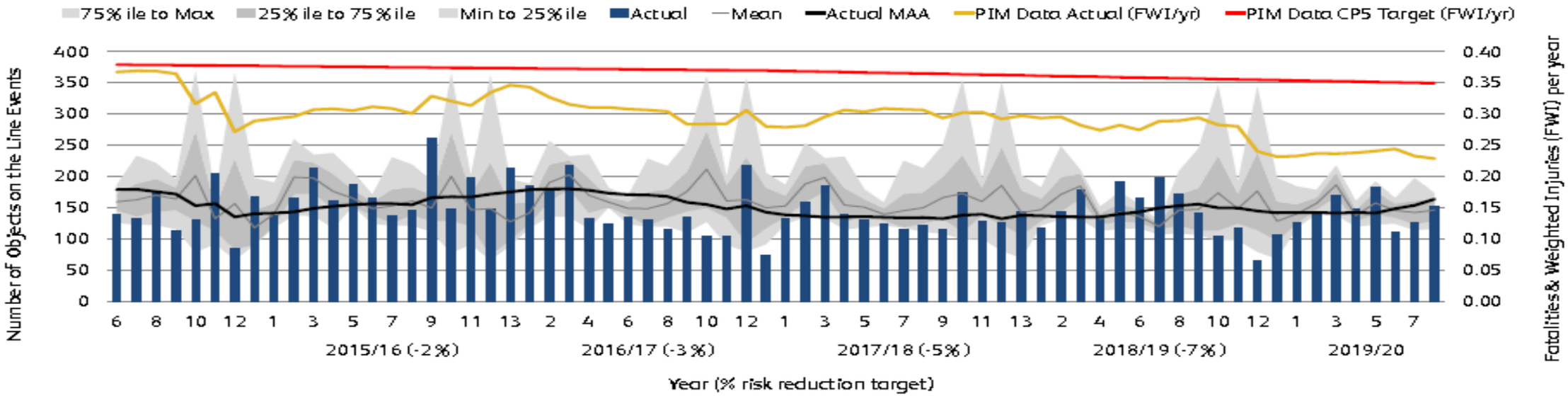


Commentary

The risk from track system events in terms of 20+ rated wrongside failures continues to be significantly better than the risk reduction target trajectory. This improvement reflects an increased focus on reducing the number of TSRs, rail defects and cyclic top sites. Following a substantial year on year increase, track geometry faults (a major constituent of this composite measure) have gradually reduced when compared to the corresponding periods last year and remain relatively stable. Also, the number of wrongside track events is fluctuating within an increasingly narrower range which suggests that an overall improving trend has resumed. Performance continues to be monitored closely and all routes have developed, and are implementing, plans during 2019/20 to target further reductions in the number of rail defects, track twists and other geometry faults.

Lineside Risk – recent trends

Objects on the Line PIM Control Chart- One Period in Arrears



Commentary

Overall incident numbers and risk levels are materially lower than those recorded at the exit from CP4 and remain below the risk reduction trajectory formulated at the end of CP4. Whilst there has been improvement attributable to an overall decrease in the number of reported events involving animal incursions and passenger trains striking fallen trees this has been undermined by the substantial increase in flooding events particularly in Periods 3, 5, 7 and 8 where they were at their highest level since Period 3 2016/17. The number of reported flooding events in Periods 8 alone was nearly as great as the total for the whole of last year and the highest period total for over 10 years.

Track Strategic Risk Priority Chapter

- Key changes made to Chapter 6:
  - Clearer separation between track and lineside assets
    - Reflects the different risk profiles and maturity of asset management processes, and work being done on the mainline
  - Updating figures on performance
  - Updating tables showing risk data and trends
    - Note the caveats on some of the data

Track Strategic Risk Priority Chapter

- Key changes made to Chapter 6:
  - Recognition of the improving management of the mainline track asset
    - Reflects the ongoing work on managing track geometry faults, and the improving KPI performance
    - Recognises the increasing use of technology and analysis tools to support management of the asset
      - EC testing for RCF
      - TIGER for track geometry data analysis
      - DST to help in decision making

Track Strategic Risk Priority Chapter

- Approach going forwards
  - Keep attention on Network Rail to ensure ongoing improvements maintained
    - Impact of PPF – regions approach to track and lineside assets
  - Some shift of track expertise/resource to other dutyholders – in particular
    - LUL – limited in depth work to date on management of the track asset
    - Trams – management of the track asset – starting with their ballasted track
    - Channel Tunnel follow up plain line issues and move on to S&C

Track Strategic Risk Priority Chapter

- **NEXT STEPS:**

- RIHSAC consultation & presentation - Today
  - Comments from RIHSAC members by CoP 25 February
- 10th March - Review by PolCo
- 23rd March - Fully revised Chapter to HSRC for discussion and agreement.

Any questions, comments, observations?

Rail Accident Investigation Branch

RAIB's Annual Report for 2019

Presentation to the Railway Industry Health and Safety Committee

Simon French
Chief Inspector

February 2020

RAIB activities in response to its preliminary examinations

Themes and issues

Protecting track workers from trains

Protecting track workers from trains

Accidents during 2019

- Two track workers struck and killed by a train at Margam, south Wales, 3 July

Narrowly avoided accidents investigated by RAIB during 2019

- Near-miss with group of track workers, at Kirtlebridge, Dumfries and Galloway, 14 Nov

Reports published during 2019

- Near-miss involving a lookout near Peterborough (04/2019)
- Near-miss involving two track workers applying AC earthing straps, near Sundon (safety digest 05/2019)
- Near-miss involving a track worker at Ynys Hir, Ceredigion (safety digest 06/2019)
- Track worker struck and killed by a train at Stoat's Nest junction, south London (07/2019)
- Near miss involving a track worker removing a DC earthing strap near Gatwick (12/2019)
- Interim report into the death at two track workers at Margam (IR/01)

Protecting track workers from trains

Issues still to be fully addressed	Reports in 2019	Reports in previous years (selected)
Equipping site leaders with the skills needed to set up and maintain safe systems of work	Margam (ongoing)	04/2008 (Ruscombe), 16/2012 (Stoats Nest), 07/2017 (Class inv), 11/2018 (Egmanton)
Ensuring that safety leadership roles on site are correctly understood and applied	IR1/2019 (Margam)	20/2018 (South Hampstead)
The management of contingent labour	07/2019 (Stoats Nest)	21/2013 (Saxilby)
Reducing the risk to possession protection staff	07/2019 (Stoats Nest)	21/2008 (Reading East), 16/2017 (Camden Junction South)
Enabling safe access to infrastructure for maintenance	04/2019 (Peterborough)	07/2017 (Class inv)
Improved implementation of lookout protection	04/2019 (Peterborough)	07/2017 (Class inv)
Ensuring planned systems of work that are fit for purpose	04/2019 (Peterborough), 12/2019 (Gatwick)	07/2013 (Roydon), 20/2013 (Bulwell), 05/2017 (Shawford), SD11/2018 (Dundee)
Management assurance (monitor, audit, review and management information)	Margam (ongoing)	01/2015 (Newark), 05/2017 (Shawford), 07/2017 (Class inv)

Death of two track workers at Margam East Junction, 03 July 2019

- Our interim report was published on 05 Dec 2019

- The ongoing investigation will encompass:
  - the factors that influenced the attitudes, behaviours and actions of those immediately involved
  - the suitability of the planned system of work, how this was understood by those involved, and any alternatives that might reasonably have been adopted
  - enabling sufficient track access for maintenance activities, and minimising the need for work activities on lines that are still open to traffic
  - management assurance, including the processes for auditing the value and effectiveness of the management systems, at local, route and national level
  - actions of the industry to reduce the occurrences of accidents and near misses involving track workers in the years leading up to the accident
  - the findings of previous RAIB investigations into track worker accidents and near misses on Network Rail infrastructure, and of the actions taken in response to previous RAIB recommendations

The management of stranded trains

The management of stranded trains

Reports published during 2019

- Self-detrainment of passengers onto an electrically live line following stranding of a train near Lewisham, followed by mass strandings of other trains (02/2019)

- Self-detrainment of passengers onto a line following train failure near North Pole junction, west London (safety digest 09/2019)

Other reports in recent years

- Detrainment of passengers onto an electrically live line following a train failure, Peckham Rye, south London (16/2018)

The management of stranded trains

Issues highlighted in 2019

- Training of drivers in responding to faults and managing incidents
- Equipping signallers and controllers with the skills needed to support drivers and manage incidents effectively
- Earlier recognition that a delay needs to be treated as a safety incident
- Rehearsing the skills that are needed to manage incidents
  - effective communication under pressure
  - quality of decision making
  - customer focus
- Increased use of simulations and exercises
- Equipment and processes to ensure better coordination between control centres
- Getting additional staff to trains to assist management of the situation

Safety at the platform train/tram interface

Reports published during 2019

- Dangerous train dispatch at Elstree and Borehamwood (03/2019)
- Passenger falling from a platform as tram departed, at Ashton-under-Lyne tram stop (15/2019)

Safety at the platform train/tram interface

Issues highlighted in 2019

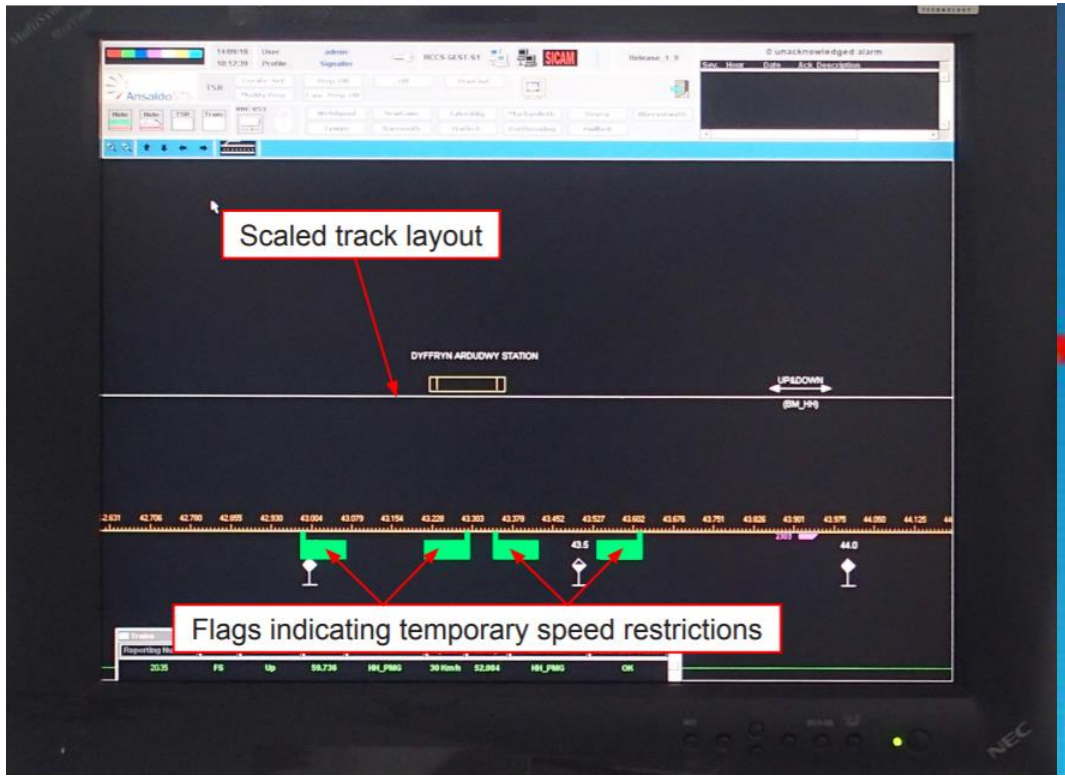
- Some dispatchers continue to rely on the door interlock rather than a final safety check

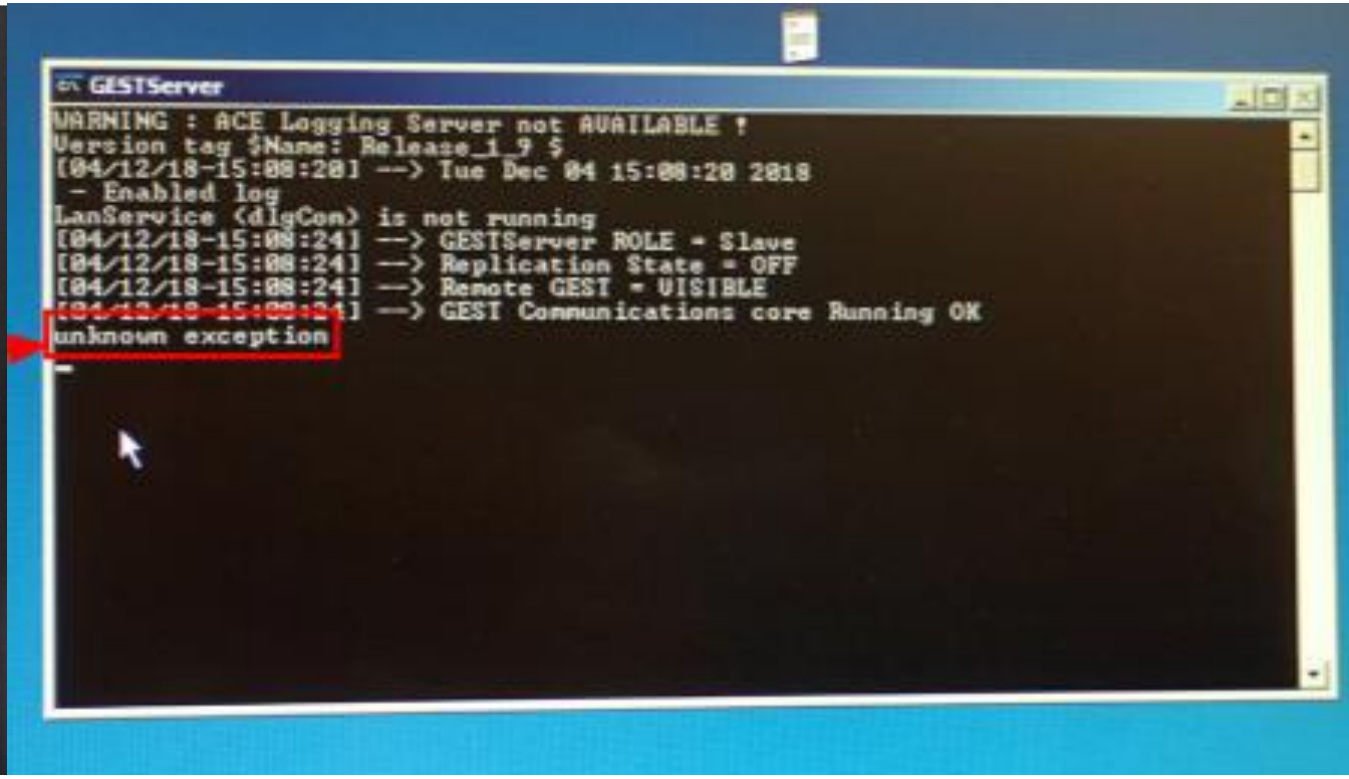
- Continued concern about the management of the PTI on tramway systems

- Humans can find it difficult to effectively monitor repetitive automatic functions such as the operation of train doors. RAIB is recommending further work to:

    - improve detection of trapped objects
    - the use of ‘smart’ technology to spot dangerous situations and warn dispatchers

Safety of high integrity software based systems





Safety of high integrity software based systems

Incidents during 2019

- Loss of safety critical signalling data on the Cambrian Coast line (17/2019)
  - undetected loss of safety related data following a system reboot ('rollover')
  - vulnerability of the system to a single point of failure was neither detected nor corrected during design, approval and testing phases of the Cambrian ERTMS project due to:
    - insufficiently defined software requirements
    - inadequate hazard analysis and validation processes
    - absence of documented safety justification for the generic product

- Mass strandings of Class 700 trains, 9 August, following drop in National grid frequency
  - unintended consequence of software modification

RAIB

Safety of high integrity software based systems

Areas of recommendation

- Development and implementation of a mandatory safety assurance procedure (and associated guidance) for clients of projects involving installation and modification of high integrity software-based systems

- Improved supplier safety assurance process (translation of software safety requirements into the design and validation processes)

- Improved capture and dissemination of safety learning through the reporting and systematic investigation of complex software-based system failures

Other issues of note

Audibility of tram horns (warnings to pedestrians)

- Fatal accident at Saughton foot crossing on the Edinburgh tramway (09/2019)

Managing the risk of excess speed at emergency speed restrictions

- Over speeding incident at Sandy, on the East Coast Main Line (10/2019)

Protection of trains from large, low and slow-moving vehicle movements at user worked crossings

- Dangerous occurrence at Bagillt level crossing (11/2019)

Managing the risk of fog at footpath and user worked crossings

- Fatal accident at Tibberton level crossing (13/2019)

Managing the risk to passengers who lean out of train windows

- Fatal accident to a passenger at Twerton, near Bath (14/2019)

Other RAIB activities

- Rail Investigation Good Practice Seminar, in Birmigham (Nov)
- RAIB contribution to the RAC Foundation's Road Collision Investigation Project
- Support to the Danish Accident Investigation Board following the accident on the Great Belt Bridge which resulted in the death of 8 passengers, on 2 January

Thank you for your attention

The purpose and value of annual reporting

RIHSAC meeting 18/02/2020

“ORR protects the interests of rail and road users, improving the safety, value and performance of railways and roads today and in the future”

The challenge

- RIHSAC has challenged ORR on the transparency and coherence of its published corporate plans and reports
- *It is reasonable for there to be continuity between the plan and the report and for the report to answer questions such as:*
  - *Were plans delivered as intended; if there was change, what was it, and why did it change?*
  - *Were objectives achieved; if not what happened and what was learned?*
  - *Were plans effective?*

Our annual publications

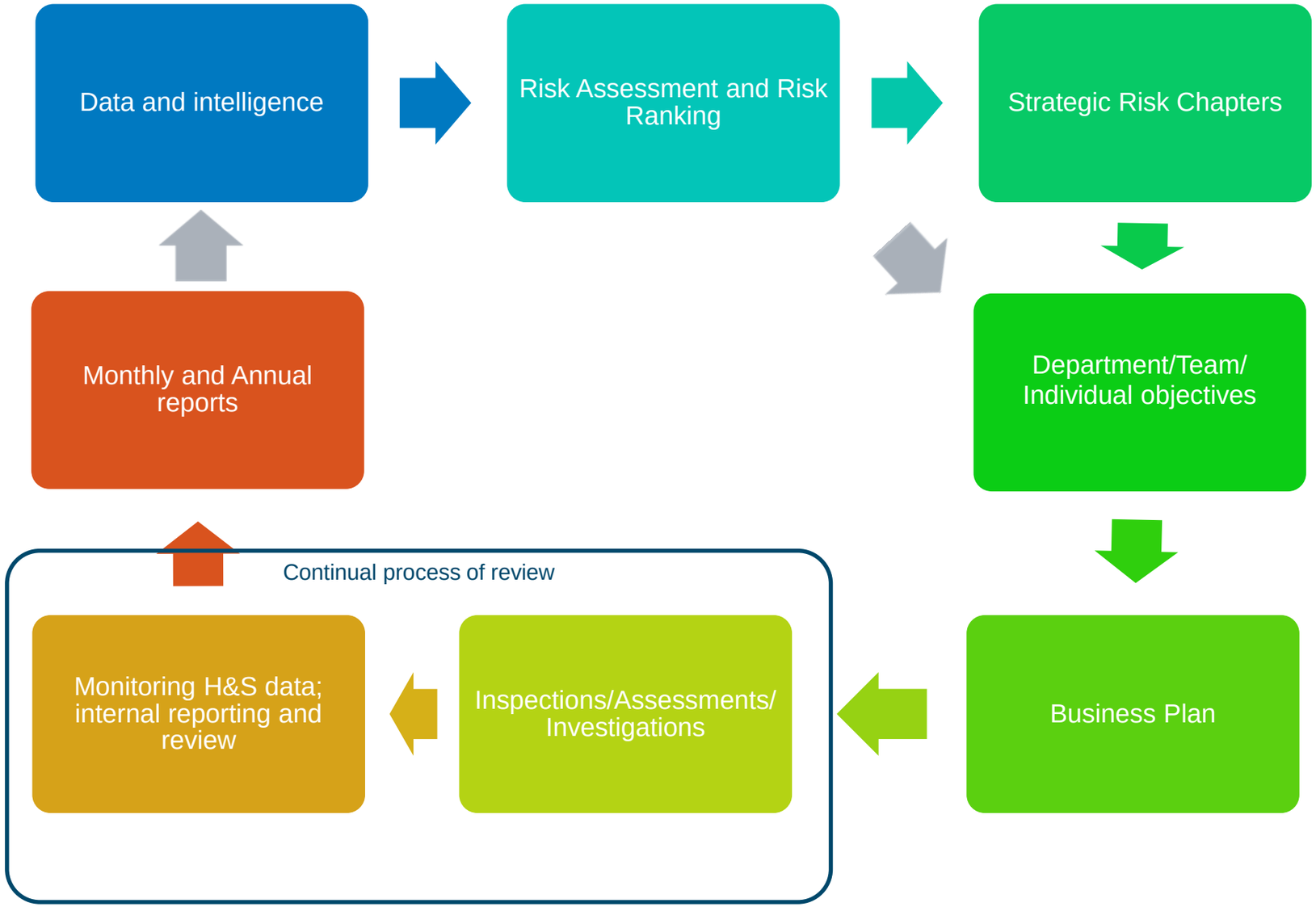
- **Business Plan**
  - Developed during February/March. Published April
  - Sets out our strategic objectives and our overall approach
- **ORR Annual Report**
  - Published and laid before Parliament in June/July
  - Reports specifically against previous year's high-level business plan commitments.
- **Annual Report of Health & Safety Performance**
  - Developed during March/April/May/June. Published July
  - Reports in detail on our health and safety activities and our assessment of the industry's performance

Report hierarchy

The purpose of public reporting

- Meeting our duties and our commitments towards transparency
- Informing stakeholders of:
  - Our own performance and activities against our strategic objectives set out in our Business Plan (Health & Safety, Better Rail Customer Service, Value for Money from the Railway and Better Highways)
  - Our assessment of the industry's performance against targets and objectives set by us
  - Signalling our priorities and the evidence supporting them
- Setting objectives and making commitments for ourselves and the industry for the forthcoming year
- An opportunity to reflect, take stock and reset priorities if required (see slide 9)

Planning and reporting cycle



Content and timing

- Priorities selected and activities planned based on annual Risk Assessment and Risk Ranking (RARR) and Strategic Risk Chapters
- Business plan captures these at a high level.
- Business plan objectives and commitments cascade into actual activities delivered and monitored through:
  - Department/team/individual objectives
  - Inspection plans
- Evidence to support the annual reports' conclusions is sourced from intelligence and data gathered over the previous 12 months' activities including:
  - H&S data (e.g. RIDDOR, SMIS)
  - Inspection findings
- The same evidence is also a key input to the next annual RARR, informing selection of priorities and the next year's plan. And so on.

Assessing performance

- Assessment of ours and the industry's performance is a year-round activity:
  - Inspections
  - RM3 assessments
  - Statutory work (e.g. ROGS assessments, vehicle authorisations)
  - Monitoring of data
  - Incident investigations
  - Department/Team/Individual work plans and objectives
- Month-by-month updates provided in the monthly H&S reports to our Board
- Culminates in an annual H&S report

Dynamic environment

- Safety risk is always changing
  - Control of current safety risks improves or deteriorates
  - New risks emerge
  - Events happen
- Our approach must be sufficiently flexible to react to changes in risk
- Our priorities and objectives can and do adapt throughout the year
- It is foreseeable that the activity reported in the annual reports may differ from what was planned in the Business Plan made 17 months previously

Areas for improvement

- Although the work we carry out is consistent with the objectives and commitments made in our Business Plan, the way we report performance is not always consistent
  - Our annual reports and Business Plan should at least address all the objectives and commitments in the previous year's reports/plans
  - Using more consistent language will help readers recognise continuity
- When our priorities change in-year we do not always explain this in our reports
  - We should report on whether the objectives in the business plan have been delivered (or not) and if they have been amended
- Our work to improve our data and intelligence should improve our ability to predict and plan for in-year changes

Overview of Data Project

2018 RARR= Managed

2019 RARR= Standardised

2020 RARR= Predictable

2021 RARR= Excellent

Continuous improvement to risk priority and planning process

Y1 (to Sept 19)

- “A process which ensures we use all the data we’ve got”
- Feedback from Ops Div on RARR process and outputs
- Improved RARR process document including agreed monitoring and comms arrangements, better record keeping, greater transparency
- Phase 1 of AI workstream: proof of concept study

Data improvement programme

Y2 (to Sept 20)

- “Improving the usability of the data we’ve got”
- Standardisation of data inputs to RARR: re-engineering the algorithm, common terminology, storage, templates, meta data
- Monitoring / assurance of Y1 RARR-based plans
- RARR and SRC processes enshrined in QMS and further enhanced based on monitoring lessons and quick wins from Phase 1 of AI work implementation

Analytics / AI

Y3 (to Sept 21)

- “Best in class analysis of our data”
- Development, testing and adoption of AI tools to analyse standardised data
- AI-driven RARR, aligned to SRCs, becomes BAU
- Determine regulatory impact monitoring feasibility

Stranded trains/passenger self-evacuation - RIHSAC

Phil Barrett

18 February 2020

Rail Delivery Group

National Rail

Items to be covered

- Purpose of presentation
  - To report on Industry stranded trains programme, including how RSSB's self- evacuation report and its findings will be addressed by the programme
  - This is a Network Rail activity supported by RDG
- Items covered
  - What the programme is doing
  - RSSB – S341 – Understanding and Preventing Passenger Self evacuation – Knowledge Analysis – (S341)
  - How the programme takes the work into consideration

What are the Programme Objectives?

- To minimise number/duration of events where customers stranded on trains across the industry to:
  - Improve safety and performance
  - Improve customer service
  - Reduce reputational damage

- To provide consistency of approach across the industry by embedding good practice

This is in response to number of high profile incidents and ORR priority for Network Rail and Industry hence is a joint activity

Linked to both control management and Emergency Planning

Stranded Train Review- Summary of interviews so far!

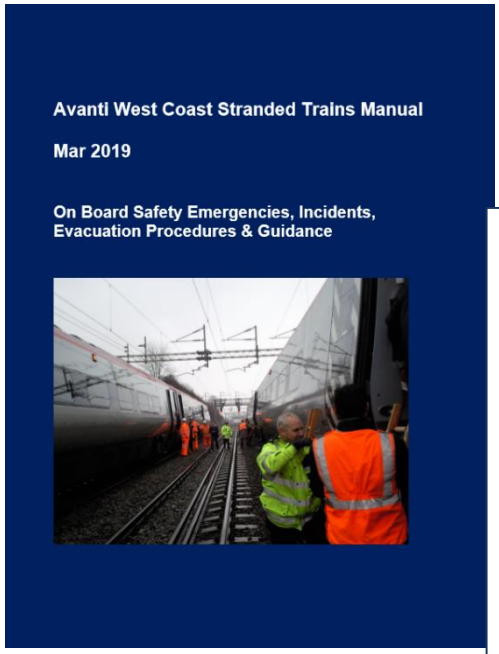
Rail Delivery Group

National Rail

BRITAIN RUNS ON RAIL

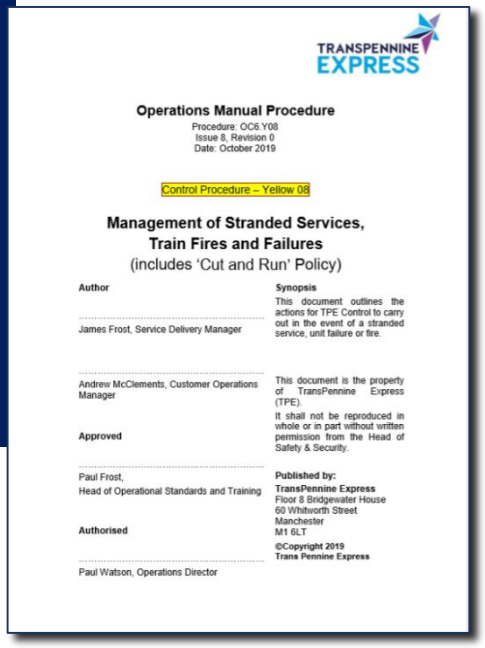
- Interview session using templated form
- 12 TOCs interviewed so far
  - Control, Safety and Emergency Planning leads
- All 5 NR regions interviewed
  - 15 different people of varying roles
- Reviews in planning stage for remaining organisations
- All organisations have found it useful
- One owning group undertaken an independent review

NetworkRail


Avanti West Coast Stranded Trains Manual

Mar 2019

On Board Safety Emergencies, Incidents, Evacuation Procedures & Guidance


TRANSPENNINE EXPRESS

Operations Manual Procedure

Procedure: OC6.Y08
Issue 8, Revision 0
Date: October 2019

Control Procedure – Yellow 08

Management of Stranded Services, Train Fires and Failures
(includes 'Cut and Run' Policy)

Author

James Frost, Service Delivery Manager

Andrew McClements, Customer Operations Manager

Approved

Paul Frost,
Head of Operational Standards and Training

Authorised

Paul Watson, Operations Director

Synopsis

This document outlines the actions for TPE Control to carry out in the event of a stranded service, unit failure or fire.

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Manchester
M1 6LT

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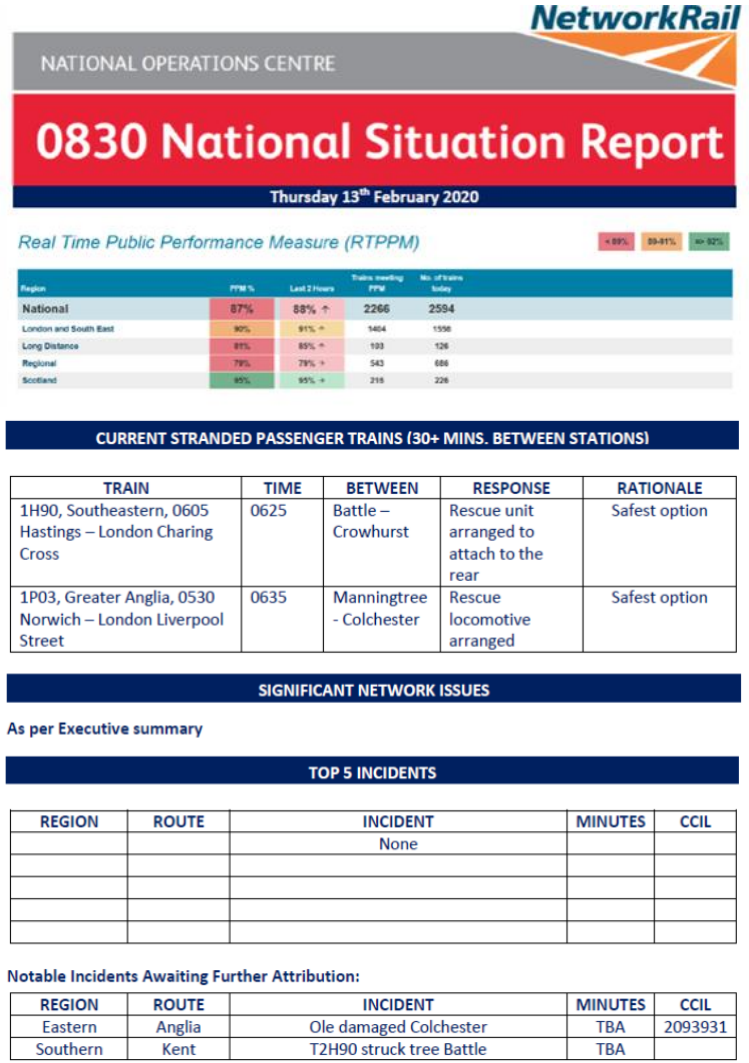
Review feedback

- Cultural change and is about people not moving trains
- Training is a focus for all –continuous improvements
- Information share needed – event and portal
- Update to SP01 Guidance note requested by most – simplification
- Equipment has been deployed and is being developed
- Communications – customers and staff improved but more wanted
- Post Incident reviews need cover performance/safety customer service
- Lack of coordinated processes between TOCs and NR.
- Lack of clear focus for stranded trains, i.e. no single point of contact.
- Good practice in many of the TOCs and Routes across different areas

What has been done so far?

- Bow tie on stranded trains
- Network Rail/RDG programme – governance/interdependencies
- Lewisham good practice sharing
- Surveys with TOCs and routes progressed – some still to complete
- Industry awareness and engagement – Workshop in January
- Stranded Trains risk now in EWAT and on NOC National Operations Centre updates



NetworkRail

NATIONAL OPERATIONS CENTRE

0830 National Situation Report

Thursday 13th February 2020

Real Time Public Performance Measure (RTPPM)

Region	PPM %	Last 2 Hours	Trains meeting PPM	No. of trains today
National	87%	88% ↑	2266	2594
London and South East	90%	91% →	1404	1558
Long Distance	81%	85% →	103	126
Regional	79%	79% →	543	686
Scotland	95%	95% →	216	226

CURRENT STRANDED PASSENGER TRAINS (30+ MINS. BETWEEN STATIONS)

TRAIN	TIME	BETWEEN	RESPONSE	RATIONALE
1H90, Southeastern, 0605 Hastings – London Charing Cross	0625	Battle – Crowhurst	Rescue unit arranged to attach to the rear	Safest option
1P03, Greater Anglia, 0530 Norwich – London Liverpool Street	0635	Manningtree - Colchester	Rescue locomotive arranged	Safest option

SIGNIFICANT NETWORK ISSUES

As per Executive summary

TOP 5 INCIDENTS

REGION	ROUTE	INCIDENT	MINUTES	CCIL
		None		

Notable Incidents Awaiting Further Attribution:

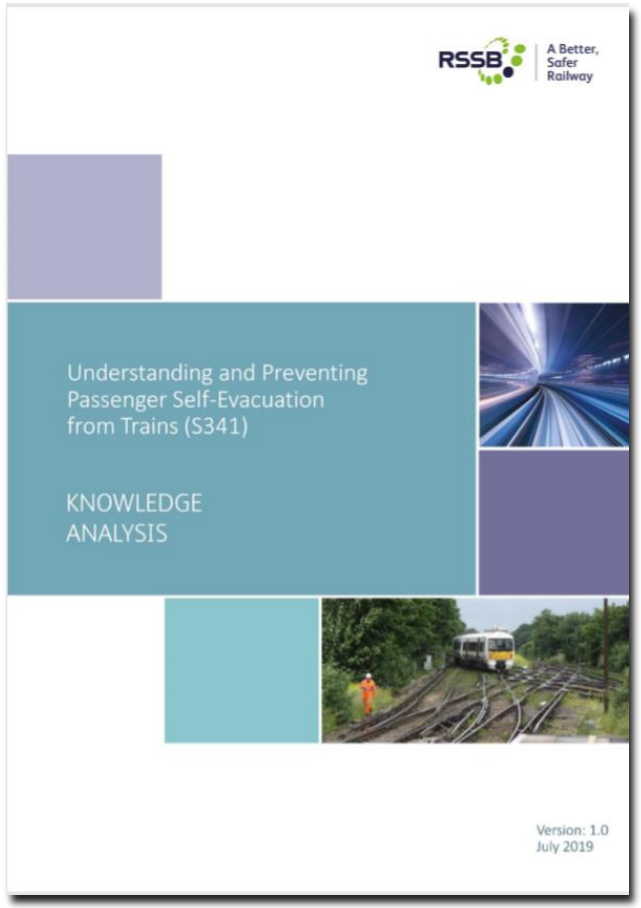
REGION	ROUTE	INCIDENT	MINUTES	CCIL
Eastern	Anglia	Ole damaged Colchester	TBA	2093931
Southern	Kent	T2H90 struck tree Battle	TBA	

What are items in progress/to do

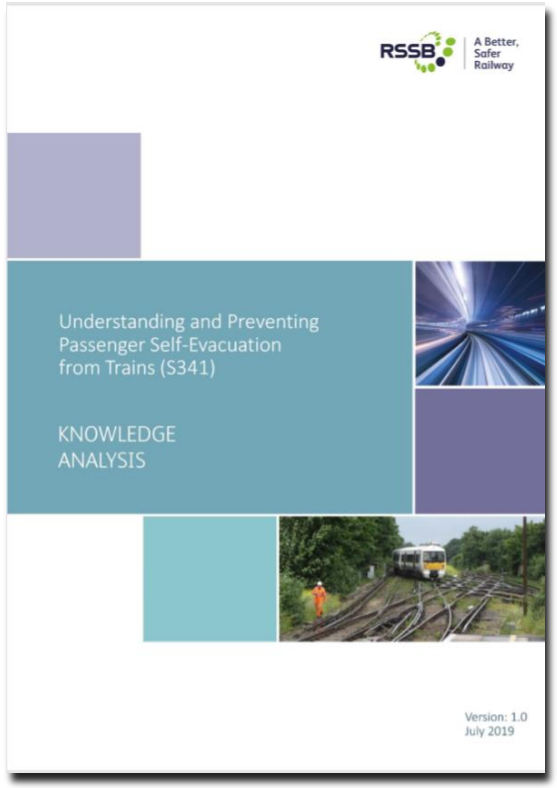
- Review, update documentation
  - NR/ RDG Guidance Note SP01- March/April
  - Network Rail Operating Procedures March/ April
  - RDG Key Train requirements document – May
- Review training with aim to provide tools for industry
  - Develop a RSSB RED briefing on Stranded trains
  - Workshop on Work on outputs
  - Materials provided end of year
- To update the new Network Rail Incident Management system
  - May/June start
- Communications strategy and includes
  - Share best practice with a colloquium/event in April/May
  - Portal for sharing information
  - Other events/communication

Understanding & Preventing Passenger Self evacuation – Knowledge Analysis

- RSSB – S341 – Understanding and Preventing Passenger Self evacuation – Knowledge Analysis – (S341)
- This was a knowledge search – July 2019
- Aim to identify any information that may influence passengers to self-evacuate in the event of a stranded train
- Key input was RSSB research projects that on passenger behaviour models to predict when a passenger will decide to self-evacuate
  - T626 – Research into the Management of Passengers on Stranded Trains in High Ambient Temperatures
  - T1065 – Identifying and Developing Good Practice in Making On-Train Announcements in the Event of an Incident



Understanding & Preventing Passenger Self evacuation – Knowledge Analysis



- Key factors influencing passenger behaviour were identified:
  - Onboard conditions- heat/light/toilets/facilities
  - Traincrew communication -
  - Other sources of information/social media
  - Other passenger/group behaviour
  - Passenger circumstance
  - Nature of the event
  - External conditions
- These are all covered in the GN SP01 and referenced

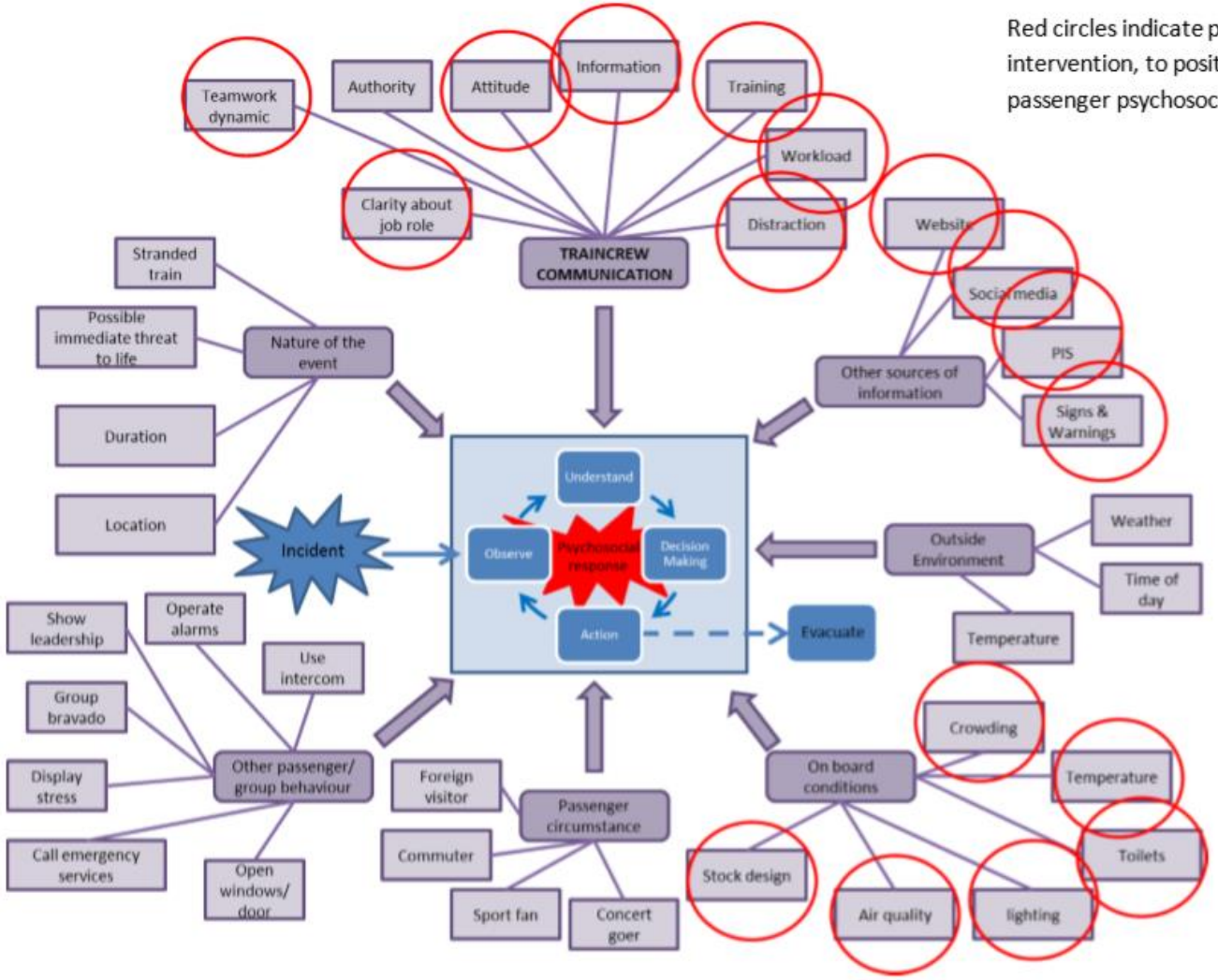


Figure 1 – Model of passenger behaviour and the underlying factors that influence this behaviour (T1065)

Understanding and Preventing Passenger Self-Evacuation from Trains (S341)

Self evacuation factor mapping

Individual	Organisational
• Misperception of hazards • Perceived low likelihood of detection • Perceived immunity from consequences and decisions • Able Bodied • Male passengers are more likely to try to escape than females	• Low staff to passenger ratio • No established authority • Poor information provision
Environmental	**Task/Scenario**
• Unacceptable temperature • No availability of basic needs • Positive external conditions • Destination in sight • Evacuation route visible	• Long delay • Crowded • Group pressure to evacuate • Shortage of time – perceived or actual • Complex procedures

Violation shaping model

- However knowledge search highlights
  - Trust of the rail company is important and part of wider information strategy
    - linked to wider factors
    - Front line staff are key
    - The need to be more flexible – needs to be reflected in guidance
  - Social media – increased focus
    - Planned to be part of information share
  - Understanding group behavior
    - Part of training activity
  - Development of personalised messaging
    - part of customer information strategy
  - Embedding the knowledge is key

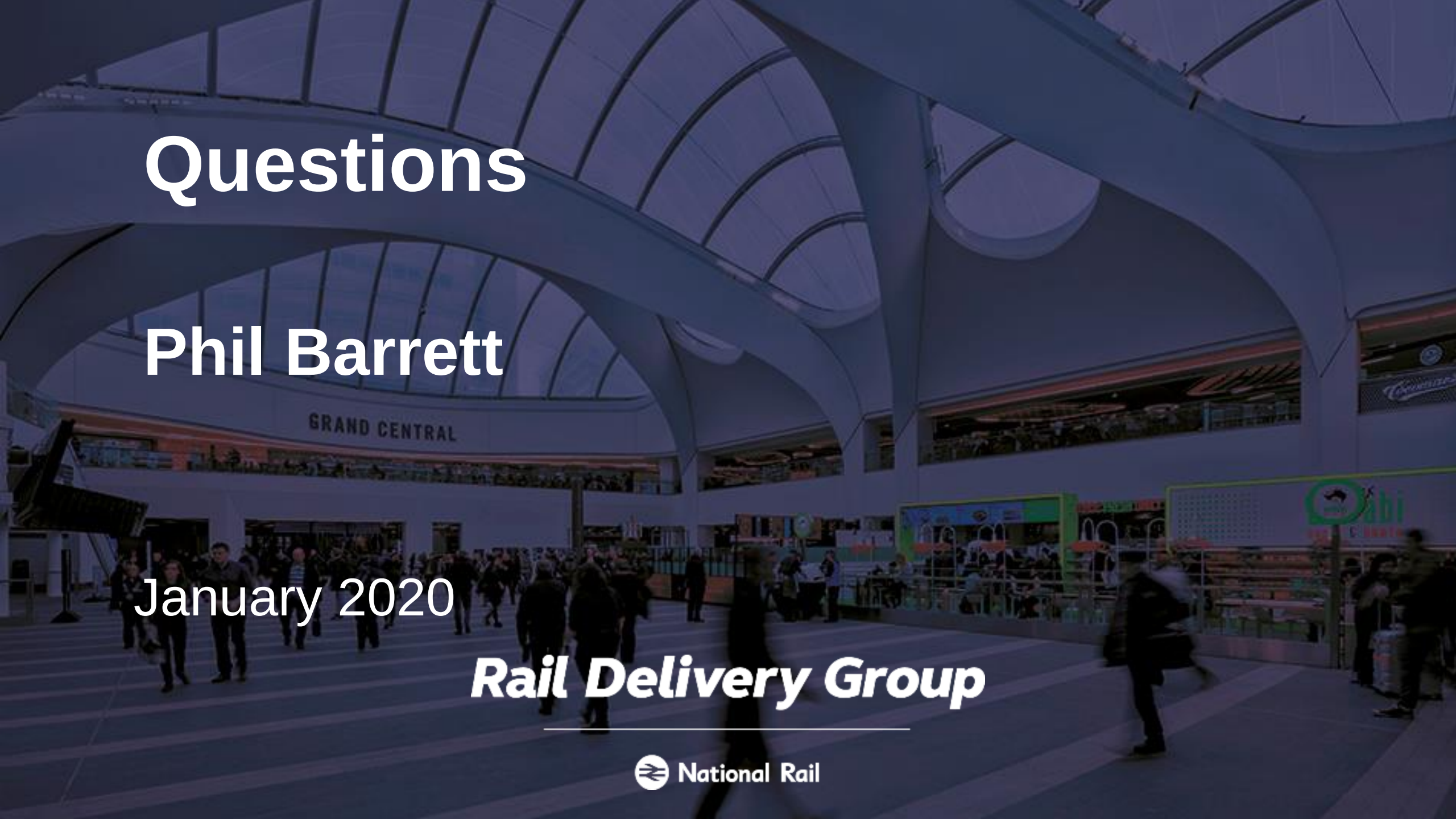
Our Vision

*Enable **Timely, Accurate, Personalised** information to support the end-to-end customer Journey*

Stranded Passenger/trains conclusions

- Stranded trains will continue to be a challenge
- The industry is coming together to work on improving industry tools and sharing good practice
  - The reviews have shown arrangements have developed
  - More support and sharing of good practice is required
- Understanding & Preventing Passenger Self evacuation – Knowledge Analysis
  - Most of the items covered have been incorporated into the guidance
  - remaining items to be picked up as part of Customer Information Strategy and the Stranded Train work
  - Embedding the knowledge is key

Aim is to reduce this risk



Questions

Phil Barrett

January 2020

Rail Delivery Group

National Rail