

[REDACTED]

19th September 2019

Dear [REDACTED]

Rise in Signals Passed at Danger (SPaDs) and the Resources Allocated to Mitigate SPaD Risks

I am writing to highlight concerns that I have recently discussed with the RSSB Board regarding the rise in SPaDs since autumn 2018, and the underlying risk from SPaDs in general. The RSSB Board share this concern. The rise in SPaDs is identified in the 2018/19 RSSB [Annual Health and Safety Report](#) and [ORR's Annual Health and Safety Report of Performance on Britain's Railways](#) for the same period.

As the ORR report states, *"The risk from SPADs has been at historically low levels in recent years, with sustained industry focus on the management of driver competence and fitness following the accidents at Southall and Ladbroke Grove in the late 1990s... The numbers are small and it is too early to see if this is a significant trend, but this is clearly not an area where ORR or the industry can be complacent."*

In writing this letter, which I am sending to all duty holders I also wish to highlight what the industry is doing to manage the risks from SPaDs, and to ask you consider whether this level of effort and resource is commensurate with the risk.

The SPaD concern

The RSSB [Signals Passed at Danger Reports and Data](#) confirms that there were 41 SPaDs reported to RSSB for July 2019. This is the highest recorded number in a single calendar month since October 2007. Most Network Rail routes experienced a higher number of SPaDs throughout July when compared to the average in the same month in the previous five years. Fully 11 (27%) of July's SPaDs were at signals that either were multi SPaD at the time of the incident or became multi SPaD as a result of the incident. Over the last three years the average proportion of SPaDs which occur at multi SPaD signals has been 21%.

RSSB data also shows that:

- Since 1999, the RSSB [Precursor Indicator Model \(PIM\)](#) shows that the industry has reduced SPaD risk from around 7 Fatalities and Weighted Injuries per year (FWI/year) to the current (2019) value of less than 1 FWI/year.
- In most cases the train passing the signal goes a short distance past the signal. However, of the over 300 SPaDs accruing each year during the past decade, about 60% have the potential for there to be a train collision involving a passenger train, if the train was to continue to the first conflict point. Only a small proportion of these reach the conflict point due to systems like the Train Protection & Warning System (TPWS) where fitted, helping to prevent this. The long-term historical average (last five years) of such events is around four to five. In fiscal year 2018/19 there were seven and between September 2018 and August 2019, there were 10.

- The effect of this trend can clearly be seen in the SPaD risk indicator as it is heavily influenced by SPaDs with potential for passenger train collision which reach or cross the conflict point. Between April and May 2019, the SPaD risk indicator, as measured using the outputs from the SPaD [Risk Ranking \(SSR\) tool](#), increased from 67 to 79% of the September 2006 baseline. This is the second notably large increase this year (2019). Between January and February 2019, the indicator rose from 50% to 68% of the September 2006 baseline, the largest recorded increase in a single month (since 2006). The figure for the latest month (August) is 81%. The SPaD risk indicator has not been this high since September 2014, when it was 83% of the baseline.

What is industry doing to address the SPaD concern?

Ladbroke Grove, and the Southall accident two years earlier, called into question many of the railway's safety management systems at the time. Since the 1999 tragedy the rail industry has made significant advances in attitudes, culture and behaviours. Yet, it has never been more important to highlight and champion the role of railway safety.

In the attachment to this letter I have summarised example risk mitigation initiatives led by Network Rail, RSSB, and other industry groups. These include:

- Work undertaken by Network Rail as part of the Train Protection Review (TPR) to identify and assess interim train protection system enhancements that could be deployed on the GB rail network as part of a migration strategy supporting the implementation of ERTMS.
- A recently initiated RSSB project to restructure the [SPaD Risk Reduction Strategy](#) to enable the industry to better apply best practice, contribute to more effective risk management, and to monitor the strategy's implementation. The project includes the creation of an online toolkit that would enable users to quickly identify the resources relevant to them and to track the usage penetration and uptake of the toolkit via the RSSB website.
- The [Red Aspect Approaches to Signals](#) (RAATS) toolkit is due for launch later in the autumn and will enable estimates of the number of times signals are approached at red to be made available. This tool complements the good practice guidance in the industry SPaD strategy and contributes towards the overall aim of better SPaD risk management.
- Project T1169 - Review of the Uff-Cullen Recommendations Related to Train Protection Systems – was sponsored by the Train Protection Strategy Group (TPSG) and recently published. The project provided an assessment, based on industry consultation, on the close-out status of the Uff-Cullen Recommendations concerning train protection.

A key finding from the T1169 work was that 90% of industry stakeholders consulted believed that the implementation of the European Train Control System (ETCS) has not occurred as originally expected, and around two-thirds expressed the opinion that cost (affordability) has been a barrier to full ETCS rollout. The consensus was that TPWS is likely to continue to play a key role in mitigating SPaD and overspeed risk for the foreseeable future, possibly complemented by a range of other mitigation measures to further reduce risk.

This leads me to ask if the multitude of SPaD risk control measures industry has in place now, or is in the process of developing as alternatives to the immediate availability of ETCS across the major part of the GB rail network, can collectively reduce risk so far as is reasonably practicable to an acceptable level? I believe that it would be difficult to provide a robust answer to this question without further in-

depth analyses into the overall effectiveness of what the industry is currently doing/planning to do to reduce risks from SPaDs versus the safety benefits derived from a much earlier rollout of ETCS.

Is what industry doing enough; if not, what else should be done?

On 23 October 2019 RSSB will host a Parliamentary reception to mark the twentieth anniversary of the Ladbroke Grove rail accident, sponsored by the Chair of the Parliamentary All-Party Group for Rail. This poignant anniversary gives us pause to take stock of what we are doing to address SPaD concerns and to ask, is this enough or should more be done?

As a follow-up to the Parliamentary reception, over the next few weeks, I will be contacting you as part of a series of consultations to review and record the industry position on the following questions:

1. Are the collective actions and initiatives being progressed by the industry enough, so far as is reasonably practicable, to reduce SPaD risks to an acceptable level and can we evidence this?
2. Should an ETCS, automatic train protection preventable train accident occur, what would be the implications for the industry, given the close-out of the Uff-Cullen recommendations?
3. What additional actions should the industry take collaboratively to expedite the development and provision of improved and more advanced train protection in a sustained manner, realising wider benefits along the way?

Recommendation

During our discussion I will propose that research be conducted by RSSB on behalf of the industry to help form a clear view on whether the various SPaD risk-controls currently in place provide sufficient safety benefits equivalent to, or exceeding those provided via a much earlier rollout of ETCS on a significant proportion of the network. Moreover, should there be delays in the full implementation of ETCS to well beyond CP7, would this negate or reverse the assessed safety benefits from the existing SPaD risk mitigations?

The sponsor for this research should be the Train Accident Risk Group (TARG) and the outcomes reported and discussed at the industry's top-level health and safety meeting (IHSM).

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Mark Phillips', written in a cursive style.

Mark Phillips

Chief Executive Officer

cc Ian Prosser ORR
Jeremy Hotchkiss DfT
Polly Payne & Ruth Hannant DfT
Paul Plummer RDG

Summary of Some Key Mitigation Actions being Carried out by Industry

Network Rail's Train Protection Review Option Identification and Assessment

Network Rail has undertaken extensive work to identify and assess interim train protection system enhancements that could be deployed on the GB rail network as part of a migration strategy supporting the implementation of ERTMS. This work is presented in Network Rail's Train Protection Review (TPR) Report.

The TPR involved key industry bodies and suppliers who attended a series of workshops aimed at generating ideas for reducing system risk and for which a business case could potentially be made. The options were assessed, and the most viable ones were selected for further development resulting in the formation of a series of similar options that provide an ETCS Level 2 Limited Supervision solution. If implemented, following a successful verification and validation process, it is anticipated that this solution will provide safety improvements and be compatible with a migration to full ETCS with the potential for earlier fitment than currently planned.

T1169 - Review of the Uff-Cullen Recommendations Related to Train Protection Systems

RSSB, on behalf of the TPSG, commissioned a review of the Uff-Cullen train protection recommendations. The review has appraised how the GB rail industry has progressed in meeting Uff-Cullen's recommendations, what further progress will be made during CP6 and determined what measures in addition to the Uff-Cullen recommendations should be considered further by the industry to mitigate the risk from SPaDs and overspeed. The review's final report provides observations on the rail industry's progress in rolling out train protection since the Ladbroke Grove and Southall accidents, how safety can be improved, and what can be anticipated. The full recommendations have been presented to TPSG and the Industry Health and Safety Meeting (IHSM) earlier this year.

RSSB Initiatives - the SPaD strategy

The industry agreed SPaD Risk Reduction Strategy for reducing and managing SPaD risk and delivering safety and performance benefits to rail passengers and freight users was launched by the SPaD Risk Reduction Strategy Steering Group in 2017. The document signposts RSSB resources and research that assist with SPAD management, as well as two case studies on successful SPaD reduction programmes.

ORR's 2018/19 ORR's Annual Health and Safety Report of Performance on Britain's Railways states: *"We continue to endorse the industry SPaD strategy published by RSSB and encourage train operators to apply it carefully."* However, industry has been slow to fully adopt and embed this strategy.

The strategy contains useful content but in its current format it suffers from usability issues: the length of the document means that it is unlikely to engage director-level staff, who would be responsible for driving its implementation in their respective companies. Content that would be valuable for front-line staff, such as driver managers dealing with SPaD issues, also becomes 'buried'. Much of the first half of the document, describing the 'state of the art' at September 2017, is now out of date.

RSSB has started a project to "repackage" the SPaD strategy. This project was requested by the SPaD Risk Subgroup which reports into Train Accident Risk Group (TARG). The objective is to create a 'one-stop-shop' for good practice in SPaD management and an online toolkit that helps target information in a way that industry needs to manage SPaD risk more effectively. This would allow a variety of SPaD risk-reduction resources, such as: training modules, reports, best practice guides and data, to be presented to users in a tailored fashion, be developed, kept current and be monitored via [rssb.co.uk](https://www.rssb.co.uk).

The online toolkit will make the information available in a more focused and accessible fashion (similar to the fatigue topic pages) that would enable more effective promotion and targeted uptake by the industry. It should also enable a user to quickly identify the resources relevant to them and to monitor the usage penetration and uptake of the toolkit via the RSSB website.

The strategy will be structured in sections for senior managers, front-line managers, front-line staff and investigators, in line with RSSB's new online Fatigue resource.

RSSB Initiatives - RAATS

RSSB has carried out work that suggests that the rise in SPaDs might be explained by the greater number of red signals encountered by train drivers due to the network becoming busier, and the prevalence of delays. i.e. the combined effects of more trains on the network and declining punctuality levels, mean that drivers are seeing more red signals, which in turn increases the opportunity for passing a signal at danger.

On the GB mainline rail network there are around half a billion (500,000,000) approaches to signals by trains per year. Of these half a billion approaches, around 4%-5% are to a red aspect. So, there are around 20-25 million red aspect approaches per year. We know these figures from analysis of the data in the Red Aspect Approaches to Signals (RAATS) tool. These approaches to red signals result in around 300 SPaDs per year. To put that in context, that's approximately 1 SPAD for every 70,000 approaches.

The RAATS tool, which uses data from Network Rail, will help operators determine how often a signal is approached when red and help inform an understanding of the cause of the rise in SPaD risk.

Other Initiatives

The concerns surrounding the rise in SPaDs, resulted in groups being set up nationally and locally to monitor the SPaD situation and implement various initiatives to bring the risks under increased control.

The SPaD Risk Subgroup of Train Accident Risk Group (TARG) launched a project to consider the rise in SPaD numbers last year, and especially during Period 3 of 2018/19. The analysis of the peak showed it wasn't a single factor leading to the rise and it couldn't all be blamed on the timetable change. Effectively, there is no 'silver bullet' or one simple explanation that can be derived from the data, emphasising the importance of the industry SPaD strategy which aims to address safety management (e.g. driver management, competence) and wider infrastructure design issues. The work identified several underlying causes including verbal communications, competence, vegetation, infrastructure design, fatigue, and workload.

The SPaD Risk Subgroup is also seeking to embed the industry's SPaD strategy and has carried out a survey to gauge the industry's uptake of this so far and the activities supporting it. Results from the survey gave a mostly positive picture from those who had responded but highlighted that more work was required to embed the strategy further.