

Train protection system exemption application received by ORR from Network Rail for Crossrail services between Paddington and Heathrow Airport Junction

Comments from the Train Protection Strategy Group (TPSG)

In principle the TPSG support the application but would reinforce that there must be no reduction in effort to implementing "plan A".

The following specific comments have been made by members of the group.

Page	Section	Comment
16	3.3.2	<p>Reviewing the requirements of RSR 1999, concludes: ‘So TPWS is a train protection system if it is not reasonably practicable to install ATP.’</p> <p>It is a reasonable conclusion that TPWS meets the requirements for a train protection system as defined in RSR 1999 ‘if it is not reasonably practicable to install ATP’, and may therefore not satisfy the definition of ‘train protection system’ as required by these regulations where it would be reasonably practicable to install ATP as an alternative. However, it could cause confusion if this statement is quoted out of context – TPWS is (by definition) a ‘train protection system’, and the practicability of installing a better system does not stop it being a train protection system, even if it would not meet the requirements for a train protection system set out in the RSR.</p>
17	3.4	Figure 5 - should it include KVB?
19	3.4.1	The second paragraph says that ‘TPWS was designed to reduce the number of SPADs’. While we are pretty sure it has led to a reduction in the number of SPADs this was not part of the design philosophy for the system.
19	3.4.1 + other relevant parts of the text (5.1)	There is no specific mention of the change in risk associated with TPWS R&C. It should be stated that the CRL trains will be fitted with the new RGS compliant (Mark 4) TPWS DMI designed to minimise R&C which will be a further benefit when compared to the current (Mark 1) TPWS arrangements for most trains on the network. This seems like a point that should be emphasised to support the case.
21	3.4.2	Halfway down the page there is a “risk of” that should be “risk from”.
26	3.5	In the table of the classes of train used on the line, it would have been helpful to indicate the current use of each class as well as the service frequency in 2018 – particularly for the ATP-fitted trains which are currently used but shown as 0 tph in 2018.
33	4.2.5	In the table “Stop if it passes signal at danger” I think the ‘standard’ and ‘enhanced’ TPWS columns are a bit misleading. While it’s true that the trains will stop, it should be stated that the important issue of stopping

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		within the overlap will depend on the approach speed and ie for 180m overlap it is around 75 mph for an OSS and around 45 mph for a TSS.																						
34	4.2.6	Option 1 onwards it is not clear what “TPWS integrated into control system with fault reporting is” does this mean the integration into the Train Management System or somehow communicating with the signalling control centre? This should be clarified in 3.4.1.1.																						
34	4.2.5	In the table - ‘Monitors train rolling away’ is part of the ERTMS system and is applicable still if in level NTC.																						
38/39	5.1	<p>The table is from a draft version of the TPWS strategy from TPSG. The published version is as follows.</p> <table border="1"> <thead> <tr> <th>Type of collision or derailment event</th> <th>Risk (FWI/yr)</th> </tr> </thead> <tbody> <tr> <td>Passenger train SPAD leading to collisions between trains</td> <td>0.26</td> </tr> <tr> <td>Non-Passenger train SPAD leading to collisions between trains</td> <td>0.18</td> </tr> <tr> <td>Passenger train derailment due to overspeeding</td> <td>0.017</td> </tr> <tr> <td>Non-passenger train derailment due to overspeeding</td> <td>0.0035</td> </tr> <tr> <td>Passenger Train SPAD at Level crossing</td> <td>0.012</td> </tr> <tr> <td>Non-Passenger Train SPAD at Level crossing</td> <td>0.0016</td> </tr> <tr> <td>Passenger train derailment due to SPAD at S&C</td> <td>0.062</td> </tr> <tr> <td>Non-passenger train derailment due to SPAD at S&C</td> <td>0.028</td> </tr> <tr> <td>Buffer stop collisions</td> <td>0.10</td> </tr> <tr> <td>Total risk</td> <td>0.66</td> </tr> </tbody> </table>	Type of collision or derailment event	Risk (FWI/yr)	Passenger train SPAD leading to collisions between trains	0.26	Non-Passenger train SPAD leading to collisions between trains	0.18	Passenger train derailment due to overspeeding	0.017	Non-passenger train derailment due to overspeeding	0.0035	Passenger Train SPAD at Level crossing	0.012	Non-Passenger Train SPAD at Level crossing	0.0016	Passenger train derailment due to SPAD at S&C	0.062	Non-passenger train derailment due to SPAD at S&C	0.028	Buffer stop collisions	0.10	Total risk	0.66
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39	5.1	The risk figure of 1.15 was an estimate made for the SORAT project and only related to junction SPAD risk. A better estimate for this figure (and one which is comparable with the 0.5463 figure) is 1.54 FWI, which has been calculated from version 8 of the SRM.																						
39	5.1	The risk summary should note that there are no level crossings on the proposed route.																						
40	5.2	First paragraph talks about a train stopping before a given collision point. This should be conflict point.																						
40	5.2	Paragraph 5 – “proportions” rather than “proposition”																						
45	5.3.3	There are entries in the “With Enhanced TPWS and Class 345 services” that are greater than 95%. Are these correct?																						
55	8	Sixth row of the table - Phil Barrett’s name is misspelt.																						
55	8	Last row of the table - TPSG is an industry group facilitated by RSSB and does not represent RSSB as a body.																						