

SUMMARY OF STAKEHOLDER COMMENTS RECEIVED AND ORR RESPONSE – TRAIN PROTECTION ARRANGEMENTS FOR THE RUNNING OF CROSSRAIL TRAINS BETWEEN PADDINGTON STATION AND HEATHROW TUNNEL JUNCTION

RESPONDENT (IN ALPHABETICAL ORDER)	SUPPORTED OR OBJECTED TO THE EXEMPTION APPLICATION?	SUMMARY OF COMMENTS	RESPONSE
ASLEF	Objected	Stated that members working without a full safety system in place would not be acceptable to ASLEF and their Executive Committee therefore rejected the granting of the exemption if the European Train Control System (ETCS) was not available in readiness for the initial operation of Crossrail services.	<p>ORR conducted a detailed assessment of the safety and technical information provided in support of the application and concluded that the overall safety impact of the train protection system proposed would be close to the established reasonably practicable standard for train protection systems. Our reasoning is fully explained in our decision letter (on ORR’s website).</p> <p>We understand that Network Rail and MTR Corporation have had an initial meeting with ASLEF to discuss any concerns and that this dialogue will continue.</p>
Chiltern Railways	Supported	Stated that the enhanced Train Protection Warning System (TPWS) coverage would provide additional protection to their limited services into Paddington.	<p>ORR considered whether the proposed additional fitment of TPWS equipment would afford additional protection to all rolling stock fitted with TPWS using this section of line. The case team reviewed the calculations put forward in the exemption submission which quantified the differences in Signal Passed At Danger protection between the current service and proposed future arrangements, signal by signal using a TPWS effectiveness tool. ORR concluded that there would be a small but clear benefit overall in SPAD protection for the other services using this section</p>

			of line, including Chiltern's.
Department for Transport, Rail Executive	Supported	Regarded the temporary exemption as an essential risk mitigation to ensure successful commencement of Crossrail services on programme. Identified no specific safety concerns noting that ORR and RSSB experts could provide the necessary technical and safety assessments.	Noted. No specific response/comment required.
Great Western Railway (GWR)	Supported. Though disappointed at likely failure to deliver ETCS on time (and hence need for exemption) but recognised the exemption application provided a realistic proposal to deal with the issue.	Stated that fitment of ETCS level 2 would provide comprehensive automatic train protection over the route and was part of the future wider fitment to the Network Rail Western Route. Expressed concern that delays in this area would mean delays in wider fitment which would pose more significant problems for GWR. Believed it important that Network Rail remained focused on delivering wider fitment. Clarified that the 19 Dec 2014 letter from Mike Hogg referred to in the application as providing support to the proposals was supportive of developing an alternative proposal but not supportive of any particular outcome of that development work and reminded that the letter also indicated concerns regarding any further slippage to the wider ETCS programme. Stated that using enhanced TPWS meant that Crossrail services with TPWS would replace Heathrow Connect services fitted with Automatic Train Protection (ATP) and this was not ideal and of concern. Were not clear whether data from the Safety Risk Model referred to in section 5.1 of the exemption application was national data or that specific to the Western route. Disappointed by early elimination of ETCS Level	ORR noted the support and the concerns expressed. As part of its assessment, ORR considered the different options considered and agreed that the proposed option (enhanced deployment of TPWS) appeared on the evidence provided to be reasonably practicable. ORR considered the timescales involved and the (other) technical options that could realistically be pursued and was satisfied that the train protection arrangements that would be put in place provided a genuine fallback option and that there was commitment to the timely introduction of ETCS if possible. The exemption is timebound and includes conditions to allow ORR to monitor the continued commitment to deliver ETCS to this section of the route. ORR understands that discussions are underway between Network Rail and GWR as part of the Network Change process and the project team have confirmed their belief that an ETCS Level 1 solution would not have been viable. Network Rail have confirmed their view that this would require significantly more effort as every signal in the area would require work potentially causing further delays to the programme. Engagement between Network Rail and GWR will continue through the Network Change and Signal Overrun Risk

		<p>1 as a viable alternative and thought a fuller evaluation may have shown that better train protection benefits could be provided than by enhanced TPWS and would provide an improved interface with the ETCS Level 2 in the Heathrow Tunnel. Because it was proposed to fit Level 2 all the way to the buffer stops at Paddington (which was not typical of ETCS fitments in Europe) GWR believed it could play an important role in the Airport Junction area.</p> <p>Noted that the exemption report was largely silent on the issue of braking capability and crash worthiness – the introduction of the Hitachi IEP and AT300 fleets were expected to result in the elimination of the 9%g braked HST fleet by Dec 2018.</p>	Assessment Tool (SORAT) risk assessment processes.
Heathrow Express	No specific objections – recognised the thoroughness of the assessment work undertaken and the realistic need to progress in this manner.	<p>Understood the complexities involved and the difficulties in achieving timescales.</p> <p>Concerned that it was a lowering of safety protection compared to the ATP fitted to the class 360 fleet currently operating the service that would be replaced. MTR drivers were likely to be relatively inexperienced making train protection even more important.</p> <p>Believed the exemption report should address/clarify the continuation of GW ATP through the transition to maximise the protection on other fleets.</p>	At ORR's request, Network Rail has confirmed for Heathrow Express that ATP provision is unaffected by the proposed proposals forming the exemption request. ATP will be retained and supported on the route until the wider Western Route ETCS works are complete. Noted points regarding drivers but consider these would be relevant to any new driver on an unfamiliar route. Discussions are underway as part of the Network Change process.
Rail Safety and Standards Board (RSSB)	Supported the process applied, consultation undertaken and consistency of results.	<p>Noted the interim nature of the train protection arrangements forming the exemption request.</p> <p>Expressed support for the application and documentation of the Common Safety Method on Risk Evaluation and Assessment, the Safety Risk Model, the Signal Overrun Assessment Tool, RIS-0386-CCS and the TPWS Effectiveness</p>	Noted. No specific response/comment required.

		<p>Spreadsheet Methodology. RSSB could not independently verify calculations but considered approach taken as good practice. Results appeared logical and no material errors or inconsistencies were identified.</p> <p>Recognised there were benefits to the operation of Crossrail and failure to provide through services potentially impacted safety risk; noted that this was not apparent in risk considerations as part of the options analysis but did not consider this to be an omission (and might in fact strengthen case if taken into account).</p> <p>Informed that RSSB also contributed to the Train Protection Strategy Group response (see below).</p>	
Sanjeev Kumar Appicharla	Objected	Believed there was insufficient understanding of the interactions between the technical, organisational and human factor elements of the exemption application.	Full response read and noted. The process applied by ORR in considering the application and reaching its decision to grant an exemption is fully explained in the decision letter (on ORR's website).
Train Protection Strategy Group	Supported. Reinforced must be no reduction in effort to deliver ETCS.	<ol style="list-style-type: none"> 1. Believed that the statement "So TPWS is a train protection system if it is not reasonably practicable to install ATP" on page 16 of the exemption report could cause confusion if quoted out of context. 2. Asked whether figure 5 on page 17 included KVB as a train protection system? 3. Disagreed with the statement on page 19 of the report that TPWS was "designed to reduce the number of SPADs". 4. Noted there was no specific mention of the change in risk associated with TPWS reset and continue – the Crossrail trains would be fitted with 	<p>Network Rail has responded directly to the Train Protection Strategy Group on the detailed, technical points raised and is sharing further risk work with the Group. ORR has reviewed the responses provided on the points raised and is content. Responses were as follows –</p> <ol style="list-style-type: none"> 1. Clarified that TPWS is a train protection system and statement related to how it is expressed in the Railway Safety Regulations 1999. 2. Noted – figure was only to give overview of systems. 3. Noted but sentence does state both SPAD reduction and mitigation of consequences of

		<p>Mark 4 TPWS designed to minimise reset and continue risk which would be a further benefit when compared to current Mark 1 TPWS systems for most trains on the network.</p> <p>5. Believed the table on page 26 of the exemption report should also show the current use of each class of train.</p> <p>6. Thought the “standard” and “enhanced” TPWS columns table on page 33 under “Stop train if it passes signal at danger” were misleading. Stopping within the overlap would depend on the approach speed.</p> <p>7. Thought it was unclear in the options on page 34 what was meant by “TPWS integrated into control system with fault reporting”.</p> <p>8. “Monitors train rolling away” was part of the ERTMS system and was applicable still if in level NTC.</p> <p>9. Informed us that the table on page 38 was not the final published version (some figures were different).</p> <p>10. The estimated risk figure of 1.15 (page 39) was made for the SORAT project and only related to junction SPAD risk. Considered a better estimate to be 1.54 FWI, calculated from version 8 of the SRM.</p> <p>11. Believed the risk summary on page 39 should note that there were no level crossings on the</p>	<p>SPADs.</p> <p>4. Noted – at the time of submission Network Rail had not quantified this benefit and so did not mention it in their application. Further work has attempted to quantify the Mk4 and MK3 provision that will be on the route as part of rolling stock cascaded EMU operation. When Crossrail service is introduced, it will be replacing a mix of MK1 and MK3 units.</p> <p>5. Intended to provide an overview of area and show that by 2018 many existing trains – not just Crossrail – would be replaced.</p> <p>6. Noted – this is detailed in the item function below of ‘preventing train approaching signal too fast’. This is what covers the overlap exceedance.</p> <p>7. Noted - this was to provide summary of the options report that was included in the submission. Further detail was provided in the Options report itself at section 3.2.</p> <p>8. Noted – it will be part of the Class 345 train provision.</p> <p>9. Noted – the figures in the table are the same, it has just been reordered and the total made more accurate.</p> <p>10. Noted – further risk work on SPAD and impact will be done using SORAT. Included to try to put into context the relative scale of risk for the items.</p>
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