Specification for research project

T1166 - Minimising the impact of ‘high and tight’ platforms on the overall PTI step/gap dimensions

The draft research specification that follows, outlines RSSB’s proposed research into Minimising the impact of ‘high and tight’ platforms on the overall PTI step/gap dimensions. This is a draft specification that is subject to change following the supplier day.

A pre-tender suppliers meeting has been arranged for Tuesday 20November 2018 at 11.00 at the RSSB offices in Moorgate, London. The purpose of this meeting is to:

* Provide an outline of the project proposal
* Validate estimates of the likely research costs
* Provide interested suppliers an opportunity to discuss and understand the draft research specification.

Suppliers should be prepared to discuss the following:

* There is a budget of up to £75,000 available to undertake a desk-based review, platform arrangement surveys at selected case study sites, an economic assessment of possible solutions to minimise the adverse impact of high and tight platforms, and an implementation strategy. Does the proposed budget reasonably cover the requirements to undertake and deliver this work? How might the outputs change with a variation to the budget?
* A definition of what this project looks at in terms of high and tight platforms is needed. An initial suggestion from the RSSB team is this set of parameters: platform thresholds that exceed both 950mm ‘high’ and 730mm ‘tight’[[1]](#footnote-1). Alternative parameters and recommendations from suppliers are welcomed, including rationales for alternative parameters.
* Are there any particular factors that might impact successful delivery of the project outputs?
* Are there barriers to achieving the objectives? Is this the right approach, and can the objective be achieved?
* Are timescales achievable? How might the outputs change with a variation to the time?

# Background

Following rolling stock cascades and new vehicle introductions in recent years, a larger step / gap distance is becoming apparent due to footsteps on new stock being further away than on the older stock. This is believed to be the result, and adverse impact from a very small minority of platforms that are both high and close to the track position, forcing rolling stock design and modifications to accommodate these platforms. New rolling stock, cascades and refurbishment of existing stock, are being modified to cope with the worst case ‘high and tight’ platforms for gauge clearance. For example, raising the vehicle body and / or reducing the size of the footstep to achieve clearance at high and tight platforms. However, such modifications may create a worse step gap position at the majority of other GB platforms, and may consequently, exacerbate PTI risks and increase dwell time.

Target platform ranges for new or modified platforms are: offset (lateral) 730 to 745mm and vertical 890 to 915 mm (Railway Group Standard GIRT7020, RSSB, 2018). Previous research (T866 - Investigation of platform edge positions on the GB network) examined every platform on the GB network to determine the platform offset (horizontal) and height (vertical) positions, using the January 2011 National Gauging Database. The findings of the research were based on a total of 132,024 measured platform profiles for a total of 5,671 platforms. From the data, 18 platforms had an average height of greater than 1000 mm, which was considered to have a disproportionate effect on the stepping distances elsewhere because vehicle footsteps are being specified to provide a clearance to the 'high' platforms. Recently, further analysis of data from T866 showed that of the average position for GB platforms, 6% were considered 'high' (>950mm) and 19% tight (<730mm)[[2]](#footnote-2). However, a clear definition of a high and tight platform remains to be established, and it is those that are both high and tight that are the major concern.

Since T866, further gauging has been undertaken, and rolling stock procured and cascaded. Feasibility studies have also indicated that it is possible to alter a vehicle’s height position at specific locations with more dynamic solutions such as the control of air suspension systems (COF-PTI-03 - Feasibility study of a kneeling train). Engineering, track, technology, platform materials and research have also advanced (e.g. T1054 - Evaluating platform gap fillers to reduce risk at the platform/train interface).

Accordingly, the current position on high and tight platforms is unclear, particularly following rolling stock cascades in recent years and the detailed constraints at the high and tight platforms that would need addressing. It is also unclear what cost-effective solutions are currently available to reduce the adverse impact of high and tight platforms, including an understanding of what approach would bring the best economic benefit to wider industry.

The impact of high and tight platforms adversely affecting the step gap position at many other platforms may consequently increase the risk to passengers in the higher consequence falls from the platform (often not boarding or alighting)[[3]](#footnote-3). Passengers with limited mobility and those carrying luggage or with prams are believed to be particularly at risk. Notably, the RSSB 2017/18 Safety Performance Report identified that the overall level of physical harm at the PTI has increased by 7% over the past year, and the fatalities and weighted injuries (FWI) for platform edge incidents (not boarding/alighting) was 5.6. PTI incidents that occur as a consequence of the adverse impact of high and tight platforms are assumed to be a proportion of this value.

Should T1166 identify possible solutions to reduce the adverse impact of high and tight platforms, including improvements in the step gap position at the majority of platforms, then possible safety benefits could be realised. This may positively impact passenger satisfaction, with recent scores indicating 63% of passengers rated were satisfied with the step or gap between the train and the platform (Transport Focus, 2018)[[4]](#footnote-4).

Therefore, T1166 sets out to investigate high and tight platforms and the adverse impact these may have on rolling stock modifications and design, and the step / gap position at other platforms. This research is supported by the industry group People on Trains and Stations Risk Group (PTSRG), and the Vehicle Structures Systems Interface Committee. Outputs from T1166 are expected to support the PTI strategy[[5]](#footnote-5) and the Leading Health and safety on Britain’s Railway strategy, including priorities of Station Operations (station development and re-development), workforce health and wellbeing and workforce assaults and trauma[[6]](#footnote-6).

# Work package objectives

The purpose of T1166 is to investigate 'high and tight' platforms and the adverse impact these may have on rolling stock modifications and design, and the step / gap position at other platforms. The objectives for this work include:

* Define the parameters of a high and tight platform, including a criterion to analyse gauging data to determine whether a platform is both high and tight
* Confirm the current locations of high and tight platforms that are adversely impacting rolling stock design, modifications and making the step gap worse at the majority of other platforms
* Define the impact high and tight platforms have on rolling stock design, modification and the step gap position at other platforms, including PTI risks and platform dwell time
* Identify possible solutions that may reduce the adverse impact of high and tight platforms
* Survey of features and related constraints that affect achieving a conforming platform edge position (e.g. buildings, track geometry, bridges, overhead lines, electrical cables, level crossings), at selected case study sites.
* Undertake an economic assessment to determine the cost-effectiveness of possible solutions reducing the adverse impact of high and tight platforms, and bring the best wider economic benefits to industry
* Identify the problems, challenges and opportunities for reducing the adverse impact of high and tight platforms
* Identify the best economic solution(s) that may improve high and tight platform positions, reduce PTI risks and improve dwell performance
* Findings report, including recommendations for PTI risk and dwell management
* Develop a robust implementation strategy, including guidance on transitioning to implementing the platform solution and impact on rolling stock cascade. This would include temporary works, possession considerations and site logistics.

RSSB intend to provide a list of high and tight platforms in the full ITT, to support suppliers identify and propose potential case study sites for the platform arrangement surveys.

Suppliers are asked to include in their bid, to propose up to five locations to undertake the case study surveys, and include a rationale for each site selection. Proposed case study sites will need to be supported and agreed by the project steering group and by the applicable SFO and Network Rail route.

# Scope

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| **In scope**  | **Out of scope** |
| * Desk based review and analysis including:
	+ Previous research (e.g. T866, T1037, COF-PTI-03, T1054)
	+ Data on gauging, rolling stock introduction and cascades, PTI incidents and station dwell
	+ Engineering, track, technology, platform materials, practices and solutions that may reduce the adverse impact of high and tight platforms
	+ Current problems and challenges that adversely impact high and tight platforms
	+ Station, track and rolling stock requirements for possible modifications to reduce the adverse impact of ‘high and tight’ platforms
* Define the parameters of a high and tight platform
* Define a criterion to analyse gauging data to determine whether a platform is both high and tight
* Confirm the current locations of high and tight platforms and identify case study sites for platform arrangement surveys
* High and tight platform arrangement surveys at selected case study sites, including an overview of constraints in the area (e.g. level crossings, buildings, bridges, lifts, escalators, electrical wires, track geometry, platform use, etc.)
* Economic assessment to define the optimal balance for reducing the adverse impact of high and tight platforms on the majority of UK platforms
* Cost-effective opportunities and solutions to reduce the adverse impact of high and tight platforms, including adjustments and modifications to combinations of platform, track and rolling stock etc
* Propose possible mitigation strategies if potential solutions may result in making the step / gap position worse at high and tight platforms, achieving the best balance of wider benefits
* Impact of high and tight platforms on dwell time and PTI management, and how possible solutions may improve these
* Implementation strategy, including planned platform/station upgrades, new rolling stock, stock cascades and modifications
 | * Testing of solutions and/or modifications to platforms, track, or rolling stock
* Solutions that are not transferable to GB rail
* Survey of platforms that are not high and tight
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# Methodology

Suppliers are expected to explain the methodology that they are intending to use to successfully meet the project objectives and cover the scope. Within that methodology there should be:

1. Desk based review and analysis,
2. Case study survey arrangements
3. Economic assessment
4. Implementation strategy

# Deliverables

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| **Deliverable Name** | **Type** |
| Desk-based review and analysis  | Report |
| This report presents the findings from the desk-based review and analysis, including:* Defined high and tight platform parameters
* An update and current position on high and tight platforms and the adverse impact on the wider network
* The PTI risk and impact on dwell performance
* Possible track, train and platform solutions that may reduce the adverse impact of high and tight platforms

This deliverable should be accepted by the project steering group and PTSRG. The report will be produced in the RSSB template and will be made available on SPARK to RSSB members. |

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| **Deliverable Name** | **Type** |
| Platform arrangement survey of high and tight platforms: Selected case studies  | Report  |
| This report presents the findings from the selected case studies, and should include detail on * The high and tight platform survey findings, including common constraints, challenges, opportunities and potential solutions across the cases.
* Implications and recommendations for wider industry platforms
* Mitigation strategies if solutions to improve step/gap at other locations, make the step/gap worse at high and tight locations

This deliverable should be accepted by the project steering group and PTSRG. The report will be produced in the RSSB template and will be made available on SPARK to RSSB members.  |

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| **Deliverable Name** | **Type** |
| Final Report on options and implementation | Report |
| This report presents the findings from the economic assessment and presents the options and implementation strategy of the research. The economic assessment should include:* The optimal balance for reducing the adverse impact of high and tight platforms on the majority of UK platforms
* Cost-effective opportunities and solutions to reduce the adverse impact of high and tight platforms
* Detail on possible adjustments and modifications, including potential combinations of platform, track and rolling stock

The implementation strategy should identify the steps and transitions for industry adoption of the findings and recommendations from T1166, and include detail on:* The planned platform/station upgrades, new rolling stock, stock cascades and modifications
* Indicator of the benefits (including tangible benefits) that could be realised through industry adoption of the outputs
* Recommendations for overcoming implementation challenges and barriers, and the potential opportunities that might enable doing so
* Guidance and recommendations on each transition step to realise end benefits

This deliverable should be accepted by the project steering group and PTSRG and V/S SIC. The report will be produced in the RSSB template and will be made available on SPARK to RSSB members. |

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| **Deliverable Name** | **Type** |
| **Executive Summary Presentation of Key Findings** | Presentation |
| The presentation will be provided by the supplier to the project steering group. The executive summary presentation will be made available on SPARK to RSSB members.  |

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| **Deliverable Name** | **Type** |
| **Research in Brief** | Report |
| The research in brief should be created by the supplier, in partnership with RSSB, to summarise the findings of this work, in no more than 4 pages. The research in brief will summarise the aim, findings, impacts and benefits, background, and summary method of this work package. The document should also identify where to find out more information, identify recommendations and next steps for industry and further research and development.The draft research in brief will be produced in a RSSB template, and an example can be provided. The research in brief will be made available on the SPARK and RSSB websites.  |

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# Stakeholders roles and responsibilities

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|  | **General role in project** | **Specific role in acceptance of deliverables** |
| **Project Manager** | The Project Manager is responsible for the detailed project management including project schedules, cost reporting and other relevant project management tasks. The Project Manager leads the project in organising meetings, etc. and ensures timely and effective delivery towards project objectives. | Facilitates technical review and acceptance processes, identifies, and monitors corrective actions where needed, including facilitating decision making |
| **Technical expert** | Throughout the project, the technical expert ensures that the research accurately reflects technical aspects. Technical aspects can refer to specific issues around Rail Operations, Performance, Recovery Planning, Stock and Crew Management, or any other specialist field.  | Reviews emerging outputs from technical perspective |
| **Industry and RSSB sponsor** | The Industry and RSSB sponsors act as a figurehead for the research, championing its importance and its outputs. Their key role is to provide steer to the research as it progresses and exert pressure on the industry to make use of its findings. | Formally accepts deliverables  |
| **Project supporters** | The project supporters represent parts of industry complementary to the champion’s organisation. They offer expertise for effective project delivery and support the implementation of findings led by the champion through networking, advice and other support. | Formally accepts deliverables  |
| **Project steering group** | The project steering group ensures the project delivers to industry needs. As such, it helps formulate specifications, assesses tenders, reviews draft and final outputs and other relevant tasks. | Formally accepts deliverables  |

# Budget, timescales and dependencies

The budget for this work is up to £75,000*.* Any bid above this value will need to provide detailed explanation on why the supplier doesn’t feel that the budget is adequate and in such case we strongly encourage suppliers to provide costed options for RSSB to consider.

The work is expected to start in February 2019 and be completed by July 2019. These are indicative dates and RSSB is prepared to consider bids that cannot meet these expectations if they have a robust and realistic project plan, and an explanation of why the expected start and end date cannot be met.

# Critical success factors and risk management

* Access to data / information for the desk-based review and economic assessment. This should be facilitated by RSSB and the project steering group, and suppliers are expected to identify appropriate sources information to support this work (e.g. open source data, academic articles).
* Access to stations to undertake case study survey arrangements. This will be supported by RSSB and the project steering group.
* Appropriate mix of supplier expertise covering infrastructure, rolling stock, rail operations, and economic assessment. Selection and award criteria for ITT.
* Robust implementation strategy. A methodology that identifies the key insertion points, benefits (including tangible benefits), and transition steps to reach the potential end benefits from industry adoption of the findings.
1. These values are taken from The Platform Train Interface Strategy: Technical report (RSSB, 2015). <https://www.sparkrail.org/Lists/Records/DispForm.aspx?ID=22428> [↑](#footnote-ref-1)
2. The Platform Train Interface Strategy: Technical report (RSSB, 2015). <https://www.sparkrail.org/Lists/Records/DispForm.aspx?ID=22428> [↑](#footnote-ref-2)
3. Platform Train Interface Strategy (RSSB, 2015) [↑](#footnote-ref-3)
4. <https://www.transportfocus.org.uk/research-publications/publications/national-rail-passenger-survey-nrps-spring-2018-main-report/> [↑](#footnote-ref-4)
5. Platform Train Interface Strategy (RSSB, 2015). See for further information <https://www.rssb.co.uk/Pages/platform-train-interface.aspx#location_1> [↑](#footnote-ref-5)
6. <https://www.rssb.co.uk/improving-industry-performance/leading-health-and-safety-on-britains-railway> [↑](#footnote-ref-6)