OPEN TENDER

RSSB INVITATION TO TENDER FOR THE PROVISION OF: RSSB2726 - T1143 Devices to guide derailed trains

Deadline: Friday 7th September 2018

ITT Reference: RSSB2726 - T1143 Devices to guide derailed trains

# TENDER DOCUMENTS

1.1 Tenders shall be submitted in accordance with the following instructions. It is important that all the information requested is provided in the format and order specified. If the Tenderer does not provide all of the information RSSB has requested within the tender pack, RSSB may reject the tender as non-compliant.

1.2 Tenderers must obtain for themselves, at their own responsibility and expense, all information necessary for the preparation of their tender. Tenderers are solely responsible for any costs and expenses in connection with the preparation and submission of their Tender, and all other stages of the selection and evaluation process. Under no circumstances will RSSB, or its advisors, be liable for any costs or expenses Tenderers, their sub-contractors, suppliers or advisors incur in this process, including if this tendering process is terminated or amended by RSSB.

1.3 Tenderers are solely responsible for obtaining the information that they consider is necessary in order to prepare the content of their tender and to undertake any investigations they consider necessary in order to verify any information RSSB provides during the procurement process.

1.4 All pages of the tender submission must be sequentially numbered (including any forms to be completed and returned).

1.5 All specifications, plans, drawings, samples and patterns and anything else that RSSB issues in connection with this ITT, remains the property of RSSB and are to be used solely for the purpose of tendering.

1.6 At any time prior to the deadline for receipt of questions, RSSB may modify the tender documents by amendments in writing.

1.7 RSSB (at its sole discretion) may extend the deadline for receipt of Tenders.

RSSB reserves the right to modify or to discontinue the whole of, or any part of, this tendering process at any time and accepts no obligation whatsoever to award a contract.

# GENERAL, LEGAL & COMPLIANCE

2.1 RSSB will check each tender for completeness and compliance with the tender instructions. RSSB reserves the right to reject any tenders it considers substantially incomplete, or non-compliant (each tender will be assessed on its own merit, according to the level/importance of omitted or non-compliant content).

2.2The Tenderer will be excluded should any of the grounds for mandatory rejection or discretionary rejection be triggered. Mandatory requirements can be viewed within the Public Contracts Regulations 2015.

2.3 Tenderers are required to confirm in their tender response, they are able to meet all mandatory and discretionary requirements.

2.4 The Tenderer will be excluded should it be assessed that it has a high risk of:

* + Insolvency over the lifetime of the contract; e.g. the Tenderer may be excluded if its current assets to current liabilities ratio is less than 1;
  + Insufficient financial capacity to deliver the services effectively; or
  + Over-dependence on RSSB (e.g. the Tenderer may be excluded if its turnover is less than £ [no more than2x the contract value]

# 3.0 TENDER INSTRUCTIONS

3.1 “RSSB” means the contracting authority, seeking to invite suppliers to participate in the procurement process.

“You” or “Supplier” means the legal entity completing these questions, seeking to be invited to the next step of the procurement process Invitation to Tender (ITT)

3.2 Please ensure all questions are completed in full and in the format requested. Failure to do so may result in your submission being disqualified. If the question does not apply you need to clearly state N/A.

3.3 If it is necessary for you to provide additional information this should be provided as an appendix and clearly referenced as part of your declaration.

3.4 **RSSB REPRESENTATIVE**

Your main point of contact is: [shareditt@rssb.co.uk](mailto:shareditt@rssb.co.uk)

**RSSB OVERVIEW**

If you wish to find out more about RSSB, please visit our website at [www.rssb.co.uk](http://www.rssb.co.uk)

**Timetable**

The timetable for this procurement follows. This is intended as a guide and whilst RSSB does not intend to depart from the timetable, it reserves the right to do so at any stage.

The expected milestones are set out below:

|  |  |
| --- | --- |
| **Activity / milestone** | **Start Date** |
| Expression of interest meeting | N/A |
| RFP issued | 13 August 2018 |
| Supplier clarification questions deadline | 31 August 2018 |
| **Deadline for Submitting Tenders** | **7 September 2018** |
| Post Tender Clarification (if required) | 17/18 September 2018 |
| Estimated notification of award decision | 24 September 2018 |
| Target contract commencement date | 3 October 2018 |

Note: RSSB reserves the right to amend these dates as business requirements demand and will communicate any changes to tenderers.

3.5 **QUESTIONS**

Should you have any questions relating to the project, please email these before the deadlines detailed in the project timeline above to ensure that these questions can be effectively addressed? To ensure equal and fair treatment to all potential suppliers, RSSB will circulate all questions and responses anonymously.

Questions should be emailed to: [shareditt@rssb.co.uk](mailto:shareditt@rssb.co.uk)

# 4.0 Evaluation Information

4.1 In the interests of an open, fair and transparent assessment, this document sets out how RSSB intends to evaluate tender responses. It outlines the evaluation criteria and respective weightings, as well as the evaluation methodology to be applied.

4.2 **Verification of Information Provided**

Whilst reserving the right to request information at any time throughout the procurement process. RSSB may enable the Supplier to self- certify that there are no mandatory/ discretionary grounds for excluding their organisation. When requesting evidence that the supplier can meet the specified questions relating to Technical and Professional Ability RSSB may only obtain such evidence after the final tender evaluation decision and only from the winning Supplier only.

4.3 **Please self-certify whether you already have, or can commit to obtain, prior to the commencement of the contract, the levels of insurance cover indicated below:**

* Employer’s (Compulsory) Liability Insurance = £2M
* Public Liability Insurance = £1M
* Professional Indemnity Insurance = £1M

4.4 **Sub- contracting Arrangements**

Where the Supplier proposes to use one or more sub- contractors to deliver some or all of the contract requirements, a separate Appendix should be used to provide details of the proposed delivery model that includes members of the supply chain and percentage of work being delivered by each sub -contractor and the key deliverables that each sub- contractor will be responsible for.

RSSB recognises that sub- contracting arrangements may be subject to change and not finalised until a later date. However, Suppliers should be aware that where information provided to RSSB indicates that sub- contractors are to play a significant role in delivering the key requirements and any changes to those sub- contracting arrangements significantly affect the ability of the supplier to deliver key requirements the Supplier should notify RSSB immediately of any changes in the proposed supplier sub-contractor arrangements. RSSB reserves the right to deselect the Supplier prior to any award of contract based on an assessment of the updated information.

4.5 **Consortia Arrangement**

If the Supplier completing this tender submission is doing so as part of a proposed consortium the following information must be provided:

* Names of all consortium members;
* The lead member of the consortium who will be contractually responsible for delivery of the contract (if a separate legal entity is not being created); and
* If the consortium is proposing to form a legal entity, full details of the proposal should be submitted as an Appendix with this Tender.
* RSSB may require the consortium to assume a specific legal form if awarded the contract. If it is deemed that a legal incorporation is necessary for the satisfactory performance of the contract.
* All members of the consortium will be required to provide the information required in all sections of the Tender as part of a single composite response to RSSB i.e. each member of the consortium is required to contribute to completing the response document.

4.6 **Confidentiality**

RSSB reserves the right to contact the named customer contact and the nominated customer does not owe RSSB any duty of care or have any legal liability, except for any deceitful or maliciously false statements of fact.

RSSB confirms that it will keep confidential and will not disclose to any third parties for any information obtained from the named customer contact, other than to the Crown Commercial Services and or contracting authorities defined by the Public Contract Regulations.

# 5.0 Evaluation Process

5.1 The process that will be used to select an appropriate Tenderer and award the contract for this procurement is available in more detail in the Evaluation Criteria.

The open procedure is a single stage process.

5.2 **Marking for Award Criteria**

An evaluation panel consisting of representatives of key stakeholders within RSSB will carry out the evaluation. The procurement team will only act as moderator during the assessment phases of the evaluation.

Each evaluation area is weighted to show the relative importance significance of the criteria specific area’s for assessment.

# 6.0 PROCESS AND PREPARATION OF RESPONSES

6.1 The Supplier shall not enter in any agreement or arrangement with any third party which would in any way cause RSSB or its members to incur any financial obligations to the Supplier or any third party.

6.2 The Supplier shall not approach any Customer employee, the Customer’s Representative or its agents to discuss any aspects of the Tender. All communication should be conducted via the Customers Representative.

6.3 The Supplier shall not canvass support for the award of the contract by approaching any employee of RSSB, its Representative or its agents.

6.4 The documents as enclosed are to be accepted in their entirety. No alteration Representative before the date stated for the receipt of tenders. If any alteration is made or these instructions to Suppliers are not fully complied with the tender may be invalidated.

6.5 The conditions of contract included in this Invitation to tender apply. The Suppliers standard terms of business or trade will not be accepted.

6.6 Any requested changes to the conditions of contract must be detailed on the Contract Issues Memo document included for consideration. If this is not completed, it is assumed that the Supplier has accepted all terms and conditions detailed and no further changes will be accepted.

6.7 The Supplier shall be deemed to have satisfied itself as to the nature, extent and the content of the goods, services or works to be provided, the extent of staff required and all other matters, which may affect the tender.

6.8 All prices quoted to be GBP (unless otherwise requested in the Invitation to Tender) exclusive Value Added Tax and firm.

It is the Suppliers responsibility to ensure the tender is correct at the time of submission. No amendment to the tender will be allowed after the due date.

6.9 Any questions must be emailed to the main point of contact no less than five days before the return date. Note: questions/responses will be circulated anonymously to all Suppliers invited to tender. Tenders received after the closing date and time will not be considered.

6.10 The Customers Representative reserves the right to correct any omissions or inaccuracies in the Invitation to Tender and to clarify and/or amend any of the Customers’ requirements, up to seven days before the return of tenders.

6.11 All information supplied by RSSB must be treated in confidence and not disclosed to third parties except insofar as this is necessary to obtain sureties or tenders required during the preparation of the Tender. All information provided by Suppliers will be treated in confidence except in stances where references may be sought.

6.12 RSSB reserves the right to cancel this Tender at any point and any cost incurred in the preparation of this Tender is at the Bidder’s expense.

6.13 Tenders must remain open for acceptance for a period of 180 calendar days from the submission date.

6.14 The tenderer should include the following information as part of their tender response:

Legal entity name of Tenderer

|  |
| --- |
|  |

Contact person's name, email address, telephone number and postal address for enquiries relating to this procurement

|  |
| --- |
| Name: |
| Postal address: |
| Telephone number: |
| Email address: |

Tenderer’s registered address

|  |
| --- |
|  |

Tenderer’s website address (if available)

|  |
| --- |
|  |

Please tick the box for the legal form of the Tenderer

|  |
| --- |
| * Sole Trader * Partnership * Limited Liability Partnership * Private Limited Company * Public Limited Company * Local Council * Voluntary/ charitable/ not for profit organisation * Other (please specify below) |

If ‘Other’ has been selected from the question above please provide details.

|  |
| --- |
|  |

If your business is a registered company, charity or any other registered organisation (including limited, non-limited or Industrial and Provident Society), please state your registration number. This must be the registration number of the Tenderer, providing the country and date of incorporation / registration if other than the UK.

|  |
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|  |

Name of ultimate parent company (if this applies)

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| --- |
|  |

Companies House Registration number of ultimate parent company (if this applies)

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| --- |
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**Additional Notes**

* Fully answer the question given and consider the weighting for the section
* Explain how you will meet the criteria and provide evidence to support your response.
* Further reading on how to complete the tender is available in section 10

# 7.0 TENDER EVALUATION (SELECTION CRITERIA)

| **Heading** | **Specific question(s)** | **Evaluation Criteria** |
| --- | --- | --- |
| S1 Experience of the supplier in vehicle – track interaction in the GB mainline railway  [Max 1 page] | Provide a brief description of two projects in which you delivered vehicle – track interaction activities on the GB mainline railway over the last five years? Please provide a brief explanation on why they are relevant to our needs. | Pass: The Tenderer provides a brief description of two projects in which the tenderer has delivered vehicle-track interaction activities on the GB Mainline Railway over the last five years. Further the tenderer explains as to how the referenced projects are relevant to RSSB’s needs. Additionally, the two projects stated by the tenderer gives RSSB with a strong degree of confidence in its experience shown in two suitable projects.  Fail: The Tenderer either fails to provide a brief description of two projects in which the tenderer has delivered vehicle-track interaction activities on the GB Mainline Railway over the last five years or has failed to provide a brief explanation as to how these are relevant to RSSB’s needs or the examples provided do not provide RSSB with sufficient confidence in its experience. |
| S2 Experience of the supplier in vehicle structures and railway civil engineering  [Max 1 page] | Provide a brief description of a vehicle structures and a railway civils engineering related project you have delivered to clients over the last five years. Please provide a brief explanation why you consider them relevant to our needs. | Pass: The Tenderer provides a brief description of a vehicle structures and a railway civils engineering related project the tenderer has delivered to clients over the last five years. Further the tenderer provides a brief explanation as to why the tenderer considers these relevant to our RSSB’s needs. Additionally, the given project provides RSSB with a strong degree of confidence in its experience shown in two suitable projects.  Fail: The Tenderer either fails to provide a brief description of a vehicle structures and a railway civils engineering related project the tenderer has delivered to clients over the last five year or fails to provide a brief explanation as to why the tenderer considers them relevant to RSSB’s needs or fails to provide RSSB with sufficient confidence in its experience. |
| S3 Experience of the supplier in undertaking Cost-benefit analysis  [Max 1 page] | Provide a brief description of project involving cost benefit analyses you have delivered to clients over the last five years. Please provide a brief explanation why you consider them relevant to our needs. | Pass: The Tenderer provides a brief description of project involving cost benefit analyses the tenderer has delivered to clients over the last five years and provides a brief explanation as to why the tenderer considers them relevant to RSSB’s needs. Further the given project provides RSSB with a strong degree of confidence in its experience shown in two suitable projects.  Fail: The Tenderer either fails to provide a brief description of project involving cost benefit analyses the tenderer has delivered to clients over the last five years or has failed to provide a brief explanation why you consider them relevant to RSSB’s needs or fails to provide RSSB with sufficient confidence in its experience. |
| S4 Experience of the supplier in safety risk assessments  [Max 1 page] | Provide a brief description of safety risk assessments you have delivered to clients over the last five years. Please provide a brief explanation why you consider them relevant to our needs. | Pass: The Tenderer provides a brief description of safety risk assessments you have delivered to clients over the last five years and provides a brief explanation as to why the tenderer considers them relevant to RSSB’s needs. Additionally, the project references provides RSSB with a strong degree of confidence in its experience shown in two suitable projects.  Fail: The Tenderer either fails to provide a brief description of safety risk assessments the tenderer has delivered to clients over the last five years or fails to provide a brief explanation why you consider them relevant to RSSB’s needs or fails to provide RSSB with sufficient confidence in its experience. |
| S5 Summary of the Proposal  [Max 1 page] | The Tenderer must provide a concise summary highlighting the key aspects of the proposal and will be used to contextualise the Supplier’s response. | Pass: The Tenderer has provided a concise summary highlighting the key aspects of the proposal of the supplier.  Fail: The Tenderer has not provided a concise summary or has not provided a summary highlighting the key aspects of the proposal of the supplier. |

# 8.0 TENDER EVALUATION (AWARD CRITERIA)

8.1 **ITT Assessment**

**The Contract Award decision is solely based on the basis of Tenderer proposal and price offering.**

8.2 RSSB uses the following quality / price ratio to determine the outcome of the evaluation where quality (technical evaluation) and price are weighted and scored individually before being combined.

Quality 80%: Price 20%

8.3 Technical criteria are weighted and scored as a percentage of the maximum score available with a minimum quality threshold set.

**Technical Evaluation**

8.4 Tenders are assessed on how well they satisfy the technical evaluation criteria.

The relative importance of each criterion is established by giving it a percentage weighting so that all the weightings equal 100%. The Evaluation Matrix provides details of the weightings that RSSB will use in assessing Tenderer proposals.

The Technical Evaluation will be carried out using Tenderer responses to the tender specification using the scoring scheme (identified in Table below).

8.5 The scored responses are generally assessed out of a maximum of five (5). The Evaluation Panel will not be allowed to give partial scores (for example 3.5); however, once all scores are aggregated, the technical scores will be rounded to two decimal places prior to consolidating with the price evaluation.

8.6 The following shall constitute a failure to evidence satisfactory delivery of the requirement(s) of the procurement and will automatically disqualify the Tenderer:

1. A grade of zero (0) in any of the evaluated technical/quality questions in Section D of Schedule One (a) of Part B of the ITT before the weightings are applied; or
2. a grade of one (1) in more than one of the evaluated technical/quality questions in Section D of Schedule One (a) of Part B of the ITT before the weightings are applied

8.7 Those Tender Responses which fail to demonstrate satisfactory delivery of the requirement(s) of the procurement by reason of failing to achieve these minimum thresholds will be set aside and not considered further.

|  |  |
| --- | --- |
| **Grade** | **Definition of grade** |
| 5 | A wholly excellent Tender Response that (where applicable):   * Addresses all aspects of the question in an informed and comprehensive manner; * Demonstrates a thorough understanding of what is being asked for; * Provides evidence of how that understanding can be applied in practice; * Offers full confidence that the Tenderer will deliver the service in full; * Addresses the majority of areas of doubt and uncertainty; and * Provides certain, unambiguous commitments or statements of intent that permit reliance through translation into contractual terms |
| 4 | * A good Tender Response that (where applicable): * Addresses all aspects of the question and is generally of a good standard; * Demonstrates a good understanding of what is being asked for; * Provides a worked-up methodical approach; * Offers confidence that the Tenderer will deliver the service in full with limited areas of doubt or uncertainty; * Addresses key areas of doubt and uncertainty; and * Provides commitments that can be translated well into contractual terms |
| 3 | A satisfactory Tender Response that (where applicable):   * Addresses the majority of the question and is generally of a good standard but lacks substance or detail in some areas; * Demonstrates an understanding of what is being asked for; * Provides a satisfactory approach; * Offers a general level of confidence that the Tenderer will deliver the service (but with room for doubt in some areas); * Address some areas of doubt and uncertainty; and * Provides some commitments that can be translated well into contractual terms. |
| 2 | A Tender Response that (where applicable):   * Addresses some of the question but *either* lacks relevant information and detail *or* lacks substance in a manner that would suggest the response is a “model answer”; * Demonstrates some understanding but with a lack of clarity in key areas; * Provides an approach which is not wholly appropriate or viable orlacks evidence; * Shows that the level of confidence that the supplier can deliver does not outweigh the doubt; * Does not address many areas of doubt and uncertainty; and * Does not offer sufficient commitment (with doubt as to the extent to which would translate into contractual terms) |
| 1 | A generally unsatisfactory Tenderer response that (where applicable):   * Does not address the question or has omissions; * Lacks understanding in significant areas: * Provides an approach which has gaps or creates concerns; * Shows that the level of confidence that the supplier can deliver is low; * Creates uncertainty; and * Displays significant lack of commitment (with doubt as to the extent to which would translate into contractual terms) |
| 0 | A wholly unsatisfactory Tenderer response that (where applicable):   * Provides no response or omissions/oversights that prevent scoring; * Refuses to deliver the requirement; and * Creates concerns so significant that the response would be detrimental to the interests of RSSB |

# 9.0 ITT Evaluation Matrix (Award Criteria)

|  |  |  |  |
| --- | --- | --- | --- |
| **Heading** | **Specific question(s)** | **Evaluation Criteria** | **Weight** |
| A1 Evidence of the Tenderer’s technical ability in rolling stock and infrastructure interactions  [Max 3 pages] | The Tenderer should:   * Provide evidence of previous experience of vehicle track interaction and post derailment analysis carried out within the organisation(s). * Provide detail of relevant experience and knowledge from the project team. | The Tenderer’s response shows that it   * Has identified relevant projects as experience and individuals to deliver the work and that the overall skills covered is suitable * Has displayed how it will access the required industry experience and knowledge (if expertise is not in-house) | 20% |
| A2 Robust methodology  [Max 5 pages] | What is your proposed research and analysis methodology? | The Tenderer’s response shows that it   * Has understood and met the requirements * Has proposed a credible methodology * Outlines how the proposed methodology will deliver the project successfully | 30% |
| A3 Project Delivery: resources, budget and risk management  [Max 4 pages] | Provide allocation of appropriate resources against deliverables and have named individuals against specific roles.  How will the work be scheduled and managed? | The Tenderer’s response shows that it   * Has allocated relevant individuals to deliver the work and that the overall mix of skills and effort for each task is adequate * Has provided a credible plan for delivering successful outcomes to time, quality and cost * Has committed a high quality team of individuals to deliver the work with appropriate effort allocation | 20% |
| A4 Communication  [Max 1 page] | How will you ensure effective communication with both yourself & RSSB? How do you propose to communicate with the key industry supporters? | The tenderer should:  Provide a well thought out and appropriate communication plan for communication between the tenderer and RSSB  Provide a robust statement for communicating with key stakeholders | 5% |
| A5. Risk and Mitigations  [Max 1 page] | What risks and challenges do you foresee in this project? What mitigating actions will you take in relations to these risks? | The Tenderer’s response has:  The tenderer provides a detailed and succinct Risk Register  The tenderer identifies appropriate risks for this project  The tenderer identifies appropriate challenges for this project  The tenderer provides an in-depth statement of what mitigating actions will be taken in relation and with specific regard to each risk  The tenderer demonstrates how they will overcome the challenges that have been identified for this project | 5% |
| A6 Cost of project | Provide a fixed cost for the project and the associated cost break down. Describe how and why this represents value for money. | * The tender with the lowest total cost will receive 100% of the available weighted score.   Other Tenderer’s tenders will receive a pro-rated relative to the lowest cost according to the following formula:  Score of other tender = lowest tender total cost / other tender total cost x 100%. | 20% |

# 10.0 PRICE EVALUATION

10.1 All prices quoted shall be in sterling (unless otherwise requested in the Tender Documents), exclusive of Value Added Tax and shall be firm.

10.2 A full and comprehensive breakdown of all costs and expenses to provide the goods, services or works requested in this invitation to tender must be provided and all assumptions must be clearly stated.

10.3 Failure to provide adequate detail may cause your tender to be judged non-compliant.

10.4 The construction of the price must be clear and easy to understand. Where appropriate the use of tables to show pricing is preferred. We require the following information:

* + - A breakdown by grade and named individual, indicating the number of days to be worked on each task and the daily rate to be charged.
    - A list of sub-contracts with prices and copies of quotations where available (a similar breakdown by grade, named individuals and rates, as above, is required where the sub-contract is for manpower).
    - Details of any other costs, such as hire charges for equipment.
    - Details of travel and subsistence and all expenses to be incurred. Mileage reclaim will be linked to maximum levels set by HMRC.
    - The above breakdowns should be further broken down into individual work packages.

# 11.0 TENDER EVALUATION CRITERIA AND MINIMUM REQUIREMENTS

11.1 In evaluating tenders, the most economically advantageous tender(s) will be sought. This will be using the evaluation criteria and weightings detailed in **ITT Evaluation Matrix** **Award Criteria**.

11.2 The evaluation criteria detail the minimum requirements. Therefore, any tender which cannot demonstrate that it meets any of the minimum requirements will not be marked and will automatically score zero.

Tenderers are advised to carefully consider the attached specifications, ask clarification questions to ensure these are understood.

# 12.0 CONDITIONS OF CONTRACT

The terms and conditions of the contract are contained with a separate document.

**Qualification of the Contract**

Where Tenderers have any queries or concerns with any specific condition of the terms and conditions of the contract, these should be submitted in writing to **shareditt@rssb.co.uk** as soon as possible, and in any case no later than 10 days prior to the deadline for submission of tenders.  Please ensure the specific condition(s) and proposed amendment(s) are provided.  These will be reviewed by RSSB on a case by case basis, and, if accepted, revised terms and conditions will be issued to all Tenderers.  Failure to accept the terms and conditions of the contract or to qualify the tender in any way, may result in the tender being rejected by RSSB.

## 13.0 RSSB Company Information

***Insert Work Package Title*Introduction**

RSSB was established in April 2003. The Company’s primary objective is to facilitate the railway industry’s work to achieve continuous improvement in the health and safety performance of the railways in Great Britain, and thus to facilitate the reduction of risk to passengers, employees and the affected public. The railway is a complex system with multiple interfaces delivered by many different organisations. At RSSB we bring these different organisations together to make collective decisions. We help the rail industry carry out research, understand risk, set standards and improve performance. We provide a constant point of reference in a changing environment.

We support rail in the areas of safety standards, knowledge and innovation and a wide range of cross- industry schemes requiring our knowledge and independence. Our work involves close collaboration, but as technical experts we also appoint suppliers in the wider market to provide an informed view.

**Key elements of the company’s remit are to:**

* Manage Railway Group Standards on behalf of the industry
* Lead the development of long-term safety strategy for the industry, including the publication of annual Railway Strategic Safety Plans
* Propose change through facilitation of the research and development programme, education and awareness
* Measure, report and inform on health and safety performance, safety intelligence, trends, data and risk
* Support cross-industry groups in national programmes which address major areas of safety concern
* Facilitate the effective representation of the UK rail industry in the development of European legislation and standards that impact on the rail system

RSSB is a not-for-profit company owned by major industry stakeholders. The company is limited by guarantee and is governed by its members, a board and an advisory committee. It is independent of any single railway company and of their commercial interests.

# Background

## RSSB Overview

*RSSB* is a membership organisation in the railway that helps industry by understanding risk, guiding standards and managing research. The rail industry in Britain is made up of many different organisations, but they all form a system and share a common purpose, to move people and freight safely and efficiently by rail. *RSSB* brings all parts of this system together to make collective decisions, products and services, to help industry drive out unnecessary cost, improve business performance and develop long-term strategies.

*RSSB’s* activities include:

* **Understanding risk –** Using safety intelligence from across the rail industry and elsewhere with the latest risk modelling to inform members and support safe decision making.
* **Guiding standards** – Creating, reviewing and simplifying GB standards to align with European requirements; managing the *Rule Book* and making it easier for the railway to deliver efficiently and safely.
* **Managing research, development and innovation** – Undertaking, commissioning and managing research and innovation programmes to address current needs, provide knowledge for decision making now and for the future, and promoting step changes to deliver the *Rail Technical Strategy*.
* **Collaborating to improve** – As an independent cross-industry body with a critical mass of technical expertise, supporting activities which require collaboration. These range from supplier assurance schemes (*RISQS, RISAS*) to confidential reporting (*CIRAS*), from health and wellbeing strategies to sustainability principles.

Specification for research project

T1143: Devices to guide derailed trains

# Background

RAIB have noted a sequence of derailment incidents over many years where the lateral excursion of the lead vehicle has been limited by engagement between vehicle and track features that were not intended for that purpose.

The most recent of these was in September 2016 at Watford Junction[[1]](#footnote-1) where the right-hand rail engaged between the traction motor and gearbox housings of the derailed vehicle and limited the deviation from the track and as a consequence reduced the severity of the impact with an oncoming vehicle.

RAIB have made recommendations to consider the use of mechanical devices or structures to guide derailed trains with the latest recommendation in recommendation 3 of the Watford report:

1. *“3. The intent of this recommendation is to identify and assess the effectiveness of design features that provide guidance to trains when derailed, so limiting the deviation of trains from the track and reducing the risk of collision with trains approaching on other lines. This could be achieved by the retention or strengthening of features already forming part of the bogie structure, or infrastructure measures such as guard rails. It is also intended that the learning from research in this area is used to derive meaningful design requirements.*

*The Rail Delivery Group (RDG), in conjunction with RSSB, should:*

*a. commission research into the ways in which guidance can be provided to derailed trains. This should include consideration of:*

1. *how the design of bogies and bogie mounted equipment can assist in limiting the lateral deviation of passenger trains during a derailment;*
2. *practice in other countries (eg Japan);*
3. *how specially installed infrastructure features can achieve the same effect at high risk locations;*
4. *potential design requirements for the retention or enhancement of such features on new trains or infrastructure; and*
5. *the potential benefits and drawbacks of such measures.*

*If such features, whether existing or additional, are shown to have a net beneficial effect in reducing risk by limiting lateral deviation, RDG/RSSB should:*

*b. share this information with the relevant Standards Committees; and*

*c. record and disseminate the design requirements with a view to their incorporation into future standards.”*

Previous similar recommendations made have been reviewed by industry through the Rolling Stock Standards Committee and concluded that such devices were unlikely to be practical or effective. The purpose of this study is to provide a broader, more comprehensive study with objective outputs to provide a definitive position on derailment mitigation.

# Objectives

Devices to guide derailed trains can be split into two categories, rolling stock mounted solutions and infrastructure mounted solutions. It is proposed that the project is split into three work packages; the first two to address the two categories separately and the third to bring the findings together.

* 1. Work Package 1: Assessing the use of Rolling Stock Mounted Equipment for the Reduction in Risk of a Derailment.

2.1.1 Assessment of technical strategies and devices.

Identify, categorise and assess the rolling stock mounted systems, including those under development and those used outside GB intended to limit lateral excursion in the event of derailment. Define the mechanism of restraint and assess the potential effectiveness and limitations of each system. The study shall include descriptions of devices deployed in service and any others that have been described in academic research.

2.1.2 The behaviour of a derailed vehicle during and immediately after leaving the rails.

Through dynamic modelling, understand the geometry and forces relating to secondary engagement of bogie mounted structures on the rail following derailment. The modelling should estimate the direction and magnitude of potential restraining forces to be imposed by track features, and the resultant lateral deviation from normal running position. Modelling should be carried out for plain line track only, but the impact of Switches and Crossings (S&C) should be considered qualitatively. Variation from speeds up to 125mph should be considered.

2.1.3 Potential for bogie or axle mounted equipment in GB railways

Based on the constraints of GB Lower Sector Vehicle Gauge (LSVG) evaluate the options available to provide rolling stock mounted devices for limiting lateral deviation following derailment. This should consider the structures that came into play in previous derailments (see Appendix A) and the systems identified in 2.1.1. This evaluation should consider interactions based on the modelling carried out in 2.1.2, and interactions with S&C. From this evaluation, define and summarise viable options, and document options ruled out and reasons for doing so.

*Note: There might be circumstances where there is a case for devices that exceed of LSVG, and where this is necessary the considerations should be presented.*

## Work package 2: Assessing the use of Infrastructure Mounted Equipment for the Reduction in Risk of a Derailment.

2.2.1 Understanding of Current Worldwide Solutions and approaches

The current use of guard rail systems in the UK is associated with the prevention of catastrophic disasters following a derailment. These are generally associated with structures over water, and high-level structures in urban areas.

Beyond this reasoning, the logic behind the positioning of these sites is perhaps not consistently applied and well understood, and it is unlikely, in the event of a track renewal, that an alternative solution would be implemented and therefore a like for like replacement would be implemented.

It is believed that Network Rail analysed what means of containment have been applied by rail authorities in other parts of the world, and the starting point for this study would be to assess all work carried out by rail authorities in the UK.

Once the extent of those studies has been collated, then the scope of any additional research can be established. The study should seek to have discussions with selected rail authorities with comparable operating characteristics as the UK.

The study should also address any research that has been carried out to understand the mechanism of a derailed train and any associated linkage to speed. It is understood that some European rail authorities have found that any form of guard rail or derailment guidance is not effective above a certain speed and could then in fact increase the risk of harm.

2.2.2 Understanding of the magnitude of risk and development of a risk based approach

It is clear that the wholesale installation of guard rails, or an equivalent system, has a high capital cost, and it will also increase the operational cost of the rail system.

It is suggested that this work focuses on the development of a risk based approach which gives the infrastructure manager the ability to target investment. Considerations should be given to both likelihood of an event and impact, and will likely include, but not necessarily limited to, an assessment of the following:

1. Properties of the track including curvature, ballast depth, presence of parallel line and distance of the six-foot interval.
2. Line speed
3. Type, frequency and crashworthiness of traffic
4. Presence of local structures, and height and condition of the structures
5. Presence of cuttings and embankments, their geometry and risk of landslides
6. Consequential risk in immediate area
7. Dead load on the structure
8. Clearances to structural members
9. The existence of derailment-containment kerbs

It is recognised that this work aims to inform decision making from and not recommend a particular spending/policy approach. The result of this work should therefor allow infrastructure managers to apply the approach developed for their network from both a Cost Benefit Analysis or So Far As Is Reasonably Practicable (SFAIRP), and a Fixed funding approach.

## Work package 3: Review use of devices to guide derailed train

This work package will take a railway system view to establish the scenarios where a rolling stock solution, an infrastructure solution or some combination of the two would be appropriate. Considerations would include:

* The relative merits of Rolling Stock or Infrastructure solutions
* Potential effects on other systems, inspection and maintenance regimes
* Review of difference in risk profile between plain line and S&C
* Review of contribution of other factors that affect outcome of derailed train trajectory
* Identify situations where derailment guidance is not likely to be justified
* Range of costs and feasibility of different implementation approaches.
* Recommendations on which, if any, solutions would be appropriate for introduction to the GB network, and appropriate mechanisms for achieving deployment.

# Scope

|  |  |
| --- | --- |
| **In Scope** | **Out of Scope** |
| * Leading passenger vehicles and locomotives * Dynamic modelling following derailment * Passive devices to guide derailed trains * Specification of new trains and of retrofitting the existing fleet * Devices compatible with the whole GB mainline network * Comparative risk and economic analysis. (Comparing the do-nothing scenario to identified feasible options). * Approaching train companies/infrastructure managers in other countries to understand their solutions * Consider interaction with all track features (e.g. S&C, Bridges, Tunnels, cuttings, embankments, electrical equipment etc) * Consider devices both inside and outside of bogie frames * Consider the applicability of different derailment scenarios * Consider the functionality of lifeguards * A general principle applicable to all trains (or sub-divided if there is a pattern of common conditions or circumstances) * Consider relevant recent derailments and how outcome might have changed if derailment devices had been in place. | * Freight wagons * Dynamic modelling of derailment mechanism * Active devices for limiting lateral deviation * Frangible equipment for limiting lateral deviation * Design or specification of new devices to guide derailed trains * Physical testing * Change in track design of plain line or switches and crossings. * Analysis applicable to a specific vehicle or type |

# Methodology

Suppliers are expected to provide a methodology suitable to achieving the project objectives and meeting the critical success factors. It is likely that this project will require:

* Review of Industry and academic research into the topic of derailment mitigation
* Detailed review of previous derailment incidents
* Engaging with rail authorities in and outside the UK
* Conduct modelling and analyses into derailment behaviour
* Understanding interaction with Lower Sector Vehicle Gauge
* High-level cost benefit analysis of the different solution

# Deliverables

|  |  |
| --- | --- |
| **1. Work package 1 findings** | **Report** |
| **A report detailing the findings of work package 1: Assessing the use of Rolling Stock Mounted Equipment for the Reduction in Risk caused by a Derailment.**   1. Technical strategies or devices deployed in other countries 2. Results from vehicle derailment behaviour modelling 3. Potential for bogie or axle mounted equipment in GB railways | |
| This report will be delivered in RSSB format and will be made available on SPARK | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | |  |  | | --- | --- | | **2. Work package 2 findings** | **Report** | | **A report detailing the findings of work package 2:** **Assessing the use of Infrastructure Mounted Equipment for the Reduction in Risk caused by a Derailment.**   1. Summary of current worldwide solutions and approaches 2. Description of the methodology, algorithms and assumptions of the risk-based approach developed to inform infrastructure manager investment decisions | | | This report will be delivered in RSSB format and will be made available on SPARK | |  |  |  | | --- | --- | | **3. Risk Analysis Tool** | **Tool** | | **Risk based tool.**   1. Tool 2. User guidance | | | To be provided in the most suitable format, to be agreed by the project steering group. | |  |  |  |  | | --- | --- | --- | | **4. Review use of devices to guide derailed train** | **Report** | | | **Final report summarising the findings from work package 1 & 2 and providing:**   * The relative merits of Rolling Stock or Infrastructure solutions * Potential effects on other systems, inspection and maintenance regimes * Review of difference in risk profile between plain line and S&C * Review of contribution of other factors that affect outcome of derailed train trajectory * Range of costs and feasibility of different implementation approaches. * Identify situations where derailment guidance is not likely to be justified * Recommendations | | | | This report will be delivered in RSSB format and will be made available on SPARK | | | | **6. Research in Brief** | | **Report** | | | **A four-page document summarising the research, its findings, and the potential benefits generated** | | | | | This report will be delivered in RSSB format and will be made available on SPARK | | | | |

# Stakeholders roles and responsibilities

|  |  |  |
| --- | --- | --- |
| **Title** | **General role in project** | **Role in acceptance of deliverables** |
| **Project manager** | The RSSB project manager is the first point of contact during project delivery. The project manager 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 Lead** | Throughout the project, the RSSB technical lead ensures that technical aspects are reflected accurately.  Technical aspects can refer to specific issues around structures, vehicle dynamics and gauging. | Reviews emerging outputs, and deliverables from a 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.  The steering group comprises the stakeholders listed here and other interested parties as deemed appropriate to the project.  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 £140,000*.* 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 October 2018 with the ambition to have the work complete by May 2019. These are indicative dates and RSSB is prepared to consider bids that vary from these expectations if they have a robust and realistic project plan, and an explanation of the proposed changes to the dates.

No dependencies have been identified at this stage.

# Critical success factors and risk management

The supplier should ensure that relevant risks are identified and managed within their proposed method. Some high-level risks to consider include:

* Evolving technology,
* Lack of clarity in the approach for GB mainline railway
* Diversity of vehicle designs and track features

Critical Success factors

* The analysis and recommendations are objective and independent.
* A clear and robust conclusion with caveats where appropriate.

Appendix A

# Previous relevant accidents

RAIB findings from accident investigations have indicated:

* bogie mounted devices, including axle mounted brake discs, can perform a useful secondary function in limiting lateral deviation
* such devices seem to offer potential for improving derailment-worthiness with minimal cost/weight addition.

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| --- | --- | --- |
| Examples: |  |  |
| * Moy | (Nov 2005) | AWS bracket |
| * Duncraig | (Jan 2007) | Axle mounted inboard brake disk |
| * Barrow | (Feb 2008) | Axle mounted inboard brake disk |
| * Ardnaff | (Nov 2009) | Axle mounted inboard brake disk |
| * Cummersdale | (Jun 2009) | Snow plough |
| * ClarboroughTunnel | (Apr 2012) | Axlebox |
| * Watford Tunnel | (Sept 2016) | Gearbox/traction motor |

**Appendix X Form of Tender**

This section outlines how the offer from the Tenderer is to be constructed. Please return this Tender Declaration along with your Tender and retain a copy for your records.

Having examined the ITT email, the Instructions to Tenderers, the Information Required From Tenderers, the Conditions of Contract, the Specification and this Form of Tender (the “Tender Documents”), we offer to supply all/part of (delete as applicable) the goods, services or works specified in these Tender Documents.

We undertake if selected, to perform the contract in accordance with the Tender Documents, including the Conditions of Contract contained herein.

We agree that this tender shall remain open for acceptance by the Customer for 180 days from the date stipulated for the return of tenders.

We understand that you are not bound to accept the lowest, or any tender you may receive.

We certify that this is a bona fide tender, and that we have not fixed or adjusted the amount of the tender by or under or in accordance with any agreement or arrangement with any other person. We also certify that we have not done and we undertake that we will not do, at any time before the hour and date specified for the return of this tender, any of the following acts:

1. Communicate to a person, other than the person calling for the tenders, the amount or approximate amount of the proposed tender. Except where the disclosure, in confidence, of the approximate amount of the tender was necessary to obtain insurance premium quotations required for the preparation of the tender.
2. Enter into an agreement or arrangement with any other person that he shall refrain from tendering or as to the amount of any tender to be submitted.
3. Offer or pay or give or agree to pay or give, any sum of money or valuable consideration directly or indirectly to any person, for doing or having done or causing or having caused to be done, in relation to any other tender or proposed tender for the said goods, services or works, any act or thing of the sort described herein.

We recognise that the Customer reserves the right to clarify details of our offer prior to the award of any contract.

We hereby undertake that the period during which this tender remains open for acceptance not to divulge to any persons, other than the persons to whom the tender is to be submitted, any information relating to the submission of this tender or the details contained therein except where such is necessary for the purpose of submission of this tender.

**Appendix X Subcontractors**

All suppliers to RSSB are asked to provide details of all sub-contractors that will be used to perform the contract.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name & Address of Sub-Contractor | | Service performed for Contractor | Provide details of staff numbers[[2]](#footnote-2) | Provide latest year’s turnover |
| Name: |  |  |  |  |
| Address: |  |
| Name: |  |  |  |  |
| Address: |  |
| Name: |  |  |  |  |
| Address: |  |

**Appendix X Conflicts** **of** **Interest**

**Tenderers have a continuing duty to disclose actual or potential conflicts of interest in respect of itself, its named sub-contractors and / or consortia members.**

**Please describe any (potential) conflicts of interest that the Tenderer has identified and how these will be managed\*:**

If you **DO** **NOT** have any conflicts to declare, please tick this box:

Tenderers are reminded that failure to identify material conflicts of interest may lead to rejection of its tender response.

Guidance to Tenderers:

Tenderers should describe in the detail the perceived conflict (how it could be perceived in the context of this procurement) and the measures it will take to mitigate the conflict through the procurement life-cycle and service delivery

1. Derailment due to a landslip, and subsequent collision, Watford (RAIB, 16 September 2016) [↑](#footnote-ref-1)
2. This is the average annual numbers of both staff and managerial staff employed over the last trading year [↑](#footnote-ref-2)