OPEN TENDER

RSSB INVITATION TO TENDER FOR THE PROVISION OF: RSSB2660 - T1137 Electrical and Data Control Compatibility between Trains

Deadline: Friday 24th November 2017

ITT Reference RSSB2660 - T1137 Electrical and Data Control Compatibility between 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:

|  |  |
| --- | --- |
|  | **Start Date** |
| Expression of interest meeting | Not Applicable |
| I.T.T issued | 16/10/2017 |
| Supplier clarification questions deadline | 17/11/2017 |
| **Deadline for Submitting Tenders** | **24/11/2017 17:00 hours** |
| Post Tender Clarification & Evaluation | W/C 27/11/2017 |
| Estimated notification of award decision | W/C 11/12/2017 |
| Target contract commencement date | W/C 08/01/2018 |

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.

|  |
| --- |
|  |

Name of ultimate parent company (if this applies)

|  |
| --- |
|  |

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

|  |
| --- |
|  |

**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 rolling stock modifications | Provide a short description of two projects, delivered in the last 5 years, which involved rolling stock modifications. Briefly explain why they are relevant to our needs. (Max 1 page) | **Pass/Fail**  **Pass =** The supplier has provided a short description of at least two projects, delivered in the last 5 years, with both projects being involved with rolling stock modifications. Further the supplier has briefly explained why the two aforementioned projects are relevant to RSSB’s needs.  **Fail =** The supplier has either not provided a short description of at least two projects, delivered in the last 5 years, with both projects being involved in rolling stock modification or the supplier has not briefly explained as to why these are relevant to RSSB’s needs or has not done so to a degree of quality that satisfies RSSB so that the supplier can deliver the required work. |
| S2 Experience of the supplier in defining rail technical requirements | Provide a short description of two projects, delivered in the last 5 years, which involved the creation of industry technical requirements. Briefly explain why they are relevant to our needs and resulted in the requirements being adopted. (Max 1 page) | **Pass/Fail**  **Pass =** The supplier has provided a short description of two projects, delivered in the last 5 years, which involved the creation of industry technical requirements. Further the supplier briefly explains why these are relevant to RSSB’s needs and resulted in the requirements being adopted.  **Fail =** The supplier has not provided a short description of two projects, delivered in the last 5 years, which involved the creation of industry technical requirements or the supplier has not briefly explained as to why these are relevant to RSSB’S needs, or neither of the two projects has resulted in the requirements being adopted or the supplier has not done so to a degree of quality that satisfies RSSB so that the supplier can deliver the required work. |
| S3 Experience of the supplier in specifying data protocols for rolling stock | Provide a short description of two projects, delivered in the last 5 years, which involved an expertise in data transmission. (Max 1 page) | **Pass/Fail**  **Pass =** The supplier has provided a short description of two projects, delivered in the last 5 years, which involved the utilisation of expertise in data transmission.  **Fail =** The supplier has not provided a short description of at least two projects, delivered in the last 5 years which involved the utilisation of expertise in data transmission or the supplier has not done so to a degree of quality that satisfies RSSB so that the supplier can deliver the required work. |

# 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 Knowledge and expertise of subject area (Max 4 pages) | Knowledge and expertise of the rail coupling, including data and power transmission. | The Tenderer’s response includes:   * Evidence of project experience, knowledge and expertise in the subject area * Description of how it will be applied to this project * Describes how the tenderer through its knowledge and expertise will add value to the project | 20% |
| A2 Robust methodology and ability to apply it to client’s needs (Max 5 pages) | What is your proposed methodology? How will the project tasks be split? How will quality be assured and outputs checked? How will the results be presented in a way that achieves the aims of the research? | The Tenderer’s response shows that it:  • Has understood the requirements  • Has proposed a credible and sound methodology  • Has described how this will be applied to the specific challenges the work is set up to cover  • Understands the project tasks  • Explains to a high degree how the project tasks will be split  • Has challenged the technical aspects of the specification, where there is potential to enhance the outcomes of the project | 30% |
| A3 Project Delivery: resources, budget, t (Max 10 pages) | Provide adequate allocation of appropriate resources against deliverables.  How will you work with RSSB to ensure the quality and the content of the deliverables is fit for purpose? | The Tenderer’s response shows that it   * Has identified relevant individuals to deliver the work and demonstrated that the mix of skills covered are appropriate to deliver the project * Has provided a credible plan for delivering successful outcomes to time, quality and cost, including appropriate ways to engage with RSSB and stakeholders * The tenderer proposes a team that has sufficient experience to successfully deliver the specification. * The tenderer proposes a team that has relevant experience to successfully deliver the specification. * The tenderer proposes a team that has a high level & quality, in terms of capability, to successfully deliver the specification. | 20% |
| A.4 Risks and Challenges | What risks and challenges do you foresee in this project? What mitigating actions will you take in relations to these risks?  Tenderers should provide, in no more than three pages, the risks and challenges that the tenderer foresees for this project as well as the mitigating actions:   * 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 by the tenderer 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. | * 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 by the tenderer 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. | 10% |
| A5 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 score relative to the lowest cost per 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**

Specification for research project

T1137 Electrical and Data Control Compatibility between Trains

# Background

The incompatibility of mechanical and electrical couplers between trains operating on the same route has increased significantly since privatisation in 1994. Under British Rail there were three standard types of automatic couplers in use for coupling between different units (BSI couplers for DMUs, modified Tightlock coupler on the EMU fleet, and the Drophead Buckeye coupler for Intercity stock) but incompatible with each other.

This compatibility problem still exists today; in addition, rapid technological changes have enabled each new fleet to have a bespoke electrical control system, therefore existing fleets of different classes from the same manufacturer are often unable to work in multiples with new ones. Even with much simpler electrical and data control systems, achieving compatibility between fleets from different manufacturers, has often required lengthy and expensive modifications.

A single manufacturer is estimated to be supporting around 100 different designs of coupler heads; this represents 1200 distinct configurations when mountings and electrical interfaces are taken into consideration[[1]](#footnote-1); the compatibility issue has adversely impacted train service performance through the life of the train fleets concerned. On the approaches to key hub locations, the likelihood that a following train can automatically couple to, and rescue, a failed train in front is generally less than 50%, and in the worst affected areas can be as low as 20%[[2]](#footnote-2).

A previous research project, T1003 - ‘[Standardisation of coupling arrangements](https://www.sparkrail.org/Lists/Records_StaffMembers/DispForm.aspx?ID=550)’, analysed both the technical and economic case for couplers’ compatibility and concluded that there is an economic justification for standardisation. Whilst the research evaluated the business case for mechanical automatic coupler compatibility and for full compatibility (enabling interworking), the development of technical solutions was confined to mechanical standardisation.

Moreover, T1003 confirmed that there are no commercial, regulatory, or technical issues that might prevent standardisation of couplers. Full standardisation of coupling arrangements will bring a substantial reduction in the time that failed trains take to be rescued, with subsequent decreased disruption to the following trains. It is estimated that the delays due to failed trains will halve. This will result in reduced costs to the industry.

Other benefits from standardisation include:

* Safety benefits for drivers due to avoidance of accidents from manual coupling in emergency situations
* Reduced depot maintenance costs from standardised types of coupler
* Reduced purchase cost for couplers due to competition
* Provide for more effective cascades and utilisation of fleets across the network. Fewer spare trainsets would be required to cover sub-fleets since all train units would be able to work with each other.
* Reduced operating costs from better utilisation

The T1003 project had drawn a draft specification for a standard mechanical coupler for GB rail in the form of a draft British Standard. This standard, once accepted through the normal British Standard Institution process, along with additional information in RDG’s Key Train Requirements document, will allow, assist, and encourage stakeholders to support the initiative.

This research project, T1137, now seeks to identify the technical requirements for electrical and data connectivity of automatic couplers between train units and/or vehicles. The outcome will be information required to enable the specification of standardised data and electrical transmission configurations. The specifications would be incorporated into the next version of the Key Train Requirements (KTR). Using the recommendations, rolling stock procurers, manufacturers and system suppliers will be able to specify the coupler arrangements on their new fleets which will permit interworking and, in the future, enable trains to be cascaded more easily between operators.

# Work package objectives

The project aims to investigate the electrical and data connectivity requirements for automatic couplers across a range of scenarios (including different train rescue situations), considering different technology enablers and business case factors to propose a standard protocol.

This includes:

*Identifying Use cases*

* Documented scenarios of train rescue together with coupling/uncoupling procedures using standardised electrical and data automatic couplers. The scenarios should cover interworking between trains with distinct types of traction systems (electric, diesel and hybrid). In each case, the data/electrical control wires that need to be transmitted between the trains concerned has to be evaluated.
* Exploration of other possible modes of operation between simple rescue and full interworking, and an evaluation of the business cases for these intermediate modes.
* Explanation of full interworking between different train types (that is, electric, diesel, hybrid) and an evaluation of the data/electrical transmission required

*Defining and assessing the technological options*

* An evaluation of the technological challenge, that is, achieving the interface between the different existing Train Control and Management Systems (TCMS) and the vehicles being linked via standardised automatic couplers. This interface would allow interworking with other trains.
* An evaluation of options for the transmission of data and electrical control wires between units and/or vehicles, starting with a technology search to identify existing or future products which might be suitable. The evaluation should consider the options particularly in relation to:
* Business case
* Safety integrity (Safety Integrity Level 4 is desired)
* Defining a protocol for the transmission of data and electrical control wires between trains, recognising the need to achieve conformance of performance characteristics between distinct types of train and considering technological solutions to achieve this.

*Recommending actions*

* Preparing a report which:

- Summarises options, in terms of modes of operation and associated business cases.

- Recommends a standard protocol for the transmission of data between units and/or vehicles.

- Recommends technical solutions, potentially based on those available today and those anticipated in the future, for the transmission of data between units and/or vehicles. The evaluation should include consideration of business case and safety integrity.

# Scope

|  |  |
| --- | --- |
| In scope | Out of scope |
| * Assessment of automatic coupler options, considering operational needs, business case, technology options, and safety integrity (that is, data and electrical automatic coupler systems have to be defined with a Safety Integrity Level of 4) * Text that is suitable for incorporation into the Key Train Requirements (KTR) that details technical specifications required for standardised data transmission, (that is, data protocols and methods of transmission) * Consideration of closer running type scenarios (for example, “on the fly” coupling at stations and, eventually, on the move) * Consideration of weathering on the automatic couplers’ solutions * Consideration of distinct rescue situations, such as “live rescue” where a power supply is provided to the rescued vehicle and air conditioning system is operational * Ensuring that the technical solutions developed work together with the previously defined solutions for mechanical standardisation of automatic couplers (T1003’s specification) | * Assessment of gangway coupling * Retrofitting requirements for couplers * The transfer of water between vehicles (if any) or hotel services requirements are not to be included in the automatic coupler specifications. The transmission of DC and AC traction current is also out of scope. * Specifications for coupler covers are not required * Dead rescue is out of scope since no electrical/data transmission will be needed * Non-GB rolling stock * Development of standard automatic couplers and testing are out of scope |

# Methodology

RSSB expects suppliers to develop the methodology to successfully meet the objectives and cover the scope. However, it is likely that the work will involve the following activities:

* Engagement with GB rail industry to understand the specific requirements of stakeholders.
* A review of existing literature to capture good practice in other countries and from other transport sectors.
* Gap analysis to understand the current automatic coupler incompatibility situation in relation to the various existing automatic coupler arrangements.

# Deliverables

All deliverables will use an RSSB template and be available to RSSB members via SPARK.

|  |  |  |
| --- | --- | --- |
| Deliverable name | Type | Description |
| Final report | Report | This report details the approach taken to developing the options and the assessments made, covering modes of operations, business cases, technology options and safety integrity. The report should also provide rescue scenarios that would use the new coupling functionality. |
| Specifications | Specifications written in a format similar to the KTR content. | This standalone document should recommend a standard protocol for the transmission of data and electric controls between trains and technical solutions, potentially based on those available today and those anticipated in the future, for the transmission of data and electric controls between trains. |
| (Draft) Research brief | Report | A four-page document summarising the research, its findings, and the potential benefits generated. |
| A presentation to be made available to industry to promote the material | PowerPoint presentation | This should cover the solutions developed for automatic couplers, their modes of operations, business cases, technology options and safety integrity, with an emphasis on their functioning during rescue scenarios. |

# Stakeholders roles and responsibilities

|  |  |  |
| --- | --- | --- |
| Person | General role in project | Specific role in acceptance of deliverables |
| Delivery manager | The delivery manager is responsible for the detailed project management including project schedules, cost reporting and other relevant project management tasks.  The delivery 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 railway signalling, track engineering, safety relevant operations 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 sponsor’s organisation. They offer expertise for effective project delivery and support the implementation of findings led by the sponsor 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 £110,000.Any bid above this value will need to provide detailed explanation on why the supplier does not 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 December 2017 and be completed by September 2018. 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 changes to the proposed start and end dates.

No dependencies were identified for this project.

# Critical success factors and risk management

The following critical success factors define what RSSB consider to be the key outcomes at the end of this project:

* Gaining industry buy in on the new developed coupler solutions and establishing proper channels to communicate the new solutions to industry members.
* The solutions are future proof and adaptable to emerging technologies or new capabilities that couplers might require.
* The solutions developed do not impinge upon the technical solutions that have been developed for mechanical compatibility.
* The new recommended solutions can be implemented into new fleets order and are considered feasible by rolling stock manufacturers and suppliers.

The project risks identify potential threats to the supplier’s successful delivery of the project. RSSB expects the supplier to identify risks, propose effective management and mitigation measures, and regularly review these risks as the project progresses. RSSB have identified the following initial risks:

* Operators and rolling stock builders are not willing to share the technical specifications of their vehicles
* The solutions developed do not leave room to consider future developments (for example, hydrogen-powered vehicles, 4G on trains, and other types of data being collected and communicated to provide a personalised customer experience)

A detailed risk assessment/register and assumptions register should be provided highlighting areas where greater attention may be required to ensure success of the project.

**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[[3]](#footnote-3) | 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. Standardisation of coupling arrangements (T1003), Pg. 17, RSSB, 2014 [↑](#footnote-ref-1)
2. Standardisation of coupling arrangements (T1003), Research in Brief, RSSB, 2017 [↑](#footnote-ref-2)
3. This is the average annual numbers of both staff and managerial staff employed over the last trading year [↑](#footnote-ref-3)