OPEN TENDER

RSSB INVITATION TO TENDER FOR THE PROVISION OF: RSSB2751 - T1167 - WP2 - Testing the effectiveness of detonators

Deadline: Friday 21st December 12:00 Mid-Day

ITT Reference: RSSB2751 - T1167 - WP2 - Testing the effectiveness of detonators

# 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** |
| I.T.T issued | 20 NOV 2018 |
| Supplier clarification questions deadline | 27 NOV 2018; 12:00 hours |
| **Deadline for Submitting Tenders** | **21 DEC 2018; 12:00 hours** |
| Post Tender Evaluation and Clarification | W/C 7 JAN 2019 |
| Estimated notification of award decision | W/C 14 JAN 2019 |
| Target contract commencement date | W/C 21 JAN 2019 |

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)

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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 audibility testing and analysis.  [Max 1 page] | Could you provide a short description of two projects involving audibility testing and analysis, that you have delivered to clients over the last three years? Please provide a short explanation of why they are relevant to our needs. | Pass: The tenderer provides a short description of at least two projects involving audibility testing and analysis, that the tenderer has delivered to its clients over the last three years. Further, the tenderer provides a short explanation as to “Why?” its referenced projects are relevant to RSSB’s needs. Additionally, through the above this provides RSSB with a strong degree of confidence in its experience involving audibility testing and analysis.  Fail: The tenderer either fails to provide a short description of two projects involving audibility testing and analysis that the tenderer has delivered to clients over the last three years or fails to provide a short explanation as to “Why?” the referenced projects are relevant to RSSB’s needs or fails to provide RSSB with sufficient confidence in its experience of delivering projects involving audibility testing and analysis.  **Note:** Should a “Fail” mark be given at this stage the tenderers bid will not be taken any further and the rest of the bid will not be evaluated. |
| S2 Strengths and key points of proposal  [Max 1 page] | Could you provide a short description a summary of the strengths and key points of the proposal? | Pass: The tenderer provides RSSB with a 1-page summary of the strengths and key points of their proposal  Fail: The tenderer does not provide RSSB with a 1-page summary of the strengths and key points of their proposal  **Note:** Should a “Fail” mark be given at this stage the tenderers bid will not be taken any further and the rest of the bid will not be evaluated. |

# 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 Robust methodology and ability to apply it to client’s needs.  [Max 4 pages] | The tenderer provides a method statement of how it is intended to deliver against all aspects of the work package objectives and scope of this work.   * What is the methodology the supplier intends to implement to test and analyse the effectiveness of detonators? * How will the supplier conduct the field testing? * How will the supplier identify and model the audibility of detonators across a variety of conditions that influence their audibility? * How will the supplier identify the implications of the findings on current expectations and practices? | The Tenderer’s response:   * Demonstrates their understanding of the objectives and provide a coherent and systematic approach to meeting all the objectives * Proposes a sound, impartial and robust methodology to test and analyse the effectiveness of detonators * Identifies how the audibility of detonators will be tested in the field trial, modelled and analysed to identify the effectiveness across a variety of conditions * Proposes how the findings will be compared and understood in relation to appropriate regulations | 30% |
| A2 Knowledge and expertise in subject area  [Max 3 pages] | The tenderer details the knowledge and expertise of the team who will be undertaking this work, and demonstrate their relevance and value for this project.   * What expertise does the supplier have in audibility testing and modelling? * What experience does the supplier have in undertaking audibility testing field-based trials? * How will the tenderer apply their knowledge, expertise and skills to meet the objectives of this work? * What experience does the supplier identify as the specific challenges of operating in the rail environment? | The Tenderer’s response includes:   * Evidence of their knowledge and expertise in the subject area * Describes how they will apply their knowledge, expertise, and technical competence to deliver the objectives of this research * Evidence of their technical competence in audibility testing, modelling, and undertaking field-based trials * Evidence of their understanding of issues specifically applicable in the rail environment | 20% |
| A3 Project Delivery and resources  [Max 3 pages] | The tenderer demonstrates sound resourcing and planning to successfully deliver this work.   * How will adequate allocation of appropriate resources be made against each deliverable? * How will the team ensure the quality and the content of the deliverables are fit for purpose? * What is the schedule that each task will be delivered against? * How will the tenderer manage and engage multiple stakeholders, including representatives from RSSB, Network Rail, RIDC staff? | The tenderer’s response:   * Identifies relevant individuals to deliver the work and demonstrates that the mix of skills covered are appropriate to deliver the project. * Provides a credible plan for delivering successful outcomes to time, quality and cost, including details of allocated effort to activities. * Provides a well thought out and appropriate communication plan for communication between the tenderer and key stakeholders, to ensure the quality and content of the work is fit for purpose | 20% |
| A4 Risks and opportunities  [Max 2 pages] | The tenderer details what risks and opportunities are foreseen in the delivery of the project. The tenderer should detail mitigating actions in relation to the risks identified, and how opportunities can be maximised.   * What are the potential risks to this project? How will these risks be managed and mitigated? * What are the potential opportunities that could be maximised during the delivery of this work? | The tenderer’s response:   * Identifies appropriate risks and opportunities through the use of a risk register. * Identifies what mitigation actions will be taken with specific regard to each risk or challenge identified. * Identifies approaches to exploit the opportunities identified. | 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 (20%).   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.

**Specification for research project**

**T1167.****WP2**

**Testing the effectiveness of detonators**

# Background

Detonators are small metal devices that contain a small quantity of explosives, that are placed on the railhead to cause a loud sound, activated by the wheel-rail interface of a passing train to alert the driver they are approaching a hazard on the line ahead (RSSB GE/GN8532, 2015). During track possessions, detonators are intended to provide a safety protection method if for example a train has been incorrectly signalled into a worksite or to mitigate unauthorised engineering trains exiting the worksite.

For detonators to be effective, they must be clearly audible so necessary precaution and mitigation action can be taken. The Rail Group Standard GM/RT2160 (RSSB, 2010) mandates the requirements for the audibility of detonators in driving cabs, and states that:

“Driving cabs shall have acoustic characteristics that ensure that exploding detonators, as specified in BR 0640A, can be heard inside the cab at any vehicle speed and readily distinguished from background noise” (p. 5).[[1]](#footnote-1)

In a live running railway, it is expected there are a variety of circumstances that will affect the audibility of detonators. T315 workstream 1: noise exposure of staff in driving cabs (RSSB, 2004)[[2]](#footnote-2) suggest sources of driving cab noise include rolling noise, traction and ancillary equipment noise, aerodynamic noise, warning horns, in-cab audible warnings, air-conditioning equipment and heater fans. These, and other factors such as environmental conditions (e.g. weather), insulation of the cab, and subjective comfort, may influence the extent in which detonators are audible to the driver.

Detonators that are not clearly audible to the driver may exacerbate safety risks, if they are not alerted to a hazard or possession on the line ahead. T326 Good Practice Guide for the design of alarms and alerts (RSSB, 2008) note that warning alarms must be heard against background noise but should not exceed noise tolerance limits. Ambient noise should be no greater than 85dB(A) for any length of time, and alarms should be between 15 and 25dB(A) above the ambient noise, which in total, should not generally exceed about 110dB(A). As detonators provide a warning alert that is activated externally to the cab, given variable factors that may influence the audibility of detonators, it is unknown in what conditions detonators are clearly audible to the driver.

It is also possible that audibility of detonator activation may alert track workers of an approaching train. The extent in which detonators may be audible to track workers is likely to vary depending on conditions such as distance of working from detonator placement, weather, personal protective equipment (ear protection) and machinery in use. However, little evidence is currently available to determine whether detonators provide such secondary function, and what, if any, conditions may influence their effectiveness in being audible to track workers. Therefore, this research sets out to evaluate the effectiveness of detonators, to determine the conditions in which they are audible to drivers within the cab and track workers.

It is recognised that the placing and removing of detonators require staff to access the track, exposing them to risks of trackside working, including train movements, slips, trips and falls. This research does not investigate the risks and benefits associated with detonator use, as this is being undertaken in RSSB research project T1155 – Reviewing the risks and benefits of detonator use. T1155 is undertaking a case by case review of detonator use, benefits and risks, to identify cases where a safety benefit can be gained through alternative options to detonator use[[3]](#footnote-3). T1155 also includes a review of alternative technologies and options to detonators. Therefore, T1167 (this project) is expected to align to T1155, which will be supported by RSSB staff working across both projects.

# Work package objectives

The purpose of this project is to provide evidence on the extent in which detonators are audible to staff, including the driver and trackworkers. More detailed objectives include:

* Identify the key conditions that may influence the audibility of detonator activation to staff inside the train cab and those working on the track (e.g. train cab insulation, weather, train running speed, ambient sounds, track joints)
* Create a model able to predict the audibility of detonators by drivers and track workers across the range of conditions
* Define the scenarios to activate and test the audibility of detonators in a field-based trial
* Produce a test plan and method of work to support the safety case risk assessment for carrying out the field trial. This will need to be approved by the test track site
* Undertake the field-based trial and gather data
* Validate the model and ensure it provides a good prediction of the audibility of detonators across the agree range of conditions
* Clearly identify the conditions, situations and scenarios in which detonators are not clearly audible, and implications for current practice

To undertake the field trial, RSSB are working with Network Rail to arrange access to test track sites, rolling stock, necessary support staff (e.g. drivers) and the provision of detonators for testing. Suppliers are not expected to fund these costs. Costs associated with accessing the test track, rolling stock and track/train support staff, will be covered by Network Rail.

Network Rail will arrange staff to facilitate access to the test sites and provide supervision during testing. Risk assessments for accessing the test track site will be undertaken by Network Rail. Personal track safety qualifications are not required by the supplier, and track visitor permits will be supplied where necessary. Suppliers should provide their own Personal Protective Equipment (e.g. appropriate footwear, clothing, helmets) for when working on the test track sites. Advice on specific requirements can be provided to the supplier when in contract.

Field testing dates and location are to be confirmed. It expected that access to the test track, support staff and rolling stock will be at one or both RIDC test track site(s)[[4]](#footnote-4), for up to 10 days testing between March and April 2019. **The testing dates and location is subject to change, and should new information emerge during the tender period regarding this, the additional information will be provided to suppliers through the tender portal**. During the project delivery, RSSB and Network Rail will work with the supplier to finalise testing arranges.

Suppliers should consider in their bids a flexible approach to the field testing, for when access to the test track is available, but with the base plan for testing to take place in late March / early April.

The supplier will also be supported by the project steering group and project manager to ensure this work appropriately aligns with T1155 and the NR workstream on possession management review.

# Scope

|  |  |
| --- | --- |
| **In Scope** | **Out of Scope** |
| * Identify the key conditions that may influence the audibility of detonator activation, and proposal for how to capture them into the noise modelling work. Considerations should include but not be limited to:   + Typical ambient background sounds   + Train operational tasks (e.g. when talking with the signaller, or alarm system activation)   + Weather conditions   + Rolling stock type, including energy traction and age   + Train running speeds   + Distances in which detonators expected to be heard (meeting minimum medical requirements for hearing)   + Sounds that could be mistaken for and misperceived as detonator activation (e.g. track joints) * Define a model to test the audibility of detonators across the agreed range of trains, conditions, situations and scenarios detonators are expected to be effective in * Validate the model in a field-based trial testing the audibility of detonators using supplier provided sensing equipment * Determine the overall effectiveness of detonators, and the conditions, situations and scenarios in which detonators are not audible * Compare the results to relevant standards (e.g. GM/RT2160 Environment inside Railway Vehicles Audibility of detonators) and understand implications for current practice. | * Risk assessment on detonator use (covered in T1155) * Alternative technologies and methods to detonators (covered in T1155) * Testing the audibility of detonators with participants who do not meet the minimum medical fitness requirements for hearing |

# Methodology

Suppliers will be expected to define the methodology that they are intending to use to successfully meet the project objectives and cover the scope.

Deliverables

|  |  |
| --- | --- |
| **Deliverable Name** | **Type** |
| **Model of the audibility of detonators** | **Model** |
| Suppliers may use and adapt existing models, or develop a new model, to meet the objectives of this work. The provision of an existing model is not expected to be a deliverable of T1167.WP2. However, detail on the model and what, if any, adaptations were required should be provided to allow repeatability of the applied methodology.  If a model is developed, then this is a deliverable of the research along with suitable documentation and detail on the model development should also be provided.  This deliverable should be accepted by the project steering group. | |

|  |  |
| --- | --- |
| **Deliverable Name** | **Type** |
| **Testing the effectiveness of detonators** | **Report** |
| This report details all work undertaken in T1167.WP2. It should include the:   * Conditions that influence the audibility of detonators * Research methodology * Findings * Implications and recommendations for current practice   This deliverable should be accepted by the project steering group. The report will be produced in the RSSB template and will be made widely available. | |

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

|  |  |
| --- | --- |
| **Deliverable Name** | **Type** |
| **Research in Brief** | Report |
| The research in brief should be created by the supplier, in partnership with RSSB, to summarise the findings of this work, in no more than 4 pages. The research in brief will also identify impacts and next steps for industry.  The draft research in brief will be produced in a RSSB template, and an example can be provided. The research in brief will be made widely available. | |

# Stakeholders roles and responsibilities

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

# Budget, timescales and dependencies

This project is expected to commence January 2019. Due to the availability of test track access, field testing is expected to be completed by 31 April 2019. The project is expected to be completed by May 2019. Outputs from this work are expected to feed into T1155 (delivered in parallel to this work).

The budget for this work is up to £80,000*.*

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.

# Critical success factors and risk management

* Access to test track and trains. Suppliers will be supported by Network Rail and RSSB to access the test sites, rolling stock, necessary support staff (e.g. drivers) and detonators.
* Access to suitable sound recording equipment. Suppliers are expected to use their own equipment for the audibility testing.
* Completion of testing on the days identified for track access.
* Providing findings in a timely fashion to feed into T1155.
* Gaining support from industry including unions for the work and the methodology to conduct. To support this a stakeholder engagement plan for T1155 has been drafted, which can be used to also support this research.

**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[[5]](#footnote-5) | 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. <https://www.rssb.co.uk/rgs/standards/GMRT2160%20Iss%204.pdf> [↑](#footnote-ref-1)
2. <https://www.sparkrail.org/Lists/Records/DispForm.aspx?ID=9995> [↑](#footnote-ref-2)
3. The case scenarios to be examined are: a) Assistance to failed train, b) Emergency protection, c) T3 protection, d) Line blockage protection, e) Single Line Working, f) Working of single and bi-directional lines by pilotman: Working to the point of obstruction, g) Temporary Block Working, h) Movements towards an isolated section, and i) Divided train. [↑](#footnote-ref-3)
4. https://www.networkrail.co.uk/industry-commercial-partners/research-development-technology/ridc/ [↑](#footnote-ref-4)
5. This is the average annual numbers of both staff and managerial staff employed over the last trading year [↑](#footnote-ref-5)