

# TERMS OF REFERENCE FOR SAFETY ISSUE INVESTIGATION INTO PRASA AND TRANSNET MANUAL TRAIN AUTHORISATION (MTA) (Level 3 Investigation)

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## ACRONYMS AND DEFINITIONS

ACRONYMS	
RSR	Railway Safety Regulator
the Act	National Railway Safety Regulator Act, Act 16 of 2002 as amended
CEO	Chief Executive Officer
COO	Chief Operations Officer
CTC	Centralised Traffic Control
MTA	Manual Train Authorisation
NQF	National Qualifications Framework
PRASA	Passenger Rail Agency of South Africa
Transnet	Refers to Transnet SOC LTD
TCO	Train Control Officer
Safety Issue Investigation (Level 3 Investigation)	Means an investigation into a number of similar or related occurrences as identified by the results of safety trend analyses, occurrence investigations or audit reports. A safety issue investigation may also be initiated following a railway occurrence, complaint or request from operators or members of the public.
SOP	Standard operating procedure

## 1. INTRODUCTION

- 1.1. The Railway Safety Regulator (RSR) was established in terms of the National Railway Safety Regulator Act, Act 16 of 2002 (“the Act”) as amended.
- 1.2. The RSR is an agency of the Department of Transport and comprises a Board of Directors, Chief Executive Officer (appointed by the Minister), Executive management and staff.
- 1.3. The primary legislative mandate of the RSR is to oversee and enforce safety performance by all railway operators in South Africa including those of the neighbouring States whose rail operations enter South Africa. Notwithstanding the foregoing, operators are, in terms of the Act, primarily responsible and accountable for ensuring the safety of their railway operations.

## 2. BACKGROUND

### 2.1. Occurrence Investigations

- a) Section 38(1) of the Act states that an operator must investigate every railway occurrence that takes place directly or indirectly in connection with that operator’s railway operations, among other things to identify the root cause or causes thereof, within a reasonable time after that occurrence.
- b) Section 38(4) states that the Regulator may, or upon receipt of a directive from the Minister, investigate any railway occurrence for the purposes of preventing similar occurrences in the future.
- c) Section 38(8) provides that the Regulator may appoint a suitably qualified person to carry out any investigation referred to in subsection (4).
- d) Section 38(9) provides that an investigator appointed in terms of Subsection (8) must furnish a written report to the Regulator upon completion of the investigation.

### 2.2. Safety Issue Occurrence Investigation (Level 3 Investigation)

- 2.2.1. In the 2023/24 financial year South Africa’s major railway operators recorded a total of 3809430 manual train authorisation (MTA); with PRASA and Transnet recording 843910 (22%) and 2965520 (78%) MTAs, respectively.

- 2.2.2. The research conducted by the RSR in November 2022 found that more concentration is required from the Train Control Officer (TCO) when issuing manual train authorities. The required coupled with long working hours result in fatigue which in turn may result in increased probability of error when executing manual train authorizations. The research confirmed that when equipment designed to track and locate the train and maintain communication between train control officers and train drivers is non-functional, train authorisation processes cannot function adequately. This sometimes means that train control and authorisation procedures must function in degraded mode. A further impact of working in a degraded mode will be on the increase of fatigue and workload management related risks; the emergence of these risks will often increase the likelihood of human error, increasing the risk of occurrences such as collisions, trains passed at danger, and derailments.
- 2.2.3. Further research has also shown that an increase in the number of sections under abnormal working leads to an increase in the number of train collisions hence, abnormal working is directly proportional to the train collisions.
- 2.2.4. The South African railway signalling systems has been unavailable for several years due to theft and vandalism, resulting in extended abnormal working conditions.
- 2.2.5. The RSR intends to conduct an in-depth investigation into the factors that influence the safety of MTAs and the impact of the prolonged manual authorisation on the safety of railway operations.
- 2.2.6. The investigation team will comprise of railway experts with extensive experience in Train Operations, Project Management, Signals, Telecommunications and Human Factors.

### **3. PURPOSE**

The purpose of this terms of reference is to appoint a service provider of an RSR team to conduct a safety issue investigation into the effect of prolonged MTAs on safe railway operations.

### **4. STATEMENT OF INTENT**

In terms of the Occurrence Investigation protocols, the RSR will conduct safety issue investigations into several similar occurrences as identified by the results of safety trend

analysis, occurrence investigations, audit reports and or technology failures. This Safety Issue Investigation (Level 3 Investigation) has been constituted in accordance with relevant RSR prescripts to investigate the factors that influence the safety and the impact of the prolonged MTAs on the safety of railway operations.

## 5. MANDATE

- 5.1. The investigation team is required to engage the PRASA and Transnet train operations personnel and conduct inspections at major Centralised Traffic Control (CTC) offices at PRASA and Transnet. The investigation team will record findings made and report on the following:
- (a) The magnitude of the MTAs; and compliance with standard operating procedures (SOPs), train working rules and relevant legislation by Train Operations personnel.
  - (b) Whether there is a justification for the introduction of a threshold to the allowable the number of authorisations.
  - (c) Whether the RSR should enforce restrictions on permissible MTAs in the current rail environment and in the upcoming open access environment.
  - (d) The impact of abnormal working conditions on the railway operations and personnel, especially the TCOs and Train drivers.
- 5.2. The investigation team is required to formulate their recommendations in such a way that:
- (a) The recommendations are clear, specific, and unambiguous as to what is expected, and from whom.
  - (b) The recommendations are measurable (verifiable), practical, and attainable.

## 6. SCOPE OF WORK

- 6.1. The appointed investigation team will conduct Safety Issue Investigation in the selected six (6) CTCs and depots in Gauteng Province
- 6.2. The investigation team will:
- a) Review and identify any areas of improvement on the approval process of MTAs.

- b) Determine the extent of the causality of manual authorization to incidents related to the train movement.
- c) Formulate a position of the effect/impact the MTAs will have during the envisaged rail network open access environment.
- d) Advise on the feasibility of restricting or limiting the use of manual train authorisation in certain lines based on associated risks
- e) Conduct interviews with some of the following key PRASA and Transnet personnel to understand the challenges experienced in the CTCs in the sections; and what controls are implemented for safe train operations:
  - Train Operations Managers
  - Rolling Stock Managers
  - Infrastructure Managers
  - Transnet CTC Managers
  - Section Managers
  - Train Control Officers
  - Train Drivers
  - Safety Managers and Risk Managers
  - Any other relevant personnel that can help the investigation.
- f) Request and review the following documents.
  - Infrastructure Risk Assessments
  - Rolling Stock Risk Assessment
  - Train schedules
  - Train Registers
  - Train Authority Registers
  - CS90 Authority Records
  - Record of train delays
  - Condition assessment reports.

- Corridor Inspection reports
  - Corrective Action Implementation
  - 
  - Any other documents that may help the investigation team with the investigation.
- g) Recommend the safety interventions to improve the state of MTAs in South African railway operations.
- h) Provide safety issue investigation report covering the complete allocated scope.

6.3. A total of 360 manhours weeks will be allocated for this assignment. The period includes review of documents, site visits and inspections, interviews, drafting of the Safety Issue Investigation report and any other relevant activity that will make this project a success.

## **7. PROJECT DELIVERABLES**

11.1. After the appointment, the investigation team will conduct the Safety Issue Investigation in the identified PRASA and Transnet corridors and draft the Investigation report. The investigation team shall submit the draft report to the RSR COO. The purpose hereof is to ensure that the investigation team has met the conditions of the Terms of Reference and that the report reflects such.

11.2. Upon receipt of the draft, the COO will require five (5) working days to review the Safety Issue Investigation report; make inputs and comments to provide direction, if any, to the investigation team.

11.3. The investigation team will incorporate inputs from the COO and shall submit the final Safety Issue Investigation report back to the COO within (5) working days of receiving inputs.

11.4. The investigation team will compile a PowerPoint presentation executive summary of the final report.

## **8. INVESTIGATION TEAM**

The Safety Issue Investigation team shall comprise the following members:

- i. Signals Specialist (Project Manager).

- ii. Human Factors specialist
- iii. Telecommunications specialist

## **9. RESPONSIBILITY OF THE PROJECT MANAGER**

9.1. The Project Manager of the Safety Issue Investigation shall be responsible to:

- a) Provide strategic direction and leadership necessary to give effect to the requirements of this Terms of Reference and the Mandate of the Safety Issue Investigation as stipulated in the National Railway Safety Regulator Act (RSR Act 16 of 2002, as amended).
- b) Provide the final comprehensive report for the Safety Issue Investigation meeting all the requirements of this Terms of Reference within the agreed timeframes.
- c) Immediately bring to the attention of the RSR Chief Operations Officer any safety concerns based on the ongoing investigation which require immediate attention for implementation by railway operators and which matters cannot wait for the finalization of the report.
- d) Consult timely with the RSR Chief Operations Officer on any issues or concerns related to the successful execution of this Terms of Reference and associate timelines.
- e) Nominate a coordinator within the Panel to be responsible for the logistical arrangements associated with a Safety Issue investigation (arranging site visits, arranging venues for holding the investigation, calling of witnesses, obtaining material evidence, making travel arrangements, organising refreshments, etc.). The coordinator shall work closely with the nominated RSR liaisons officer; and
- f) Submission of a detailed account supported by appropriate timesheets and invoices for payments made indicating the costs incurred in conducting the Safety Issue Investigation.
- g) In line with section 38(5) of the Act, the Safety Issue Investigation team may—

- in its discretion, allow any person affected by or interested in the relevant investigation or the duly authorised representative of such person, to appear before it and—
  - Give evidence or make oral or written representations relevant to such investigation.
  - Call witnesses and lead evidence on any question relevant thereto; or
  - Question any person who testified as a witness in such investigation.
- Summon any person who may reasonably be able to give material information concerning such investigation to appear before it to give evidence or to produce any document or object in their possession or custody or under their control which may reasonably have a bearing thereon.
- Call upon and administer an oath to or obtain an affirmation from any person present before it, who has been or might be summoned in terms of paragraph (b) or otherwise.
- Question any person who has been called upon under paragraph (c) or require such person to produce any document or object in their possession or custody, or under their control, which may reasonably have a bearing on the investigation.

## 10. QUALIFICATIONS AND EXPERIENCE

10.1. The service provider shall comprise the following three (03) specialist:

- i. **Signals Specialist (Project Manager).**
  - a) This person must be registered with Engineering Council of South Africa (ECSA) in terms of the Engineering Profession Act 46 of 2000 as a Professional Engineer.
  - b) He/she must have extensive experience in railway engineering particularly in Signalling and an excellent understanding of train operations.
  - c) He/she must have extensive understanding of railway safety management.

- d) He/she must have experience in railway safety accident investigations, and in particular root cause analysis. Furthermore, it is required that he/she should be able to translate his/her findings and recommendations in layman's terms to other members of the investigation.
- e) The Signals Specialist will be the project manager for the safety issue investigation.

ii. **Human Factors specialist**

- a) The RSR requires the services of a Human Factors expert (with train operations experience) to be a member of the Safety Issue investigation into the factors that contribute safety of MTAs.
- b) This person must be registered with the relevant professional body for their field.
- c) The person must propose applicable questions relating to all human element behaviour.
- d) He/she must analyse the human factor responses to determine underlying factors, findings, and recommendations for consideration by the investigation team members.
- e) He/she must provide guidance to the investigation team in terms of human factor behaviour with specific reference to deviations from the norm.
- f) He/she must provide the appropriate guidance to the investigation team in terms of human factors field of expertise.
- g) He/she must constructively participate in the analysis, determination of factors, findings and conclusions as required.
- h) He/she must compose the required questions and information requirements to obtain evidence.

iii. **Telecommunications specialist**

- a) The RSR requires the services of a Telecommunications expert (with train operations experience) to be a member of the Safety Issue investigation into the factors that contribute to the safety of MTAs.
- b) The person must be registered with the Engineering Council of South Africa (ECSA) in terms of the Engineering Profession Act 46 of 2000 as a Professional Engineer or Technologist.

- c) The person must have extensive experience in railway Telecommunications and an excellent understanding of train operations.
- d) The person must have an extensive understanding of railway safety management.
- e) The person must have experience in railway safety accident investigations, and in particular root cause analysis. Furthermore, it is required that he/she should be able to translate his/her findings and recommendations in layman's terms to other members of the Safety Issue Investigation.
- f) The person must have a workable knowledge of SANS 3000 series of standards.

## 11. RESPONSIBILITY OF THE RSR

11.1. The RSR shall support the service provider with the following support specialist:

- a) 1 x Senior Manager or RSR Principal Inspector. This RSR personnel will work with the service provider and function as a Railway Operator Liaison Support.
- b) All documentation at their disposal related to MTAs and occurrences.

11.2. The RSR, hereby agree to remunerate the service provider at the agreed hourly rates, in the execution of this Terms of Reference in line with the priced schedule/table below.

## 12. PROPOSAL SUBMISSION

12.1. The bidder must provide a detailed proposal as part of the tender, addressing and including at least the following:

- a) Organisation profile;
- b) If applicable, A Joint Venture agreement signed by all parties in case of a Joint Venture / Consortium submission;
- c) Central Supplier database (CSD) Registration;
- d) Valid B-BBEE certificate / B-BBEE sworn affidavit. A valid B-BBEE certificate or sworn affidavit (the sworn affidavit must indicate the full date i.e., day, month, and year of the financial year end e.g., 31 March 2021). A trust, consortium, or joint venture (including

unincorporated consortia and joint ventures) must submit a consolidated B-BBEE Status Level Verification Certificate.

- e) Valid tax compliance status report with PIN or international equivalent;
- f) Fully completed and duly signed Standard Bidding Documents (SBD) Forms documents supplied with these Terms of Reference;
- g) Proven previous experience, including testimonials from previous contracts in railway engineering. The testimonials/reference letter should be on a client's official letterhead with valid and traceable contact details, scope of the work and standard of service. RSR may contact the references to confirm the information provided, letters must not be older than 10 years;
- h) Demonstrable capacity to deliver all the desired services that include response to the project scope and allocated resources;
- i) A detailed methodology on how the project scope will be delivered;
- j) A Project Management plan, covering project management reports; and
- k) All prices should be VAT Inclusive and include all travelling, and accommodation expenses.

### **13. BID EVALUATION CRITERIA**

13.1 The proposals will be evaluated on a 3-phase approach consisting of:

#### **i. Phase 1 - Administrative compliance documentation**

The evaluation of the administrative compliance requirements is indicated below. Failure to comply may lead to disqualification.

- a) Fully completed and duly signed SBD forms.
- b) Central Supplier database (CSD) Registration.
- c) Tax compliant status report with PIN.

## ii. Phase 2 - Evaluation of Proposal

The evaluation of the functional requirements is as per **Section 14** below. Bidders must attain a minimum of **70 points** to be considered for Phase 3.

## iii. Phase 3 - The evaluation of price and Specific Goals

Only bidders who score 70 points and above in the Phase 3 section will be considered for the price and preference points evaluation.

- The price quotations will be evaluated in accordance with the pre-scripts of the Preferential Procurement Policy Framework Act (PPPFA) and its regulations, in particular Preference Procurement Regulation 2022 which stipulate 80/20 preference point system for acquisition of goods or services with Rand value equal to or below R50 million (inclusive of all applicable tax).
- A maximum of 80 points for price and 20 points for the specific goal specified on the request for proposal may be awarded to a Service Provider.
- For Points to be awarded for the specific goals the proof for the claim for such goal must be submitted.

## 14. PHASE 2 - FUNCTIONALITY EVALUATION

The suitable service provider must demonstrate capacity and capability to execute this project by complying with the functionality criteria Table 1 below:

**Table 1 - Functionality Criteria**

FUNCTIONALITY CRITERIA		100										
<b>14.1.</b>	<b>COMPANY EXPERIENCE</b>	<b>10 POINTS</b>										
<b>14.1.1</b>	Company's proven experience in railway engineering  Contactable Testimonials and/or references (not older than 10 years) <table style="width: 100%; border: none;"> <tr> <td style="width: 60%;">5 References</td> <td style="text-align: right;">= 10 points</td> </tr> <tr> <td>4 References</td> <td style="text-align: right;">= 8 points</td> </tr> <tr> <td>3 References</td> <td style="text-align: right;">= 6 points</td> </tr> <tr> <td>2 References</td> <td style="text-align: right;">= 4 points</td> </tr> <tr> <td>1 Reference</td> <td style="text-align: right;">= 2 points</td> </tr> </table>	5 References	= 10 points	4 References	= 8 points	3 References	= 6 points	2 References	= 4 points	1 Reference	= 2 points	<b>10</b>
5 References	= 10 points											
4 References	= 8 points											
3 References	= 6 points											
2 References	= 4 points											
1 Reference	= 2 points											
<b>14.2</b>	<b>BIDDER'S TECHNICAL TEAM QUALIFICATION &amp; EXPERIENCE</b>	<b>45 POINTS</b>										
<b>14.2.1</b>	Enclosure: <ol style="list-style-type: none"> <li>1. CVs</li> <li>2. Certified Certificates of academic qualifications</li> </ol> <p style="text-align: center;"><i><u>The CV and certificates of individuals will be used for evaluation of the each of the key personnel for this section.</u></i></p> <p><b>The scoring of the key personnel will be as below:</b></p> <p><b>Signalling Expert– (Max 15 points)</b></p> <ol style="list-style-type: none"> <li>1. Qualifications - Postgraduate qualification preferably in Engineering [or its International Qualification equivalent as verified by SAQA]:               <ol style="list-style-type: none"> <li>a) Post-graduate (NQF 8 and above) = 5 points</li> <li>b) Bachelor's Degree (NQF 7) = 4 points</li> <li>c) National Diploma (NQF 6) = 3 points</li> <li>d) No qualification = 0 points</li> </ol> </li> <li>2. Years of work experience in participating railway engineering:</li> </ol>	<b>5</b>										

	<p>a) 10 years or more = 5 points</p> <p>b) 5 or more years but below 10 years = 4 points</p> <p>c) Less than 5 years = 3 points</p> <p>d) No experience = 0 points</p> <p>3. Years of work experience in project management:</p> <p>a) 10 years or more = 5 points</p> <p>b) 5 or more years but below 10 years = 4 points</p> <p>c) Less than 5 years = 3 points</p> <p>d) No experience = 0 points</p>	<p>5</p> <p>5</p>
<p><b>14.2.3</b></p>	<p><b>Telecommunications Expert– (Max 15 points)</b></p> <p>2. Qualifications - Postgraduate qualification preferably in Engineering [or its International Qualification equivalent as verified by SAQA]:</p> <p>a) Post-graduate (NQF 8 and above) = 5 points</p> <p>b) Bachelor's Degree (NQF 7) = 4 points</p> <p>c) National Diploma (NQF 6) = 3 points</p> <p>d) No qualification = 0 points</p> <p>2. Years of work experience in participating in railway engineering:</p> <p>a) 10 years or more = 5 points</p> <p>b) 5 or more years but below 10 years = 4 points</p> <p>c) Less than 5 years = 3 points</p> <p>d) No experience = 0 points</p> <p>3. Years of work experience in Train Operations:</p> <p>a) 10 years or more = 5 points</p> <p>b) 5 or more years but below 10 years = 4 points</p> <p>c) Less than 5 years = 3 points</p> <p>d) No experience = 0 points</p>	<p>5</p> <p>5</p> <p>5</p>



	• No project plan = 0 points	
	<b>TOTAL</b>	<b>100</b>

Only bidders who scored a minimum of **70 points** of the total points at the functionality phase will proceed to phase 3.

### 15. PHASE 3 -EVALUATION OF PRICE AND SPECIFIC GOALS

- Only bidders who scored 70 points and above in phase 03 will be considered for the preference point system evaluation.
- The price quotations will be evaluated in accordance with the prescripts of the Preferential Procurement Policy Framework Act (PPPFA) and its regulations, in particular Preference Procurement Regulation 2022 which stipulate 80/20 preference point system for acquisition of goods or services with Rand value equal to or below R50 million (inclusive of all applicable tax).
- A maximum of 80 points for price and 20 points for the specific goal specified on the request for proposal may be awarded to a Service Provider.
- Points for the specific goal will be awarded as specified on the table below:

NO	SPECIFIC GOALS	PREFERENCE POINT (OUT OF 20)	PROOF OF CLAIM
1	An Exempt Micro Enterprises (EME) or Qualifying Small Enterprise (QSE) which is <b>at least 51% owned by black people</b>	10	<ul style="list-style-type: none"> <li>• Copy of the identity document of the owner(s)</li> <li>• A valid SANAS accredited BBBEE certificate or a valid BBEEE sworn affidavit (whichever is applicable)</li> <li>• Central Supplier Database (CSD) report</li> <li>• Valid company registration documentation that are issued by Companies &amp; Intellectual Property Commission (CIPC)</li> </ul>
2	An Exempt Micro Enterprises (EME) or Qualifying Small Enterprise (QSE) which is <b>at least 51% owned by black women</b>	5	<ul style="list-style-type: none"> <li>• Copy of the identity document of the owner(s)</li> <li>• A valid SANAS accredited BBBEE certificate or a valid BBEEE sworn affidavit (whichever is applicable)</li> <li>• Central Supplier Database (CSD) report</li> <li>• Valid company registration documentation that are issued by Companies &amp; Intellectual Property Commission (CIPC)</li> </ul>

3	An Exempt Micro Enterprises (EME) or Qualifying Small Enterprise (QSE) which is <b>at least 51% owned by youth</b>	3	<ul style="list-style-type: none"> <li>• Copy of the identity document of the owner(s)</li> <li>• A valid SANAS accredited BBBEE certificate or a valid BBEEE sworn affidavit (whichever is applicable)</li> <li>• Central Supplier Database (CSD) report</li> <li>• Valid company registration documentation that are issued by Companies &amp; Intellectual Property Commission (CIPC)</li> </ul>
4	An Exempt Micro Enterprises (EME) or Qualifying Small Enterprise (QSE) which is <b>at least 51% owned by person(s) with disabilities</b>	2	<ul style="list-style-type: none"> <li>• Copy of the identity document of the owner(s)</li> <li>• A valid SANAS accredited BBBEE certificate or a valid BBEEE sworn affidavit (whichever is applicable)</li> <li>• Central Supplier Database (CSD) report</li> <li>• Valid company registration documentation that are issued by Companies &amp; Intellectual Property Commission (CIPC)</li> <li>• Valid Medical Certificate</li> <li>• Valid South African Social Security Agency (SASSA) registration (where applicable)</li> <li>• Valid National Council for Persons with Physical Disability in South Africa registration (NCPDPSA)</li> </ul>

Approved by:

**Freddie Kgomari**

**Head: Safety Management**

## ANNAXURE 1: PRICING SCHEDULE

Hours to be Spent for duration (Estimated)	Position	Rate per hour	Total
120 hours	Proposed Signalling Expert		
120 hours	Proposed Telecom Expert		
120 hours	Proposed Human Factors Expert		
<b>Sub Total</b>			
<b>VAT @ 15%</b>			
<b>Grand Total</b>			

All prices should include VAT and e all travelling, and accommodation expenses.



## ANNEXURE 2: REPORT TEMPLATE

### THE INVESTIGATION REPORT

The Safety Issue investigation team will produce a report on the state of MTAs at PRASA and Transnet; and recommendations to improve the prevailing conditions.

The complete report of the Safety Issue investigation may conform to the following requirements:

- (a) Cover Page: Appropriate title and descriptive photograph if available.
- (b) Table of contents
- (c) Executive Summary
- (d) Definitions
- (e) Narrative



#### Part A: A title page with RSR reference number

**Example:** Report of the Safety Issue Investigation into the state of manual train authorisations in PRASA and Transnet.

#### Part B: Statement of Intent

**Example:** “This Safety Issue Investigation (Level 3 Investigation) has been constituted in accordance with relevant RSR prescripts to investigate the factors that influence the increase in the MTAs and the impact of the prolonged manual authorisation on the safety of operations. The report is for the use of persons with direct responsibility for overseeing, improving, or maintaining railway safety and as such the objective of the investigation is not the allocation of blame and liability.”

## **Part C: Copy of Terms of Reference**

## **Part D: Details**

Details of the investigation, including the dates, and as appropriate CTCs visited, personnel interviewed, etc.

## **Part E: A summary of the evidence considered relevant.**

## **Part F: Factors for consideration**

A summary of the factors taken into consideration by the Safety Issue Investigation team, showing how the evidence provided has been assessed and the conclusions drawn.

## **Part G: The conclusions (findings) including the immediate and underlying causes.**

## **Part H: The recommendations**

The recommendations are to be cross-referenced with the relevant paragraphs in the report, to provide the justification for the recommendations. A clear indication shall be given on the intentions of the recommendations.