

ANNEXURE 3 SPECIFICATION

SPECIFICATION OF THE WORK OR PRODUCTS OR SERVICES REQUIRED

1. REPLACEMENT OF RAILS

1.1 SPECIFICATION OF PROPOSED WORK PROCESSES

- 1.1.1 The contractor will be responsible for work between Germiston and Kwesine in the Metrorail PRASA Gauteng Province
- 1.1.2 The Contractor shall tender for the re-assembling, installation, aligning and tamping without the assistance of any heavy on-track ballast tamping machine of the new rails, and the uplifting, dismantling and removal of the old rails from the track.
- 1.1.3 The contractor shall be responsible for the final quality of geometry.
- 1.1.4 It shall be expected of the contractor to communicate timeously and effectively with any contractor or parties involved on site regarding quality and production issues.
- 1.1.5 PRASA has the right to adjust quantities or reduce scope of work to conform to any budget constraints.

1.2 NATURE OF WORK

- 1.2.1 This contract and specifications cover the replacement of rails in the Germiston to Kwesine line in the Prasa Gauteng Province.
- 1.2.2 The contractor shall provide all machines, tools, and labour necessary for the successful completion of the project.
- 1.2.3 All works shall conform with clauses, drawings, specifications, and conditions pertaining to this contract.
- 1.2.4 The work will take place in confined space and under special conditions close to running trains.

1.2.5 This contract covers the following:

- 1.2.5.1. Removal of rails.
- 1.2.5.2. Placing of 36m of 48kg, 57kg and 60kg Head-hardened rails.
- 1.2.5.3. Loading of released material.
- 1.2.5.4. Transportation of released material by rail or road and offloading at the scrap camps at the Perway material stores (Driehoek) in Metrorail Gauteng South.
- 1.2.5.5. Exothermic welding and X-ray of rail joints.
- 1.2.5.6. Electrical bonding shall be executed by the contractor.
- 1.2.5.7. Finalising of track within 72 hours from installation where trains are operational.
- 1.2.5.8. Any other work arising out of, or incidental, to the above or required of the Contractor for proper completion of the works in accordance with the true meaning and intent of the contract documents.
- 1.2.5.9. Any worn rails to be cut and transported back to Perway material stores (Driehoek) in the Metrorail Gauteng Region.

1.3 REPLACEMENT OF RAILS

- 1.3.1 PRASA RAIL Gauteng will provide all material for the replacement of rails which will be issued from PRASA material stores (Driehoek) in the Metrorail Gauteng Region.
- 1.3.2 The contractor shall deliver this material to the respective construction site areas between Germiston and Kwesine in time for the re-installation before the occupation date.
- 1.3.3 The contractor shall be responsible for cutting and removal of old rails. The Project Manager or his/her delegated assistant will give instructions on the lengths the rails must be cut.
- 1.3.4. The Contractor shall be responsible for placing of new rails. Closure rails must be kept to a minimum.
- 1.3.5. The Contractor shall be responsible for loading, transporting, and offloading of

the released material at the PRASA depot (Driehoek)

- 1.3.6. Record must be kept for quantities of material released. Loaded, and delivered at the scrap camp.
- 1.3.7. The contractor shall acknowledge receipt of all material he/she accepts from the PRASA Rail material depot and this must be recorded and signed by both the Contractor and Project Manager and record to be always kept safe on file.
- 1.3.8. The contractor shall be responsible of all issued material and all damaged or missing material will be recovered on the contractor's cost.
- 1.3.9. PRASA RAIL will provide the contractor with diagrams depicting information applicable to the relevant section of work.
- 1.3.10. The contractor shall carry out work as specified in the 'TRACK MANUAL: REPLACEMENT OF RAILS and E10 SPECIFICATION'. Copies of this specifications will be made available to the preferred bidder upon his/her written request for the purpose of this works only.
- 1.3.11. The Contractor shall be responsible for all rail related welding, cutting and exothermic welding.
- 1.3.12. The contractor shall be responsible for all consumables that conform with the SABS and PRASA standards required for Welding activities.
- 1.3.13. The contractor shall be responsible for all rail joints X-rays and the results must be provided to the Project Manager or his/her delegated assistant for evaluation and approval before payment.
- 1.3.14. All rail joints X-rayed must comply with the SSS5, 6 & 11 and E10/8 Specifications which are attached to the tender document.
- 1.4. MEASUREMENT OF QUALITY OF CONSTRUCTION
 - 1.4.1. All work shall conform to "A" standard and the following measurements of quality of construction shall be required:
 - 1.4.1.1. The contractor shall measure and record for each length of rail replaced and all measurements required to determine the standard of construction. A hard copy of all these measurements shall be made

available to the Project Manager or his/her delegated assistant on completion of the work for evaluation purposes.

- 1.4.1.2. Measurement for the vertical alignment shall be made with a correct track-gauge or equivalent equipment with approved void meters.
- 1.4.1.3. Deviations from the straight line (slack) shall be determined visually by means of measuring the depth of the slack with a correct track gauge and measurements shall be taken along the top of the rail, before and after the points of deviation.
- 1.4.1.4. Measurement for the horizontal alignment shall be made with a nylon line on the running side of the reference rail at the two points 10m apart and a feeler gauge calibrated at 1mm intervals.
- 1.4.1.5. Deviation on the straight track between the two points 10m apart must be measured by inserting the feeler gauge between the nylon line and the rail at the center of the deviation. The number of sleeper spaces between the beginning and end of the deviation must be recorded.
- 1.4.1.6. Curved track shall be marked out at 5m intervals and each mark shall become a measuring station. Measuring and ordering the offset at each station from the 10m chord strung across alternative stations shall determine the Track Standards
- 1.4.1.7. The measuring stations specified above shall be numbered consecutively on the flange of the left-hand rail with white chalk for each section being evaluated and shall be prefixed with the letter A as per the track manual.
- 1.4.1.8. Ballast standards shall be determined by:
 - 1.4.1.8.1. Opening and measuring actual ballast depth where directed by the Project manager.
 - 1.4.1.8.2. The ballast profile shall be measured by approved means along the track and recorded.

2. REPLACEMENT OF TURNOUTS

2.1. NATURE OF WORK

This contract covers the replacing of turnouts and track sections on concrete sleepers on the Germiston to Kwesine line in the Metrorail Gauteng region.

The following activities form part of this contract:

- 2.1.1. Transporting of all Perway material required for the replacing of the turnouts and track sections from the Perway material stores (Driehoek) to the construction sites,
- 2.1.2. Preparing of sites for the pre-assembling of new turnouts and track sections on site in close proximity where old or vandalised turnouts are to be replaced,
- 2.1.3. Removing of existing turnouts or track sections, including ballast from the track,
- 2.1.4. Offloading of ballast supplied in AY trucks, spreading, and compacting into a 150 to 200 mm layers,
- 2.1.5. Placing of pre-assembled turnouts and track section into track to fit a specified layout onto compacted layer of ballast.
- 2.1.6. Alignment of turnouts and track sections placed into position, ensuring the compliance to the specification for track-work from 25m before Stock-Rail-Joints (SRJ) to 25m after End-of-Sets (EOS).
- 2.1.7. Ballasting and tamping of turnouts.
- 2.1.8. Exothermic welding of rail joints.
- 2.1.9. Electrical bonding of set. All bonding will be done by the Contractor.
- 2.1.10. Finalising of turnout and track section within 72 hours from installation where trains are operational.
- 2.1.11. The final tamp of the turnout and track section after installation has been completed

2.1.12. Dismantling and transporting of released turnouts to the PRASA Material stores (Driehoek) and stacking thereof at the material camp after classified by PRASA.

2.1.13. Any other work arising out of, or incidental to the above or required of the contractor for the proper completion of the works in accordance with the true meaning and intent of the contract documents.

2.1.14. Relationship to other contractors on site

2.1.15. The Contractor shall be responsible for working within the site allocated to him/her.

2.1.16. The Contractor will be required to tender for the installation, lifting, aligning, and tamping of turnouts.

2.1.17. The responsibility for final quality of geometry of turnout and track sections shall however remain with the Contractor.

2.2. CONSTRUCTION OF A TURNOUT

2.2.1. Material:

2.2.1.1. PRASA RAIL will provide all material required for the construction of all turnouts. This material shall be collected by the Contractor from the PRASA material stores (Driehoek) in time for the pre-assembly of turnouts and kept in safe custody by the contractor.

2.2.1.2. PRASA RAIL will provide the Contractor with an installation programme, as well as diagrams depicting information applicable to the relevant turnout, re-assembly sites, and Stock-Rail-Joints (SRJ) direction.

2.2.1.3. Occupations will be agreed upon with successful Tenderer.

2.2.1.4. The contractor shall at least give PRASA Project Manager or his/her delegated assistant in writing an inspection notice for all pre-assembled turnouts before installation and no pre-assembled turnout shall be installed before inspection and approval

2.2.1.5. The following material will be used in the installation of the turnouts:

2.2.1.5.1. Sub-assemblies:

2.2.1.5.2. Stock and switches - left hand.

2.2.1.5.3. Stock and switches - right hand.

2.2.1.5.4. Stock and guard rails - left hand.

2.2.1.5.5. Stock and guard rails - right hand.

2.2.1.5.6. Frogs.

2.2.1.5.7. Lead rails inside set.

2.2.1.5.8. Closure rails.

2.2.1.5.9. Closures inside and outside sets

2.2.1.6. Rail to sleeper fastenings:

2.2.1.6.1. All standard sleeper fastenings for turnouts and closure rails will be supplied by PRASA.

2.2.1.6.2. Concrete crossing Ties:

2.2.1.6.3. Full turnout set

2.2.1.6.4. P54 or P84 Ties

2.2.1.6.5. Cradles A or B or both.

2.2.1.6.6. Electrical Equipment.

2.2.1.6.7. Mast to rail bonding cables

2.2.1.6.8. Bonds at frog both sides

2.2.1.6.9. Bonds at Stock and Switch

2.2.1.6.10. Bonds at block-joints inside set (Z-Bond)

2.2.2. Turnout assembly:

2.2.2.1. The turnouts shall be constructed as specified in the “Track Maintenance manual and E/10 specification for the building of Turnouts and Crossings”. A copy of Track manual and E10 specification will be attached on the tender document.

2.2.3. Re-assembly of pre-assembled turnouts:

2.2.3.1. For re-assembly of turnouts on concrete sleepers,

48kg 1:12Turnout LH and RH

(Design drawings will all be available on request).

2.2.4. Working time during occupation.

2.2.4.1. Working time taken to replace various sets shall be twelve (12) hours for sets without formation repairs where trains are operational.

2.2.4.2. This working time occupation taken for the installation of the turnout shall include the time taken for:

2.2.4.2.1. Transporting of pre-assembled turnout from the pre-assembling site to the construction site.

2.2.4.2.2. Cut out of existing turnout or track section.

2.2.4.2.2.1. Remove the existing turnout and/or track sections and ballast.

2.2.4.2.3. Loading the removed turnout and track section for transporting to dismantling site.

2.2.4.2.4. Placing of initial ballast layer.

2.2.4.2.5. Placing, lifting and alignment and tamping of the new turnout.
(To within the “A” Standard).

2.2.4.2.6. Placing, lifting and alignment and tamping of the track sections.

2.2.4.2.7. Re-spacing of adjacent sleepers where necessary.

2.2.4.2.8. All rail cuttings.

2.2.4.2.9. Insertion and welding of closure rails where necessary.

2.2.4.2.10. Offloading of ballast supplied in AY trucks.

2.2.4.2.11. Boxing in of ballast and tamping of set and adjacent track up to 5 meters beyond section replaced.

2.2.4.2.12. Final tamping of turnout and track sections replaced, at least within 48 hours after the installation of the turnout or track section.

2.2.4.2.13. Finalising of turnout or track section.

2.2.4.2.14. Lubrication of slide chairs.

2.2.4.2.15. Exothermic welding of turnout and x-rays to adjacent tracks sections.

2.2.4.2.16. The Contractor shall also include in his/her tender the exact sequence of events and detail of the process he/she intends to implement.

2.3. TURNOUT EXCHANGE SYSTEM

The Turnout Exchange system if used shall consist of on-track machinery for the removal of existing turnouts, and the placing of pre-assembled turnouts.

2.3.1. Type of turnout exchange system required.

2.3.1.1. Machines shall be capable of maintaining a minimum travelling speed of 10 km/h at gradients of 1:50. Should this not be achieved the difference between actual and theoretical travelling time will be regarded as breakdown time.

2.3.1.2. Machines shall actuate colour light signals when travelling at any speed by means of electric currents passing from one rail to the other through the machine.

2.3.1.3. The machinery shall have power service brakes with independent operation to each axle capable of providing a minimum retardation on dry rail of 12,5% at travelling speed.

2.3.1.4. Emergency brakes - Independent of the service brakes shall operate on at least one wheelset and can provide a minimum retardation on dry rail of 6% at travelling speed.

2.3.1.5. Two electric headlamps of at least 40W each and two red warning lights shall be fitted at each end of each machine.

2.3.1.6. Maximum wheel tread and rim wear, distance between wheel flanges, and the ultrasonic testing for flaws in running axles shall all be measured for compliance with PRASA RAIL standards.

2.3.1.7. Regular checks shall be made for pressure loss on brake cylinders

and circuits, wear and set of brake shoes, proper functioning of sirens and mechanical locks on hydraulic components.

- 2.3.1.8. The machine shall be fitted with PRASA RAIL compatible couplers, a through vacuum/air pressure pipe and brake hoses in the event of it being required to couple into a train for transportation. The machine shall comply with Metrorail's vehicle gauge.
- 2.3.1.9. The machine shall have an adequate lighting system for operation at night. The trailing end headlights and leading end red lights shall not be capable of being switched on during forward motion.
- 2.3.1.10. The Contractor shall provide in writing to PRASA RAIL a full description of all machinery offered when tendering, showing how all on-track machinery complies with the standard track gauge and clearances.
- 2.3.1.11. The machine will travel as a train using a locomotive provided by the contractor to pull the machine along between work sites yards and any travelling distance in excess of one kilometre.
- 2.3.1.12. The machine shall not damage the turnout during the construction, handling or transporting process by inducing stress in excess of the designed stress on any component of the turnout.
- 2.3.1.13. The Contractor shall ensure that deflection of the turnout and its components when handled by the machine does not exceed maximum allowable.
- 2.3.1.14. A detailed description of the deflection limits, which will apply to the machine during handling and transportation of all turnouts, must be submitted with the tender.
- 2.3.1.15. The transportation/moving of pre-build turnouts from the pre-assembly site, using equipment compatible with the turnout exchange system may be required.
- 2.3.1.16. This is to be included as an option in the tender, and details of the method of working of this equipment is to be submitted.

2.3.2. Machinery Specifications

Machinery shall be suitable for use under the following conditions and dimensional limitations:

- 2.3.2.1. Vehicle gauge: 1 065mm-gauge track shown in Annexure B (E.160).
- 2.3.2.2. Should the machinery exceed the vehicle gauge in any respect, this shall be clearly indicated by the Contractor by means of suitable drawings.
- 2.3.2.3. Track gauge: nominal 1 065mm, with a range of - 10mm to + 45mm.
- 2.3.2.4. Minimum structure gauges: as shown in Annexure C (E.160).
- 2.3.2.5. Single lines or multiple lines with a minimum distance of 4m between track centres.
- 2.3.2.6. Maximum track gradient: 1 in 30.
- 2.3.2.7. Minimum curve radius: 125m.
- 2.3.2.8. Workplace altitude range: zero to 2 000m above sea level.
- 2.3.2.9. Ambient temperature range: -5°C to +50°C.
- 2.3.2.10. Mass of rail: 57 kg/m, 48 kg/m and 60 kg/m.
- 2.3.2.11. Maximum mass per sleeper: Sets - 750 kg; other - 300 kg.
- 2.3.2.12. Types of sleepers in track: timber, steel, monolithic or tie-bar concrete.
- 2.3.2.13. Sleeper spacing: 500mm to 900mm.

2.3.3. Unknown/Alternative/Substitute Machines

- 2.3.3.1. PRASA RAIL will require alternative machines offered by Tenderers of which the characteristics are unknown to PRASA RAIL, to be subjected to trials under the prevailing working conditions of the contract area(s) to demonstrate their compliance with the contract specifications before they may be accepted.

- 2.3.3.2. In the case where such machines do not comply with the specifications, they will not be accepted.

2.3.4. Warning device

- 2.3.4.1. The machine shall be fitted with a hooter for use during travelling.
- 2.3.4.2. The machine shall be fitted with a separate warning system used solely for and on the approach of a train.
- 2.3.4.3. The pitch and intensity shall make it discernible from other sounding devices and easily heard above the working of the machine anywhere within 100m from the machine.
- 2.3.4.4. The Contractor shall appoint a duly authorised person for activation of the warning system.
- 2.3.4.5. An additional handheld warning system shall be provided on site to be used during the times that the machine is standing clear of the work site.
- 2.3.4.6. A rotating amber flashing light shall be fitted to the top of the machine's cab, for use during travel.

2.3.5. Lighting for the Work Site

- 2.3.5.1. The Contractor shall provide lighting to all workplaces where work is to be taking place during the hours between sunset and sunrise.
- 2.3.5.2. The lighting shall be of sufficient intensity and spread to satisfy the Project Manager or his/her delegated assistant that work can proceed efficiently and safely.

2.3.6. Stabling of machines

- 2.3.6.1.1. The on-track machines may at times be stabled overnight at the workplace or on loop lines near the workplace whatever the case may be.
- 2.3.6.1.2. The Contractor shall in all instances be responsible for security of the machinery. The cost to provide such security will be

deemed included in the rates tendered and no separate payment will be made.

2.3.7. STANDARD OF WORK

2.3.7.1. Pre-assembly.

2.3.7.1.1. The Contractor shall ensure that the pre-assembled turnout conform to the “A” standard.

2.3.7.2. Handling.

2.3.7.2.1. Sub-assemblies must be handled by means of a spreader beam to ensure that the deflection of sub-assemblies during lifting and handling does not exceed specified tolerances.

2.3.7.2.2. During the lifting and loading of the assembled turnout, deflection may not exceed 10mm over a 10m span.

2.3.7.3. Turnouts.

2.3.7.3.1. Turnouts shall always be placed by the Contractor within 10mm of position. This position shall be indicated by the Project Manager or his/her delegated assistant by means of reference pegs on the ground at the stock-rail-joints (SRJ) and end-of-sets (EOS).

2.3.7.3.2. The Contractor shall work to the layout dimensions required by the Project Manager, these dimensions will be given in writing to the Contractor or indicated by means of chalk marks on the sleepers.

2.3.7.3.3. The Contractor shall monitor and evaluate measurements of the layout and shall ensure compliance with the specified standards of workmanship and accuracy during installation of the turnout.

2.3.7.3.4. Where, in the opinion of the Contractor, the condition of the site is such that the specified performance standards cannot be achieved, he/she should record all relevant information in

conjunction with the Project Manager or his/her delegated assistant before and after working. The Project Manager or his/her delegated assistant may, if he/she concurs with the Contractor's contentions, adapt the specified standards of workmanship in order to conform to suit the track and/or site conditions.

2.3.7.4. Track formation.

2.3.7.4.1. Track formation shall not be damaged, or its profile changed by work carried out by the Contractor.

2.3.7.5. Geometric standard.

2.3.7.5.1. Turnouts shall be built to the "A" standard, and this will be required regardless of the prevailing conditions.

2.3.7.5.2. Diagrams indicating measurements to determine the geometric standard of pre-assembled turnouts will be provided to the contractor on request.

2.3.7.6. General

2.3.7.6.1. Where subject to the Contractor's discretion the distance between track centre lines on multiple tracks must be within 10mm of the design centres.

2.3.7.6.2. The standard for structure gauge shall be adhered to specification E7/2 (July 1998).

2.3.7.7. Sleepers

2.3.7.7.1. The position of each sleeper shall be marked out with permanent paint on the field side of the rail flange. These markings will be used for quality measurements afterwards.

2.3.7.7.2. Sleepers spacing in accordance with the "A" standard shall not vary by more than 5mm where it was subjected to the Contractor's discretion.

2.3.7.8. Ballast

2.3.7.8.1. The top width of the ballast shoulder to the "A" standard shall be

constructed to a tolerance of +100mm and -50mm.

2.3.7.8.2. The depth of the ballast profile shall be within a tolerance of +50mm and -50mm.

2.3.7.9. Signal equipment

2.3.7.9.1. The contractor shall not interfere or tamper with signal equipment on turnouts or signal equipment next to the track.

2.3.7.9.2. In the event of existing signal equipment hindering the execution of the works, the contractor shall timeously advise the Project Manager or his/her delegated assistant in writing of his/her requirements for qualified signaling personnel to provide the necessary assistance.

2.3.7.9.3. The Project Manager or his/her delegated assistant will arrange for the necessary adjustments of points, lock slides and detection. He will also arrange for the electrical connection and final setting of the points machine.

2.3.7.10. Electrical equipment

2.3.7.10.1. Since the traction rail forms part of the high voltage electrical circuit, any break in the track could result in the full system voltage (up to 50 000 volts) between rail and earth under certain conditions. The Contractor when encountering any such situation shall therefore exercise special care and the Project Manager or his/her delegated assistant shall be advised without any delays.

2.3.7.10.2. The continuity of the traction rail shall be maintained by means of portable jumper cables, which shall be connected across the turnout by a contractor's responsible person in conjunction with PRASA Electrical Personnel before any fishplate, or rail bond is removed for the replacement of the old turnout.

2.3.7.10.3. On completion of the replacement of the turnout, a contractor's responsible person in conjunction with PRASA Electrical

Personnel shall restore the continuity of the traction rail with permanent bonds before the removal of the portable jumper cables.

2.3.7.10.4. Although the replacement of turnouts shall be carried out under cover of a work permit (i.e., the electrical power in the overhead lines is switched off), the following precautionary measures will still be required to ensure the safety of persons on site against the risk of electric shock: -

2.3.7.10.4.1. No work on site, especially off-loading by the gantries or other equipment from rail trucks, shall commence unless the Contractor's responsible person has noted the conditions contained in the electrical work-permit by way of signing the work-permit form.

2.3.7.10.4.2. The Contractor shall not proceed with work before having properly informed and warned all his/her staff of potential dangers of adjacent live equipment pointed out to him/her by the PRASA electrical officer who issued and controls the work permit.

2.4. MEASUREMENT OF QUALITY OF CONSTRUCTION

2.4.1. All work shall conform to "A" Standard and the following measurements of quality of construction shall be required:

2.4.1.1. The Contractor shall measure and record for each turnout all measurements required to determine the standard of construction. A hard copy of these measurements shall be made available to the Project Manager or his/her delegated assistant on completion of the work for evaluation purposes.

2.4.1.2. Measurements for the vertical alignment and gauge shall be made with a track gauge or equivalent.

2.4.1.3. Deviations from straight line (slack): Determine position of the slack by visual means. Measure the depth of the slack with a track gauge.

Measurements shall be taken along the top of the rail also before and after the points of deviation.

2.4.1.4. Measurement for the horizontal alignment shall be made with a nylon line on the running side of the reference rail at two points 10m apart and a feeler gauge calibrated at 1mm intervals.

2.4.1.5. On the straight track, each deviation between the two points 10m apart must be measured by inserting the feeler gauge between the nylon line and the rail at the center of the deviation. The number of sleeper spaces between the beginning and end of the deviation must be recorded.

2.4.1.6. Curved track shall be marked out at 5m intervals, and each mark shall become a measuring station. Measuring and recording the offset at each station from the 10m chord strung across alternative stations shall determine the Final Standard.

2.4.1.7. The measuring stations specified above shall be numbered consecutively on the flange of the left hand rail with white chalk for each section being evaluated and shall be prefixed with the letter A.

2.4.1.8. Ballast standards shall be determined by:

2.4.1.8.1. Open and measuring actual ballast depth where directed by the Project Manager or his/her delegated assistant

2.4.1.8.2. The ballast profile shall be measured by approved means along the track and recorded.

3. REPLACEMENT OF SLEEPERS

3.1. SPECIFICATION OF PROPOSED WORK PROCESS

3.1.1. This specification covers the on-site replacement of wooden sleepers and damaged concrete sleepers with concrete and wooden sleepers between Germiston and Kwesine line in the Metrorail Gauteng Region.

3.1.2. The Contractor shall do the work as directed by the Project and in accordance with the specifications set out in this tender/contract

document. (Also see E.10/2 from Manual for Track Maintenance 2000 attached).

- 3.1.3. The contractor shall always be required to supply adequate and competent supervision.
- 3.1.4. The contractor shall loosen fastenings, remove old sleepers and replace it with concrete sleepers fastened by E-clips/fist fastenings. This will include the correct placing of rail pads that will be provided.
- 3.1.5. Some of the work will be carried out in restricted areas (multiple lines, cuttings, or embankments). Contractors are expected to trolley in material to this construction site.
- 3.1.6. It is accepted that work will be done by hand labour (manually). The bidder may submit alternative methods for the required work to be done.
- 3.1.7. The workplace will be as directed by the Project Manager.
- 3.1.8. The completion date of a workplace will be as soon as the work has been completed to the satisfaction of the Project Manager.
- 3.1.9. The work shall be carried out in such a way that the track is not moved from its original position.
- 3.1.10. All ballast will be cased into the satisfaction of the Project Manager.
- 3.1.11. Sleepers laid must be kept square to the rails.
- 3.1.12. Sleepers must be tamped to the A standard.
- 3.1.13. Special attention must be paid to joints and adjacent sleepers at rail joints.
- 3.1.14. Sleeper's fastenings must be kept tight.
- 3.1.15. The contact areas of clips and rail flanges must be kept free of lubricant.
- 3.1.16. Rail seats and rail pads must not be coated with bitumen or tar,
- 3.1.17. Where this has been done, rail seats should be cleaned with white spirits and the pads renewed.

- 3.1.18. If a hard deposit of rubber is built up on the rail seat in the recess of concrete sleepers with Fist B or C fastenings; this must be cleared away before a new pad is inserted.
- 3.1.19. Concrete sleepers must not be damaged when being handled.
- 3.1.20. Damaged sleepers must not be placed into the track and must be reported to the Project Manager or his/her delegated assistant in writing and paid for by the contractor.
- 3.1.21. **Sleepers are to be laid and packed in a 1 to 4 sequence, thus there must always be three packed sleepers on both sides of the sleeper being removed. Before traffic is permitted over the track which laid on newly inserted concrete sleepers, the sleepers must be packed to within the B standard to ensure adequate and even bearing.**
- 3.1.22. **The track must be kept within the B standard by the contractor at his cost up to three weeks after the sleepers have been replaced, according to The Manual for Track Maintenance (2000) {Annexure 4.2.1.3 - 4.2.4.7}.**
- 3.1.23. **After a six weeks period of establishment, the contractor will again tamp the track to the A standard according to The Manual for Track Maintenance (2000) {Annexure 4.2.1.3 - 4.2.4.7}.**
- 3.1.24. E-clips and Fist clips must be applied or removed only by means of a Pan Puller or Fist lever respectively.
- 3.1.25. **Work shall only be done within Temperature Ranges allowed in the Manual for Track Maintenance (2000) {Annexure 16}.**
- 3.1.26. **The contractor is always responsible for the safety of the track and his/her workers until the site is handed back to PRASA.**

3.2. STANDARD OF WORK

- 3.2.1. The Contractor shall monitor and evaluate measurements of the layout and shall ensure compliance with the specified standards of workmanship and accuracy during installation of the sleepers.
- 3.2.2. The Contractor will have to ensure he/she is familiar with the E10 (General Specification for Railway Track work), E10/2 (Laying of Sleepers), and the Manual of Track Maintenance 2000.
- 3.2.3. The Contractor will be responsible for:
 - 3.2.3.1. Replacing the Sleepers to comply with attached E10 and E10/2 speciation.
 - 3.2.3.2. Leaving the track in a standard B for PRASA Rail to allow for the safe passage of trains after the occupation.
 - 3.2.3.3. Leaving the track in the A-standard at the end of the project.

3.3. METHOD AND PROCEDURES

3.3.1. General

- 3.3.1.1. Sleepers shall be laid at right angles to the track centre line on straight track and radially on curves.
- 3.3.1.2. Sleeper spacing shall be in accordance with Annexure E of specification E.10 Gen. for the nominal spacing specified in the Project Specification.
- 3.3.1.3. When re-sleepering is to be done prior to re-railing, the position of the rail joints in jointed track shall be established beforehand.
- 3.3.1.4. Special attention shall be given to the spacing of the joint and adjacent sleepers to ensure that it is as specified.
- 3.3.1.5. The contact areas of clips and rail flanges shall be cleaned of lubricant and foreign matter before installation.
- 3.3.1.6. Proprietary fastenings and those using multi-coil spring washers shall be tightened in accordance with the manufacturer's instructions or as directed by the Project Manager.
- 3.3.1.7. Instructions which are issued in connection with the installation of

insulating pads shall be followed implicitly.

3.3.1.8. Care shall be taken not to damage these pads.

3.4. CONCRETE SLEEPERS AND FASTENINGS

3.4.1. Various makes of concrete sleepers and different types of fastenings shall not be mixed in the track.

3.4.2. The Contractor shall obtain sleeper clip combinations and details of sleeper fastenings from the Project Manager or his/her delegated assistant and shall check that the combinations and fastenings do, in fact, give the required gauge before proceeding to use the material.

3.4.3. Concrete sleepers with Fist A type fastenings shall not be used as joint sleepers at fishplates joints.

3.4.4. Drilling of holes and driving of nails and bolts into concrete sleepers is not permitted.

3.4.5. Before traffic is permitted over track laid on newly inserted concrete sleepers, the sleepers shall be packed.

3.5. SLEEPERS ON UNBALLASTED BRIDGES

3.5.1. Special sleepers will be supplied for use on unballasted bridges.

3.5.2. Bridge sleepers shall not be adzed to make the running top even. Steel packing plates will be supplied for this purpose for insertion between the sleeper and the rail chair.

3.5.3. If protective plates, walkways, or safety rails are fixed to the sleepers, the Contractor shall, when re-sleepering, remove them and replace them on the new sleepers.

3.5.4. Sleepers shall not rest on the ballast walls but shall be laid on either side of the walls as close as possible to 700 mm spacing.

3.5.5. The Contractor shall drill the wooden sleepers to suit the fixing arrangements on the steelwork and shall insert the fixing bolts with the special washers and nuts on the top of the sleepers.

3.6. RE-SLEEPER

3.6.1. Re-sleeper under long-welded rails may be done at any temperature below the maximum of the following ranges:

3.6.1.1. A range on track laid with steel sleepers,

3.6.1.2. B range on track laid with wood sleepers,

3.6.1.3. C range on track laid with concrete sleepers.

3.6.2. All ranges are specified in Annexure H of specification E.10 Gen.

3.6.3. At least eight sleepers on both sides of any sleeper being removed shall be properly boxed in and tamped.

3.6.4. When re-sleeper under rails of 36m length or shorter, at least four sleepers on both sides of any sleeper being removed shall be properly boxed in and tamped.

3.6.5. Re-sleeper shall not be done when the rail temperature exceeds the upper limit of temperature range C shown in Annexure H of specification E.10 Gen.

3.6.6. In tunnels, sleepers may be replaced consecutively to within 20m inside the tunnel portal irrespective of the rail temperature outside the tunnel.

3.6.7. Sleepers under lock bars and safety bars, and sleepers to which any bond or signalling apparatus is attached, shall not be disturbed unless the Project Manager or his/her delegated assistant is present and has given his/her consent.

3.7. RE-SPACING OF SLEEPERS

3.7.1. Where the sleeper spacing are not in accordance with that specified in Annexure E of specification E.10 Gen for the nominal spacing specified in the Project Specification, the Contractor shall respace the sleepers.

3.7.2. Respacing of sleepers shall only be done within the same temperature limits and while the same number of sleepers on both sides are properly boxed in and tamped as specified in 5.3.6. hereof for re-sleeper.

3.7.3. The Contractor shall open the track to move a sleeper to be respaced to the correct position, loosen the sleeper fastenings, move the sleeper to the correct spacing, fasten the sleeper fastenings and pack the sleeper.

3.7.4. Additional sleepers shall be inserted where necessary to ensure that the distance between packed sleepers does not exceed three times the nominal sleeper spacing.

4. INSTALLATION OF RAIL LUBRICATORS

4.1. SPECIFICATION OF PROPOSED WORK PROCESSES

4.1.1. This specification covers the on-site replacement of vandalised, faulty, and stolen rail lubricators and installation of new rail lubricators between Germiston and Kwesine line in the Metrorail Gauteng Region.

4.1.2. The Contractor shall do the work as directed by the Project Manager or his/her delegated assistant and in accordance with the specifications set out in this tender/contract document.

4.1.3. The contractor shall loosen fastenings, remove vandalised, faulty or the remains of the stolen rail lubricators and replace it with new rail lubricators.

4.1.4. Some of the work will be carried out in restricted areas (multiple lines, cuttings, or embankments). Contractors are expected to trolley in material to the construction site.

4.1.5. It is accepted that work will be done by hand labour (manually).

4.1.6. The workplace will be as directed by the Project Manager.

4.1.7. The completion date of a workplace will be as soon as the work has been completed to the satisfaction of the Project Manager.

4.1.8. The work shall be carried out in such a way that the track is not moved from its original position.

4.1.9. All ballast shall be cased to the satisfaction of the Project Manager.

4.1.10. Ballast shall not be contaminated.

4.1.11. **The contractor is always responsible for the safety of the track and his/her workers until he/she hands back site to PRASA.**

4.2. STANDARD OF WORK

- 4.2.1. The Contractor shall monitor and evaluate measurements of the installation and shall ensure compliance with the specified standards of workmanship and accuracy during installation of the rail lubricators.
- 4.2.2. The Contractor will have to ensure he/she is familiar with the E10 (General Specification for Railway Track work) and the Manual of Track Maintenance 2000.
- 4.2.3. The Contractor shall be responsible for:
 - 4.2.3.1. Installation of the rail lubricators to comply with the specification and instruction given by the Project Manager.
 - 4.2.3.2. Leaving the track in a condition that they find the track at to allow for the safe passage of trains after the occupation.

5. FIELD WELDING AND GRINDING OF RAILS MANUFACTURED CROSSINGS, WHEEL-SPIN BURNS, BATTERED ENDS, REMOVAL OF ULTRASONIC DEFECTS BY MEANS OF EXOTHERMIC WELDING AND GRINDING OF OVERLAPS ON TURNOUTS

5.1. SPECIFICATION OF PROPOSED WORK PROCESSES

This contract and specifications cover:

- 5.1.1. Field welding and grinding of Rail manufactured crossings,
- 5.1.2. Welding and grinding of skid marks,
- 5.1.3. Welding and grinding of battered ends,
- 5.1.4. Repair of ultra-sonic defects by means of exothermic welding of rail joints (48kg, 57kg and 60kg),
- 5.1.5. Grinding of overlaps on turnouts.

5.2. PREVIOUS TRACK WELDING EXPERIENCE

- 5.2.1. All contractors are required to give satisfactory evidence of previous experience regarding on-track welding and grinding, as it will form part of the evaluation criteria during the process of awarding the contract.

6. VEGETATION CONTROL AND TREE FELLING

6.1. NATURE OF WORK

- 6.1.1. This specification covers the grass cutting and tree felling in the Germiston and Kwesine line.
- 6.1.2. The Contractor shall do the work as directed by the Project Manager or his/her delegated assistant and in accordance with the specifications set out in this tender/contract document.
- 6.1.3. PRASA RAIL intends to control vegetation along the rail reserve, tracks, cable routes, yards, substations, and relay-rooms within the Germiston to Kwesine Line.
- 6.1.4. The work shall be expected to control vegetation on the Germiston to Kwesine line.
- 6.1.5. The tendered prices shall consider all machines, plant and consumables required for the proper completion of the work.

6.2. SPECIFICATION OF PROPOSED WORK PROCESSES

- 6.2.1. PRASA requires the initially cutting of all Grass and Trees and invader trees as listed in Categories 1, 2, and 3 of the Conservation of Agricultural resources act, act 43 of 1983 (CARA).
- 6.2.2. The contract shall have a proven record of wide experience in chemical eradication and the use of herbicides in Southern Africa and have the proper understanding of safe tree felling and grass cutting.
- 6.2.3. The Contractor's procedures for the procurement, storage, handling, transportation, application, and general use of chemicals shall comply with all applicable legislation, Codes of Practice and Local, Regional or Provincial Authorities, including but not restricted to:
 - 6.2.3.1. The Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (Act 36 of 1947) as amended.
 - 6.2.3.2. The Hazardous Substance Act (Act 15 of 1973).

6.2.3.3. The Water Act (Act 54 of 1956) and the Water Amendment Act (Act 96 of 1984) (where applicable).

6.2.3.4. The Environmental Conservation Act (Act 73 of 1989).

6.2.3.5. SABS Code of Practice No. 0206 - 1985 "Safety procedures for the disposal of surplus pesticide and associated toxic waste".

6.2.3.6. National Environmental Management, Act No. 107 of 1998

6.2.4. The Contractor's authorised representative shall be a registered Pest Control Operator, specialising in the field of industrial weed control only and registered in terms of the Farm Feeds Agricultural and Stock Remedies Act, Act 36 of 1947 as amended. A registered Pest Control Officer shall be in direct control of work taking place on site.

6.2.5. Proof of registration as a Pest Control Officer in the field of (Industrial Weed Control) shall be submitted with the tender document

NB!!!Only valid PCO certificates in industrial weed control will be accepted and if expired a letter from the department of Agriculture must be submitted to show the certificate is in the process of been issued.

6.3. HERBICIDES AND OTHER CHEMICALS

6.3.1. The Contractor shall provide safe and secure storage facilities for all herbicides or chemicals brought onto, and in use on site.

6.3.2. Such facilities shall be capable of ensuring that unauthorised persons or animals cannot gain access to such chemicals.

6.3.3. A list of registered Herbicides for Trees to be used in Industrial weed control only, supported by specimen labels.

6.3.4. A full list of declared weeds and invader plants as listed in Categories 1, 2, and 3 of the Conservation of Agricultural resources act, act 43 of 1983 (CARA) is available on the department website.

6.3.5. A list of herbicides to be used must be completed in full.

6.3.6. Trees and hard woods (Triclopyr) (Pyridyloxy Compound).

Picloram (pyridine carboxylic acid)

Trade name (Label name)

Generic name _____

Registration number _____

Ingredient (type and content) as shown on the label _____

Application rates, _____

Application rates, and fields of use. _____

6.3.7. A description of the methods to be used for tree felling must be provided.

This must include the following:

6.3.7.1. The description and rate of application of chemicals.

6.3.7.2. Precautions to be taken to prevent damage of adjacent structures.

6.3.7.3. The type and method of use of the proposed equipment and any other relevant information.

6.3.7.4. The description and rates of application submitted shall serve as the minimum basis for estimating performance and vegetation control by the Contractor.

6.3.7.5. The herbicides specified shall be used as the basis for evaluating the efficacy of the Contractor's proposed method of work.

6.3.7.6. The work programme. This will be used for evaluation purposes and monitoring of work.

6.3.7.7. A certified copy of a valid certificate issued by the Department of Agriculture to certify that the tenderer or his/her representative is a pest control operator in industrial weed, in terms of Act 36 of 1947, as stipulated under clause must be submitted.

6.4. DEFINITIONS

6.4.1. **CARA Legislation:** It pertains to The Conservation of Agricultural resources Act, Act 43 of 1983.

6.4.2. **Declared weeds:** Is all species as listed in category 1 of the CARA Legislation, refer to The Conservation of Agricultural resources Act, Act 43 of 1983.

6.4.3. **Invader plants:** Is all species as listed in category 2, and 3 of the CARA Legislation, refer to The Conservation of Agricultural resources Act, Act 43 of 1983.

6.4.4. **Spraying:** means the even and uniform application of chemical herbicides at the rate specified and applies to liquid, granular or any other formulation.

6.4.5. **Technical Officer:** is the PRASA Project Manager, his/her appointed deputy or any person lawfully acting in that capacity.

6.4.6. **Area for invader plants only:** Is a subdivision of any area on which the Contractor shall control trees and grass.

6.4.7. Provisional area for invader plants only comprises the removal of cut vegetation from site.

NB: The rendering of this type of service is not necessarily required during the course of the contract, provision has only been made should the need arise for this type of service.

Apart from the stipulation that provisional work may not necessarily be required, all other contract conditions shall apply mutatis mutandis to provisional work.

6.4.8. **Remove:** comprises moving the entire felled tree from the site and dumping it at a registered municipal dump or other specified area.

6.4.9. **Move:** comprises moving the felled trees to an area determined by the Project Manager where this material will not pose a hindrance, obstruct drainage systems, or present a fire hazard.

6.4.10. **Control:** Is achieved when all existing or potential growth of vegetation is permanently impaired or destroyed by the application and effects of chemical herbicides, to the extent that:

6.4.10.1. **An area (measured in m²):** is a subdivision of any area on which the contractor shall control vegetation.

6.4.10.2. In yards, depots/areas where control is required area may be irregular in shape.

6.4.10.3. For inspection and payment purposes, the area shall be physically measured where necessary.

- 6.4.10.4. In such instances the Project Manager or his/her delegated assistant shall decide in advance and advise the Contractor accordingly, of the method of measurement to be adopted in any particular area.
- 6.4.10.5. In yards, depots/areas area will normally be measured parallel to the main direction of the track work present, or parallel to the main axis of any other area. Area will not be measured individually in different directions but will form part of a pattern of continuous and parallel area covering, in the most effective manner possible, the surface of any particular area.
- 6.4.10.6. **An area for cable routes:** will normally be areas of 1.5m wide on both (left and right) sides and parallel to the cable route and 500m long.
- 6.4.10.7. **Formation:** is the finished earthworks surface upon which the track is laid.
- 6.4.10.8. **Ballast:** means that part normally consisting of crushed stone, gravel, ash or muck, (the material placed on the formation to support the track Superstructure).
- 6.4.10.9. **Yards:** are those areas of shunting yards comprising mainly shunting or staging tracks, paths, roadways, platforms, and land adjacent to the above and situated within the station emplacement. Yards and loops start at the clearance mark of the facing points.
- 6.4.10.10. **Depots areas:** are those sites where assets such as stores and workshops are located, areas of stacking space, hard standing, buildings, access roads, railway tracks and dumping areas within the railway reserve.
- NB: This may also include Radio masts, signal equipment, relay stations and electrical sub-stations and other specified areas outside the railway reserves.
- 6.4.10.11. **Declared weeds:** means noxious plants proclaimed under the Conservation of Agricultural Resources Act, Act No. 43 of 1983

(C.A.R.A.), as listed in Government Gazette No. 9238 or amendments thereto.

6.5. METHOD OF WORK

Standard of vegetation control for individual area (m²) and the boundary concerned is not the boundary of an adjoining area.

- 6.5.1. The scope of work requires a combination of, felling tall herbaceous growth (i.e., reeds and succulents) with cut stump application of herbicides, and foliar application to low growing herbaceous growth CARA.
- 6.5.2. The Contractor's methods and program shall provide rapid and effective control in all areas.
- 6.5.3. Priority areas for rapid and effective control include building surrounds, staked cable routes, level crossings, shunting yards and approaches to stations.

6.6. STANDARDS OF WORKMANSHIP

6.6.1. **Standard of vegetation control for individual work**

- 6.6.1.1. Tall growth comprising weeds and CARA shall be carefully and safely felled.

NB: The branches and stems must be cut up into one meter pieces, which must be spread out and left on site unless otherwise stated, the remaining stump shall be cut off to a maximum height of 30 cm above ground level and left in situ, all branches and stems shall be move away from drainage systems where present.

- 6.6.1.2. The remaining stumps shall be treated immediately after being cut with a registered herbicide, as stated at the manufacturers recommended dosage, to prevent re-growth.
- 6.6.1.3. The contractor shall apply extreme care when working near live high voltage power lines, railway tracks, and bordering private property.

- 6.6.1.4. The Contractor shall implement safe working practices and precautions to safeguard his/her personnel and prevent damage to infrastructure.
- 6.6.1.5. The Contractor shall follow and abide by the prescriptions as specified in the E7/2 (Specifications for works on, over, under, or adjacent to railway lines and near high voltage equipment, where applicable.)
- 6.6.1.6. In the case of the foliar application of herbicides, the herbicide shall be carefully applied to the target species to prevent damage to desirable vegetation, at the manufacturers recommended dosage and means of application.
- 6.6.1.7. The Contractor shall appoint a responsible representative at the site, who shall be present while the works is in progress and ensure that safe working practices are implemented.

6.6.2. Overall control

- 6.6.2.1. The overall standard of control to be achieved by the Contractor over the contract area, is defined as “Overall Control” and expressed as a percentage will be determined by application of the following formula:
- 6.6.2.2. Failure by the Contractor to achieve the standard of “Overall Control” shall constitute a material breach of contract by the Contractor, which will entitle the Executive Officer to act in terms of the General Conditions for Minor Works 287.

6.6.3. PERFORMANCE MONITORING AND EVALUATION

- 6.6.3.1. The Contractor shall always be responsible for supervision of the work and for follow-up.
- 6.6.3.2. The Project Manager or his/her delegated assistant shall at any time during the cutting periods carry out inspections of the Contractor’s performance methods and procedures.

6.6.3.3. The Project Manager or his/her delegated assistant may at any time take samples of the chemicals applied and arrange for the testing thereof.

6.6.3.4. Where test samples fail to conform to the specifications the costs of testing will be recovered from the Contractor, and he/she will be ordered by the Project Manager or his/her delegated assistant to re-treat entire area or sections where such chemicals were applied.

6.6.4. INSPECTIONS: GRASS CUTTING TREE FELLING

6.6.4.1. Tree felling will be based on the Schedule of prices where the Contractor successfully applied the vegetation control measures and has achieved the standard of workmanship defined.

6.6.4.2. Cutting of vegetation will be based on the Contractor's rate per m² as stated in the Schedule of quantities and prices.

6.6.4.3. Photograph of before and after the work commence with actual references of same area and date stamp on Photos must be submitted as proof with every invoice submitted.

6.6.5. REMEDIAL WORK

6.6.5.1. The Contractor shall carry out immediate remedial work to all area where control has not been achieved.

6.6.5.2. Such remedial work shall include foliar application and the felling and application of tree killers to stumps where re-growth has occurred as well as the removal or moving of dry or dead growth forming a nuisance or hazard to PRASA rail Operations, from the treated area.

6.6.5.3. Failure on the part of the contractor to take immediate remedial action will result in the application of penalties as specified in the contract.

6.6.5.4. In the case of inaction or non-conformance by the Contractor, PRASA rail reserves the right to implement remedial action and recover the cost from the contractor.

6.6.5.5. The felling of re-growth will not be allowed on its own as a remedial action and a tree killer shall be re-applied.

6.6.6. DAMAGE TO FAUNA AND FLORA

6.6.6.1. The Contractor shall always ensure that his/her employees exercise care and consideration for the fauna and flora within and adjacent to the area to be sprayed.

6.6.6.2. The Contractor shall take the presence of drainage works within the work area into account and shall ensure that no waterborne movement of herbicides is possible.

6.6.6.3. The Contractor shall not apply any chemical of an explosive, inflammable, highly volatile or corrosive nature, which may damage crops, vegetation or property or be hazardous to humans or animals.

6.6.6.4. The Contractor shall assume full responsibility for the efficiency and safety of whatever chemicals are used.

6.6.6.5. Illegal dumping or pollution of any kind will not be permitted.

6.6.6.6. The stipulation is also applicable to the washing out of tanks and equipment containing harmful chemicals and pollutants.

6.6.6.7. The Contractor shall institute and maintain procedures for the safe disposal of all chemicals and residual materials originating from the execution of the works.

6.6.6.8. Containers and residual material shall not be disposed of, on PRASA property.

6.6.6.9. The Contractor shall take note of environmentally sensitive areas and shall plan and execute his/her work with the utmost care and responsibility.

6.6.7. GRASS CUTTING AND TREE FELLING

- 6.6.7.1. For tree felling payment will be based on the Schedule of prices where the Contractor successfully applied the vegetation control measures and has achieved the standard of workmanship defined
- 6.6.7.2. No payment will be made where control does not meet the standards of control specified.
- 6.6.7.3. For cutting of vegetation payment will be based on the Contractor's rate per m2 as stated in the Schedule of quantities and prices
- 6.6.7.4. No payment will be made for rejected areas where control achieved does not meet the standards specified.
- 6.6.7.5. Payment of rejected areas will be withheld until prescribed standards of workmanship has been achieved.
- 6.6.7.6. Photograph of before and after the work commence with actual references of same area and date stamp on Photos must be submitted as proof with every invoice submitted.

7. WORK SUPERVISION AND PROTECTION ON SITE

- 7.1.1. The Contractor shall provide a fully qualified Track Inspector/Master with valid Track Inspector/Master certificate (as required by PRASA Rail) to properly supervise the execution of the work
- 7.1.2. The Contractor shall also provide a technical supervisor (welding) for welding work supervision
- 7.1.3. The Contractor shall provide a Pest Control Operator (registered in terms of the Farm Feeds Agricultural and Stock Remedies Act, Act 36 of 1947 as amended) to supervise vegetation control works
- 7.1.4. The Contractor shall also provide his/her own qualified flagmen for the protection of the work site (at least 3 flagmen per site) - with valid flagmen certificate's (as required by PRASA Rail)
 - 7.1.4.1. Flagmen must be officially trained, evaluated, and certified competent, (TETA -ASSR 463972 (Accreditation no: TETA 1186) and Transnet 407 – Item Number 37/270451 - "Certificate of Competency") by a

designated competent person, before being used on protection duties. This certificate of competency shall remain valid for two (2) years only after, which re-testing and re-certification of competency will be required.

7.1.5. It is the responsibility of the contractor to provide security on site for equipment, material, and personnel for the duration of the contract.

8. RECTIFICATION OF SUB-STANDARD WORK

8.1.1. The contractor shall rectify all sub-standard work within five (5) days on his/her own cost.

8.1.2. The Project Manager or his/her delegated assistant will inspect all work done and payment will only be made for work that conforms with “A” standard.

8.1.3. Sub-standard work will not be paid.

9. RELEASED MATERIAL

9.1.1. General

9.1.1.1. The Project Manager or his/her delegated assistant will classify all materials to be released and the contractor will be required to transport them to PRASA Rail Material Stores (Driehoek)

9.1.1.2. Released permanent way material shall be broken up into its basic components, and shall be grouped into types for loading, or stacking e.g., rails and clips shall not be loaded onto the same rail truck, pads shall be placed in approved type bags when loaded together with pins in the same truck, and etc.

9.1.1.3. All the released material from the track shall be handed in at the material stores (Driehoek)

9.1.1.4. Any missing released materials not accounted for will be deducted from the Contractor's invoice.

9.1.1.5. The accumulated amount of released missing material will be

deducted from the invoice amount claimed.

9.1.1.6. Re-usable material loaded into trucks for dispatching shall be neatly stacked in such a manner that:

9.1.1.6.1. Re-usable material is not to be damaged during the loading operation.

9.1.1.6.2. The journey to its destination may be made with no damage to the material or shifting of the load.

9.1.1.6.3. The unloading by others at its destination may be undertaken without difficulty.

9.1.2. Rails

9.1.2.1. Released rails shall be cut into 12m lengths.

9.1.2.2. The Contractor shall load scrap rails into trucks.

9.1.2.3. Re-usable rails shall be placed and stacked as directed by the Project Manager or his/her delegated assistant.

9.1.3. Fastenings

9.1.3.1. Released fastenings shall be grouped together prior to loading by binding wire, sturdy bags, or any similar approved method.

9.1.4. Sleepers

9.1.4.1. Sleepers must be stacked and must not exceed 200 on site at a given time and must be immediately transported to the stores.

9.1.5. Turnouts

9.1.5.1. The components shall be grouped together and loaded into separate trucks or stacked as directed by the Project Manager or his/her delegated assistant.

9.1.6. Loading and stacking lists

9.1.6.1. The Contractor shall keep record of all material loaded into trucks or stacked for despatching. The lists reflecting the full contents of each truck or stack shall be submitted to the Project Manager or his/her delegated assistant.

10. LOADING OF MATERIAL

- 10.1. All released material from the track must be loaded and delivered to PRASA depots (Driehoek)
- 10.2. The Contractor will be paid for the removal/transporting of material at rates stipulated in the contract.
- 10.3. All the chairs and screws must be removed from the wooden sleepers.
- 10.4. **The Store will only receive and supply material on weekdays between 08h00 and 15h00** unless special arrangements have been made with the store manager.
- 10.5. All material shall be stacked, sorted, and classified according to the **Manual for Track Maintenance (2000) {Annexure 7 .1.3.11+ 10}**.
- 10.6. **All released material must be booked back to the store on a 9B form (Available at Material stores).**
- 10.7. All released material removed must match the number of materials installed.
- 10.8. **The Contractor is to count and sign for all fasteners, materials and any shortcoming will be for his/her own account.**
- 10.9. All stacked sleepers must not exceed 200 on site at a given time and must be immediately transported to the stores.

11. MATERIAL OFFLOADED BY THE CONTRACTOR

- 11.1. The Contractor shall offload, distribute, and stack permanent way material supplied for the works at places designated by the Project Manager or his/her delegated assistant.
- 11.2. The Contractor must keep record of such receipts, indicating truck numbers and the date of offloading.
- 11.3. The Contractor shall accept responsibility for safe custody of the material only from the time the material is handed over into his/her custody by PRASA on site just prior to commencement of construction of the turnouts.

12. PLANT, TOOLS, AND EQUIPMENT

- 12.1. The Contractor shall supply all plant, tools and equipment required for and during the execution of the work.
- 12.2. **All tools are to be in good working condition according to Act 85 of 1993.**
- 12.3. Correct equipment shall be used e.g., pan puller instead of hammer/beater to install or remove fastenings.
- 12.4. The quality of all tools and equipment to be used shall be specifically pre-approved by PRASA Rail
- 12.5. The Contractor shall supply, maintain and operate all labour, equipment and materials associated with the work.
- 12.6. **WALKIE-TALKIE RADIO TRANSCEIVERS AND CELL PHONE**
 - 12.6.1. The Contractor shall supply walkie-talkie radio transceivers for communication on site and with Operating.

13. GENERAL

- 13.1. Should any damages been caused to any assets of Prasa Rail by the contractor during the execution of his/her duties, it will be recovered from the contractor's account.
- 13.2. These quantities must be recorded and signed by both parties in the triplicate site book provided by the contractor.
- 13.3. The original must be handed to the Project Manager or his/her delegated assistant, one copy will be for the contractors' records and the third to stay in the site book.
- 13.4. The Contractor will be responsible for the safeguarding of any material issued to him by Prasa Rail
- 13.5. The Contractor shall unload, distribute, and stack permanent way material supplied for the works at places designated by the Project Manager. The Contractor shall accept responsibility for safe custody of the material from

the time the material is handed over into his/her custody by PRASA RAIL on site just prior to commencement of replacing of the rails.

14. CONTRACT AREA

- 14.1. The contract area will be within the Germiston to Kwesine corridor in the Metrorail Gauteng Region.
- 14.2. PRASA will provide the Contractor with a preliminary working program.
- 14.3. The Project Manager or his/her delegated assistant will also arrange for a depot planning meeting two (2) weeks in advance of site occupation and of any plant and machinery arriving on a particular site.
- 14.4. This meeting will involve all the local stakeholders and production aspects of all work required for the installation of Perway components.
- 14.5. Meeting discussions will be recorded by means of the official meeting minutes.

15. HOURS OF WORK/ OCCUPATION PERIOD

- 15.1. The site will be available to the contractor all the time where trains are not operational and it will be of the contractor's discretion to utilize this time efficiently in order to finish work within the approved time frames.
- 15.2. Some work will take place on weekdays, Mondays to Fridays between 09h00 to 15h00 and weekends and public holidays from 06h00 to 17h00 where lines are operational.
- 15.3. Occupations between trains will be allowed for preparation and finalizing work.
- 15.4. The successful contractor will indicate the number of occupations required to successfully complete the contract.
- 15.5. The contractor shall conform to the duration of occupations as indicated by the notices and the Project Manager or his/her delegated assistant.
- 15.6. Occupation time used by the contractor more than the maximum specified occupation time will not be paid against overtime rates, unless:

15.6.1.1. The Project Manager or his/her delegated assistant agrees on it in writing prior the start of the occupation.

16. CONSTRUCTION IN CONFINED SPACE

- 16.1. It may be necessary for the Contractor to work within confined areas and no additional payment will be made for work done in restricted areas.
- 16.2. The method of construction in these confined areas will depend largely on the contractor's construction plan.
- 16.3. The tendered rates and amounts shall include full compensation for all special equipment and construction methods and for all difficulties encountered during working in confined areas and narrow widths, and at, around or through obstructions, and that no extra payment will be made nor will any claim for additional payment be considered in such cases.
- 16.4. The contractor will be held responsible when working in confined areas for the repair, at his own cost, of damage caused by him to any asset or service indicated to him/her.

17. PROJECT SCHEDULE / PROGRAM

- 17.1. Bidders shall submit with their tender a detailed method statement and sequenced program of how they propose to execute the work.
- 17.2. This shall include details of a number and grades of staff, plant, tools, and equipment that he/she intends using for the duration of appointment.
- 17.3. On award of the tender the Contractor's first task under the contract shall be to agree with the Project Manager or his/her delegated assistant on the final work programme to be followed and this must be done within 7 (seven) days from date of award.

18. DURATION OF CONTRACT

- 18.1. The Contractor shall be able to commence work within two (2) weeks once all necessary documentation and application for site occupation have been completed.
- 18.2. The Project Manager or his/her delegated assistant will issue the contractor with a written site access certificate to commence his/her work.
- 18.3. PRASA Rail reserves the right to extend the period if occupations are not granted as requested.
- 18.4. The Contract duration will be six (6) Months from the award date/appointment letter signed by the contractor.

19. ESTABLISHMENT OF PLANT AND MACHINERY ON SITE

- 19.1. The contractor shall deliver the plant and machinery, in operational condition with maintenance crew, operator crew labour and consumables (diesel, lubricants, etc.) to the initial place of work as directed by the Project Manager or his/her delegated assistant.
- 19.2. This time shall not be regarded as travelling time.

20. TO BE PROVIDED BY PRASA

- 20.1. PRASA Rail (in cooperation with the contractor) will arrange for the occupations during which the project will take place.
- 20.2. PRASA Rail will arrange and provide:
 - 20.2.1. All project related material (Ballast, Rails, Sleepers, Turnout components, Lubricators, and fastenings)
 - 20.2.2. Supervision of works - Track Master/Inspector and Technical supervisor (welding) to check quality of work done, to oversee the protection arrangements on site, and to declare the track safe for the passage of trains during the work and on completion of work.
 - 20.2.3. A formal working Procedure (Track Maintenance manual and E10 specifications) for the replacement of Perway components including

quality standards for acceptance and rejection.

20.2.4. PRASA Rail Track Master/Inspector and Technical supervisor (welding) shall on completion of each task inspect and measure work done for purposes of verifying quality for payment purposes.

21. TO BE PROVIDED BY THE CONTRACTOR

21.1. The contractor shall in addition to what is stipulated in the Conditions of Contract, also supply the following:

- 21.1.1. The contractor to provide a site diary or instruction book (in triplicate form) to record any incidents or instructions as well as progress of the work done.
- 21.1.2. The contractor to provide a logbook or a daily works book (in triplicate form), where he/she shall record the number of personnel on site, trucks, machinery, and equipment used, and a detailed description of work carried out daily.
- 21.1.3. All equipment, tools, and labour that he/she shall need to successfully complete the project.
- 21.1.4. Neither of the books should be removed from the site without the permission of the Project Manager or his/her delegated assistant. The original copies of pages from both books shall be delivered to the Project Manager or his/her delegated assistant on a weekly basis.
- 21.1.5. The Contractor shall do a pre-inspection of work daily for the purpose of planning for each working activity.
- 21.1.6. The pre-inspection shall include determining the exact material required for each daily task as per the approved working program as well as determining other preparation aspects to be attended by PRASA Rail for the successful completion of each planned task.
- 21.1.7. The Contractor will have to ensure he/she is familiar with the specifications within these contract documents.

22. MEASUREMENT AND PAYMENT

- 22.1. Claims for payment will only be made monthly and successful invoices will be paid within 30 days of approval.
- 22.2. Any rejected or incomplete work will not be paid.
- 22.3. All rates in the schedule of quantities must be made per unit of measure as described under “Measurement and Payments clause.
- 22.4. The tendered rates must all be in South African Rand and VAT inclusive.
- 22.5. The rate quoted by the Tenderer(s) and accepted by PRASA Rail must hold for the duration of the contract and shall not subject to any escalation due to increase in the local market rates for materials & labour.
- 22.6. No claim on this account whatsoever shall be entertained at any stage including the extended period, if any.
- 22.7. Payment will be made in accordance with the rates tendered in the schedule of prices and as follows:

22.7.1. **ITEM 1: PRELIMINARY AND GENERAL**

Unit: Sum

- 22.7.1.1. A fixed rate for the Site Establishment, including the management and site supervision will be made in accordance with the relevant pay item under ITEM of the BOQ.
- 22.7.1.2. Adequate security officers shall be deployed at the site office.
- 22.7.1.3. Access and egress control measures to be implemented on the site.
- 22.7.1.4. The fence shall be erected in such a manner as to enclose the offices as well as the storage facilities including the parking space for vehicles of site staff.
- 22.7.1.5. A minimum of two lockable containers shall be used for the storage of materials including salvaged scrap.
- 22.7.1.6. The contractor will be responsible for safe movement of salvaged scrap to the designated PRASA stores (Driehoek)

22.7.1.7. An initial sum of 10% of the total quoted price shall be paid when the client's representative is satisfied that the site office has been set up, security in place and the safety file is approved.

22.7.1.8. The rest of the amount shall be assessed as an amount prorated to the value of the work duly executed in the same ratio as the preliminaries bears to the total of prices.

22.7.1.9. The Contractor shall allow in this rate for the work, travelling and effort associated with pre-inspection of railway lines to quantify exact rail lengths to be replaced and associated materials required, discuss, and confirm with the depot staff the extend of preparation required of PRASA Rail for each site.

22.7.1.10. The Contractor shall discuss and confirm with the Project Manager or his/her delegated assistant the extent of preparation required for this work.

22.7.1.11. All site establishment cost must be included in the Preliminary and General Item

22.7.2. ITEM 2: E10/1: LAYING OF RAILS

22.7.2.1. ITEM 2.1: Removal of rails

Unit: meter

This includes the following:

22.7.2.1.1. Loosening and removal of fastenings

22.7.2.1.2. Storing released fastenings.

22.7.2.1.3. Removal of rails.

22.7.2.1.4. Cutting of rails.

22.7.2.2. ITEM 2.2: Placing of rails.

Unit: Meter.

This includes the following:

22.7.2.2.1. Placing the rails

22.7.2.2.2. Replace damaged or worn fastenings.

22.7.2.2.3. Release and fasten fastenings.

22.7.2.3. **ITEM 2.2.1:** Placing of rails on P2 sleepers.

22.7.2.4. **ITEM 2.2.2:** Placing of rails on F1 sleepers.

22.7.2.5. **ITEM 2.3: Removal of released material**

Unit: Meter

This includes the following:

22.7.2.5.1. Loading of rails.

22.7.2.5.2. Rails allocated for re-use.

22.7.2.5.3. Rails allocated as scrap.

22.7.2.5.4. Loading of broken and/or damaged fastenings.

22.7.2.5.5. Transport and offloading at scrap camps.

22.7.2.5.6. Cleaning up of worksite.

22.7.2.5.7. The rates tendered shall include the associated finishing to get the railway track in the A-standard.

22.7.2.6. **ITEM 2.4: Thermit welding.**

Unit: Each

This includes all material, consumables, and the following:

22.7.2.6.1. Preparation and completion to the A-standard.

22.7.2.6.2. X-rays on joints

22.7.2.6.3. NB! Exothermic welds will only be paid for after the X-ray results, confirming no defects, have been submitted to the Project Manager or his/her delegated assistant.

22.7.3. **ITEM 3: INSTALLATION OF TURNOUTS**

22.7.3.1. **ITEM 3.2: Pre-assembly of turnouts**

Unit:

22.7.3.1.1. Payment will be made for preparing the pre-assembling site, as well as for pre-assembling of turnouts, and clearing the site. No separate payment will be made for off-loading trucks and sorting material.

22.7.3.2. ITEM 3.2: Removal of turnout
Unit: Each

22.7.3.2.1. Payment will be made for the complete removal of a turnout on track.

22.7.3.3. ITEM 3.3: Installation of Re-assembled turnout into track
Unit: Each

22.7.3.3.1. Payment will be made for each turnout moved from its pre-assembled site and placed into track. The types of turnouts paid for shall be those quoted in the Schedule of Prices. This will cover the payment for all work included in clause 5.23.7.3.3.1. hereof and to get the track to a minimum of the “A” standard.

22.7.3.4. ITEM 3.4: Re-aligning of turnouts and track
Unit: Each

22.7.3.4.1. The Contractor shall allow for the slewing of turnouts and track to centres indicated by the Technical Officer. The work shall include the loosening of fastenings, the opening of the sleeper heads, the slewing of the **adjacent** turnouts and track to the correct centres, and the making good of the work, including manual tamping.

22.7.3.4.2. The insertion of junction rails or the cropping of existing rail must be included in the work and will be paid under **ITEM 3.3**.

22.7.3.4.3. Measurements will be per each slew.

22.7.3.4.4. This payment will be made irrespective of the rail mass or type of track or turnout.

22.7.3.5. ITEM 3.5: Released material - Dismantle, Sorting, Stacking and Loading Unit: Each

22.7.3.5.1. The Contractor shall allow for sorting and grouping together in accordance with clause 5.9 hereof. No separate payment will be made for sorting and grouping of released material.

22.7.3.5.2. The Contractor shall allow for all the work required to dismantle, stack and transporting of released material to the material camps. Measurements will be per each turnout or metre of track.

22.7.3.5.3. This payment will be made independent of the rail mass of the track or turnout.

22.7.3.6. ITEM 3.6: Joining of Rails Unit: Each

22.7.3.6.1. Payment will be made per completed Thermit welds and approved X-ray results.

22.7.3.7. ITEM 4: E.10/2 LAYING OF SLEEPERS

22.7.3.7.1. ITEM 4.1: Load from stack, transport and distribute sleepers and fastenings Unit: Each

Each sleeper offloaded, transported, and distributed will be counted:

22.7.3.7.1.1. Separate items will be scheduled for the following:

22.7.3.7.1.2. Wooden sleepers.

22.7.3.7.1.3. Concrete sleepers.

The rates tendered shall include loading the sleepers and the following:

22.7.3.7.1.4. Transport over free haul distance.

22.7.3.7.1.5. Offloading and distributing the sleepers.

22.7.3.7.2. ITEM 4.2: Re-sleeping in existing track
Unit: Each

Each sleeper put in existing track to replace an existing sleeper will be counted and separate items will be scheduled for the following:

- 22.7.3.7.2.1. Wooden sleepers on straights.
- 22.7.3.7.2.2. Wooden sleepers on curves.
- 22.7.3.7.2.3. Concrete sleepers.
- 22.7.3.7.2.4. Sleepers in tunnels and on bridges.

The rates tendered shall include for the following:

- 22.7.3.7.2.5. Opening of ballast.
- 22.7.3.7.2.6. Removing the existing sleepers and sleeper fastenings from the track.
- 22.7.3.7.2.7. Laying sleepers and fitting sleeper fastenings.
- 22.7.3.7.2.8. Packing the sleepers and boxing in the ballast.
- 22.7.3.7.2.9. Drilling holes and inserting dowels in wood sleepers.
- 22.7.3.7.2.10. Plugging of old holes in wood sleepers.
- 22.7.3.7.2.11. Removing and inserting packing plates on sleepers over unballasted bridges.
- 22.7.3.7.2.12. Removing and replacing any bond or signalling apparatus attached to the sleepers.
- 22.7.3.7.2.13. Removing and replacing protective plates.

22.7.3.8. ITEM 4.3: Transport released surplus sleepers and fastenings with lorries Unit: Each.km

Each sleeper transported will be counted. And separate items will be scheduled for the following:

- 22.7.3.8.1. Wooden sleepers.
- 22.7.3.8.2. Concrete sleepers.
- 22.7.3.8.3. Sleepers and fastenings in tunnels and on bridges.

The rates tendered shall include for the following:

22.7.3.8.4. The transport over free haul distance

NB: All work must comply with the specification and quality procedures. PRASA Rail will withhold 20% of the payment until the contractor re-tamp the track to A standard as per the track manual and the E10 specifications. Rejected work must be redone at the Contractor's cost.

22.7.3.9. ITEM 5: LUBRICATORS

22.7.3.9.1. ITEM 5.1: Load from stack, transport and distribute rail lubricators Unit: Each.km

Each rail lubricators offloaded, transported, and distributed will be counted and rates tendered shall include for the following:

- 22.7.3.9.1.1. Loading the rail lubricators.
- 22.7.3.9.1.2. Transport over free haul distance.
- 22.7.3.9.1.3. Offloading and distributing the rail lubricators.

22.7.3.9.2. ITEM 5.2: Installation of lubricators Unit: Each

Each rail lubricator and applicator bracket installed will be counted and rates tendered shall include for the following.

- 22.7.3.9.2.1. Opening of ballast.
- 22.7.3.9.2.2. Removing the existing rail lubricator and from the track.
- 22.7.3.9.2.3. Installing rail lubricator.
- 22.7.3.9.2.4. Installing check rail applicator bracket
- 22.7.3.9.2.5. boxing in the ballast.

22.7.3.9.3. ITEM 5.3: Transport released surplus rail lubricators with lorries Unit: Each.km

Each rail lubricator transported will be counted and rates tendered shall include for the following:

- 22.7.3.9.3.1. The transport over free haul distance.

22.7.3.10.ITEM 6: FIELD WELDING AND GRINDING.

Payment will be paid for the following.

- 22.7.3.10.1. Field welding and grinding of rail manufactured crossings
- 22.7.3.10.2. Wheel spin burns (skid marks)
- 22.7.3.10.3. Grinding of overlaps
- 22.7.3.10.4. Exothermic welds and X - Rays (48kg/m, 57kg/m, and 60kg/m)

NB: Payment will only made for approved X – Rays

22.7.3.11.ITEM 7: VEGETATION CONTROL. Square Meter

Unit.

- 22.7.3.11.1. Payment will be based on the numbers of area treated and controlled successfully maintained at areas instructed by the Project Manager or his/her delegated assistant and to which the Contractor successfully applied the vegetation control measures and has achieved the standard of control defined.
- 22.7.3.11.2. Photographic evidence will be supply in the form of a photograph of before work commence and after completion of work.
- 22.7.3.11.3. The photographs must have a clear date stamp on when it was taken as well as exact references to area with mass locations for identification.
- 22.7.3.11.4. No payment will be made for rejected work that does not conform with the required standard.

22.7.3.12.ITEM 8: TREE FELLING. Unit: Each

- 22.7.3.12.1. Payment will be based on the numbers of trees attended to at areas instructed by the Project Manager or his/her delegated assistant.
- 22.7.3.12.2. Photographic evidence will be supply in the form of a photograph of before work commence and after completion of work.
- 22.7.3.12.3. The photographs must have a clear date stamp on when it was taken as well as exact references to area with mass locations for identification.
- 22.7.3.12.4. No payment will be made for rejected work that does not conform with the required standard.

22.7.3.13.ITEM 9: OFFLOADING OF BALLAST
Unit. Cubic Meter

Payment will be paid for ballast offloaded and distributed as follows:

- 22.7.3.13.1. Ballast offloaded from AY wagons
- 22.7.3.13.2. Ballast offloaded from Trucks

22.7.3.14.ITEM 10: LIGHTNING FOR WORKING AT NIGHT **Unit. R/day**

- 22.7.3.14.1. The provision of adequate lighting will be paid per day used, under ITEM 10

22.7.3.15.ITEM 11: DAY LABOUR (PROVISIONAL) **Unit. R/Hour**

- 22.7.3.15.1. The rate for labour under **ITEM 11** will apply in respect of additional labour approved by the Project Manager or his/her delegated assistant. The number of labourers required and the tasks to be completed must be agreed to before commencement of the work. This Item shall be mutually exclusive.
- 22.7.3.15.2. Payment will be made for the following:
 - 22.7.3.15.2.1.Supervision/ Skilled labour

22.7.3.15.2.2.General labour

22.7.3.16.ITEM 12: WORKING OUTSIDE NORMAL WORKING HOURS (OVERTIME) Unit. R/Hour

22.7.3.16.1. The rate for labour under **ITEM 12** will apply in respect of additional labour approved by the Project Manager or his/her delegated assistant to work on Sundays and paid public holidays. The number of labourers required and the tasks to be completed must be agreed to before commencement of the work. This Item shall be mutually exclusive.

22.7.3.16.2. The rate for labour under **ITEM 12** will apply in respect of additional labour approved by the Project Manager or his/her delegated assistant to work on Saturdays and between the hours 19:00 to 05:00 on Mondays to Fridays. The number of labourers required and the tasks to be completed must be agreed to before commencement of the work. This Item shall be mutually exclusive.

22.7.3.16.3. Payment will be made for the following:

22.7.3.16.3.1.Working on Saturdays and outside normal working hours
(Normal overtime)

22.7.3.16.3.2.Working on Sundays including Paid public Holidays

23. PAYMENT CERTIFICATE

23.1. On or after the assessment date, the Project Manager or his/her delegated assistant and the Contractor will together assess the quantities of the progress on each item in the Bill of Quantities and complete the Progress Assessment Detail form, where after the Progress Assessment Certificate will be issued.

23.2. The Contractor shall then submit a VAT invoice and attach the above Progress Certificate for payment by the Employer.

- 23.3. Contractor to provide the Employer with the necessary details regarding banking details to enable the Employer to make electronic payments.

24. PRICING OF THE WORKS

- 24.1. The contractor is required to provide firm prices/ rates for material and labor for the duration of the contract.
- 24.2. The contractor shall make provision for the costs (direct or otherwise) associated with works on, over or adjacent to railway lines.
- 24.3. The Contractor is advised to study the requirements of the SPK 7/2 and ensure that all works can be completed in accordance with these requirements.

25. PENALTIES

- 25.1. If the Contractor fails to complete the Services within the time stipulated in this Contract for completion of Services or a part or portion of Services, the Contractor shall be liable to the Employer for an amount calculated at 0.05% of the Contract Price per delayed Day per order, which shall be paid for every day which shall elapse between the time for due completion and completion of the relevant Services. However, the total amount due under this sub-clause shall not exceed the maximum of 10% of the Contract Price.
- 25.2. The imposition of such penalty shall not relieve the Contractor from his/her obligation to complete Services or from any of its obligations and liabilities under the Contract,
- 25.3. PRASA may set off or deduct from the fees due to the Contractor any penalty amounts due and owing by the Contractor in terms of clause 5.26.1
- 25.4. The following penalties will be recovered from the Contractor for delays to PRASA train as described above:
- 25.4.1. Each train R2500,00 per hour or part thereof - maximum of R22 500,00 per day.

- 25.4.2. Any missing released materials not accounted for will be deducted from the invoice according to the following items:
- 25.4.2.1. R740.00 Per Wooden sleeper.
 - 25.4.2.2. R970.00 Per Concrete sleeper.
 - 25.4.2.3. R130.00 Per Chair.
 - 25.4.2.4. R900.00 Per old, vandalized, and faulty rail lubricator.
- 25.5. When trains consigned to PRASA are to be off-loaded by the Contractor, the Project Manager or his/her delegated assistant will give the Contractor at least 24hour notice of the place and expected date and time of placing of the trucks for purposes of off-loading.
- 25.6. The Contractor shall off-load the trains as expeditiously as possible.
- 25.7. If the contractor fails to off-load any trains within 24 hours or agreed time of it being placed for off-loading, The contractor shall be liable to pay the penalties specified in clause 5.26.1. hereof for the time between the expiration of the 24 hours period allowed or agreed time, and the time the trains is finally off-loaded, irrespective of weekdays, weekends or public holidays which may intervene
- 25.8. As soon as any trains has been off-loaded, the Contractor shall advise the Project Manager or his/her delegated assistant, giving date, time, and the number of the train off-loaded.
- 25.9. The same conditions and penalties as specified in clause 5.26.1 will apply to empty train into which the Contractor is to load released material.
- 25.10. Penalties will be recovered from the Contractor for delays to PRASA train as per clause 25.1

26. CONSTRUCTION RELATED SECURITY

26.1. MANDATORY SECURITY REQUIREMENTS

- 26.1.1. All security companies used by the Contractor shall be PSIRA registered with valid letter of good standing.
- 26.1.2. Security personnel shall all be PSIRA registered with a clear criminal record no criminal pending cases and preferably be sourced from the local community.

- 26.1.3. All personnel employed by the Contractor including sub-contractors shall have undergone a Health and Safety Induction.
- 26.1.4. The security to be provided by the contractor shall be responsible for both the appointed contractor's assets and PRASA's assets on site until the site is handed over to PRASA. A list of all functioning equipment that do not form part of this scope of work will be shared with the successful bidder and shall be signed off by both the successful bidder and PRASA's representative.
- 26.1.5. PRASA assets that shall be guarded by the contracted security includes Permanent way assets, All Train Authorisation on track elements, all train stations (with all assets included) within the construction site and all functioning equipment within the construction site.
- 26.1.6. Any lost or stolen material shall be replaced by the contractor at his/her own cost.
- 26.1.7. The contractor shall provide on-site security for personnel and material stock and should ensure that patrols are in place at the section handed over to the contractor and until the completed work is handed over to PRASA. No claims of material or losses shall be lodged with the client for stolen goods during the construction before the completed work is handed over to PRASA.
- 26.1.8. Furthermore, it is the contractor's responsibility to ensure that valuable metal i.e., Rail fastenings and turnout components are adequately protected while in transit to and from site.
- 26.1.9. The contractor shall make sure that all material removed from site is quantified, counted, logged in the site diary and that it is co-signed by a PRASA representative on site before it is removed from site.
- 26.1.10. Scrap metal removed from the section shall be adequately protected until it is delivered to PRASA's stores (Driehoek)
- 26.1.11. PRASA reserves the right to conduct ad-hoc inspections to ensure Compliance.

26.2. RISKS

- 26.2.1. Tabulated below are the associated security Risks and proposed mitigation measures. It should be noted that this are minimum risks identified and bidders

shall be responsible for conducting their own risk assessment that will influence their quotations.

Risk	Probability	Mitigation
Project Hi-jacking – Regulation 9 30% Subcontracting. This includes the provision of security.	High	Social Facilitation to ensure community involvement and buy in. PRASA recommends an approach that involves the local community. Failure to ensure local involvement can result in serious work stoppages.
Theft of Installed equipment	High	Fit for purpose security with an integrated plan for assets installed and physical security at site office. Ensure protective measures for site with an access gate.
Hi-jacking of site personnel vehicles	High	Armed Escorts to and from the site
Armed Robbery of personnel on site and Storage Facility at site	High	Armed Guarding at site and site office with an armed response for mobilisation

26.3. PROPOSED INTERVENTIONS

26.3.1. Minimum of 2 vehicles with armed response officers (2-4) per vehicle strategically deployed within the site. To supplement the vehicles, a suitable number of day and night visible officers on foot patrol is required.

26.3.2. Requisite equipment:

26.3.2.1. Bullet proof vests.

26.3.2.2. Spotlight.

26.3.2.3. Night vision equipment; Torches.

26.3.2.4. Tactical Radios (PTT with GPS and Panic Button). This should be the primary communication for all personnel on site.

26.3.2.5. Handcuffs (disposable type) and other standard equipment.

26.3.2.6. Firearms with extra magazine; and

26.3.2.7. Any other equipment identified through the risk assessment.

27. OVERALL STAFFING AND KEY PROFESSIONAL STAFF

27.1. PROFESSIONAL TECHNICAL STAFF REQUIREMENTS

The appointed Contractor will be required to provide qualified and experienced professional staff with the following key professional expertise:

- 27.1.1. Project or Contract Manager (Civil).
- 27.1.2. Construction Health and Safety Manager.
- 27.1.3. Perway – Track Inspector / Master.
- 27.1.4. Perway – Track Welder
- 27.1.5. Horticulturist
- 27.1.6. Railway - Flagman

27.2. PROFESSIONAL BODY REGISTRATION

- 27.2.1. **Engineering Council of South Africa:** Pr. Engineer/s, Pr. Technologist/s, Pr. Technician/s
- 27.2.2. **South African Institute of Civil Engineers:** SAICE
- 27.2.3. **South African Council for the Project and Construction Management Professions:** Pr. CPM, CPM and/or Pr. CM, CM and/or Pr. CHSA, CHSO and CHSM
- 27.2.4. **Project Management Profession Certification:** PMP

27.3. DETAILS OF THE MINIMUM QUALIFICATIONS FOR THE TECHNICAL STAFF LISTED ON 5.28.6 ARE OUTLINED IN THE TECHNICAL MATRIX.

27.3.1. PROJECT OR CONTRACT MANAGER

The desired minimum qualifications for the Project or Contract Manager are as follows:

- 27.3.1.1. BSc Degree/B-Tech Degree in Civil Engineering.
- 27.3.1.2. ECSA registration as a Professional Engineer (Pr. Eng)/Technologist (Pr. Tech Eng).
- 27.3.1.3. A minimum of 5 years' experience post professional registration in the Built Environment field of study with a minimum of five (5) years relevant Project

Management experience in similar project disciplines in the Built Environment.

27.3.1.4. Project Management qualification and a minimum of 5 years' experience in Project Management.

27.3.1.5. South African Council for the Project and Construction Management Professions (SACPCMP) professional registration certification or Project Management Professional (PMP) Certification with a minimum of five (5) years relevant post-certification practical experience.

27.3.1.6. A minimum of 5 years of leadership experience on multi-disciplinary similar or related projects.

27.3.1.7. A minimum of 5 years' experience in the planning and design of multi-disciplinary similar or related projects.

27.3.2. **CONSTRUCTION HEALTH AND SAFETY AGENT (PRCHSA)**

The desired minimum qualifications for the Health and Safety Manager are as follows:

27.3.2.1. BSc Degree/ B-Tech Degree in Safety Management.

27.3.2.2. A minimum of 5 years post-graduate experience in Health and Safety including Construction Management experience with 5 years post professional registration.

27.3.2.3. South African Council for the Project and Construction Management Professions (SACPCMP) professional registration certification.

27.3.3. **PERWAY – TRACK INSPECTOR / MASTER**

The desired minimum qualifications for the Perway Track Inspector / Master are as follows:

27.3.3.1. Recognized Track Inspector / Master qualification.

27.3.3.2. A minimum of 5 years' experience.

27.3.3.3. A minimum of 5 years of leadership experience on similar or related projects.

27.3.4. **PERWAY – TRACK WELDER**

The desired minimum qualifications for the Perway – Welder are as follows:

27.3.4.1. Recognized Perway – Welder qualification.

27.3.4.2. A minimum of 5 years' working experience.

27.3.5. **HORTICULTURIST**

The desired minimum qualifications for the Horticulturist are as follows:

- 27.3.5.1. BSc Degree/B-Tech Degree/National Diploma in Horticulture or related Agricultural Science.
- 27.3.5.2. Southern African Society for Horticultural Science (SASHS) professional registration certificate
- 27.3.5.3. Pest Control Officer (PCO) certificates in industrial weed control
- 27.3.5.4. Minimum of 5 years of post-professional experience.
- 27.3.5.5. Minimum of 5 years of leadership experience on similar or related projects.

27.3.6. **RAILWAY – FLAGMAN**

The desired minimum qualifications for the Railway – Flagman are as follows:

- 27.3.6.1. Valid and recognized Railway – Flagman certificate.
 - 27.3.6.2. A minimum of 3 years' experience.
- NB: A minimum of three qualified railway flagmen shall be deployed for each occupied section.

27.4. TEAM COMPOSITION

- 27.4.1. The Contractor shall ensure that he/she has a complete team composition for any Perway work as per the Perway Track Maintenance manual to successfully carry out the work.
- 27.4.2. No work shall commence before this Perway team is complete and arrangements for this team must be made prior to the commencement of the works to minimize delays.
- 27.4.3. The Perway team composition is comprised of the following:
 - 27.4.3.1. Two welders (with two helpers each),
 - 27.4.3.2. Three track helpers (Flag men),
 - 27.4.3.3. One Track Inspector/Master,
 - 27.4.3.4. Eight track workers
- 27.4.4. The two welders, three flag men, track Inspector/Master and welding team will work together as one team.
- 27.4.5. The Contractor shall ensure that he/she have adequate team to complete the works as per the approved programme and timeframes.

28. APPLICABLE SPECIFICATIONS

5.29.1. The documents forming the contract are to be taken as complimentary to each other. In case of any discrepancy or inconsistency between contract documents, the order of precedence will be:

SANS 3000-1 to 2,	Railway Safety Management
SABS 1200NB	Railway Sidings (Track work)
EN13674-1	Specification for new Railway Rails or the latest equivalent standard
UIC 860-0, UIC 8610-1	UIC Codes or the latest equivalent standard
EN13848	Railway applications – Track geometry quality standard
Safety Act (Act 85 of 1993)	Safety Arrangements and Procedural Compliance with the Occupational Health and Safety Act (Act 85 of 1993) and Applicable Regulations; including any subsequent amendments;
SANS 3000-2-2-1-2021	Level Crossings Standard.
SABS 1083:1994	Aggregates from natural sources
SABS 0100-2: 1992	The Structural use of concrete – Part 2: Materials and execution of work
SABS 50197 – 1: 2000	Cement – composition, specifications, and conformity criteria. Part 1: Common cements
SABS 1491 – 1: 1989	Cement extenders – Part 1 Ground granulated blast furnace slag
SABS 1491 – 2: 1989	Cement extenders – Part 2 Fly ash
SABS 1491 – 3: 1989	Cement extenders – Part 3 Condensed Silica Fume
Bridge Code: 1983	South African Transport Service
SANS 10206	The handling, storage, and disposal of pesticides
SABS 1200NB	Railway Sidings (Track work)
EN 13481- Part 1	Performance requirements for fastening systems
EN 13146	Test methods for fastening systems
EN 10089	Hot rolled steels for quenched and tempered springs
EN ISO 6506-1	Brinell hardness test method for rails

REQUEST FOR PROPOSAL –BID DESCRIPTION: APPOINTMENT OF A SERVICE PROVIDER FOR THE REPLACEMENT OF RAILS, TURNOUTS, SLEEPERS, LUBRICATORS, FIELD WELDING AND GRINDING OF RAILS, MANUFACTURED CROSSINGS, REPAIR ULTRASONIC DEFECTS AND GRINDING OF OVERLAPS ON TURNOUTS AND VEGETATION CONTROL ON THE GERMISTON TO KWESINE LINE FOR A PERIOD OF SIX (6) MONTH IN THE METRORAIL GAUTENG REGION
27/08/2023/GAU-(PER)



CCE 1/57/2	Specification for concrete sleepers to standard dimensions 1065mm gauge track
PWM 2/5	Specification for prestressed concrete sleepers used on 1065mm gauge Railway track
SABS 1083:2013	Ballast specification (latest revision for Railway lines)
S406 (1998)	Transnet specification for supply of ballast stone
EN13674	Specification for new Railway Rails
CP1/1	Exothermic welding portions packaging specification
SABS 1431	Grade 300wa for weldable structural steel
BBB8341	Manual for Track Welding (2007)
SANRAL	Drainage Manual 6 th Edition 2013;
S410	Specification for Railway earthworks
BBC4038	Geosynthetics Specification for Railway earthworks construction
PRASA SPECIFICATIONS	
E10	General Specifications for Railway Track work (1996)
E10/1:	Laying of rails
E10/2:	Laying of sleepers
E10/3:	Ballast cleaning
E10/4:	Ballasting and tamping
E10/5:	Destressing of Rails
E10/6:	Building and Replacement of sets
E10/7:	Field welding of Rail joints
E10/8:	Field welding of skid marks
E10/9:	Slewing and Alignment
E10/10:	Drain cleaning
E10/11:	Survey and setting out of Track Alignment and Referencing
E10/14:	Building of New Lines
E7/2	Specification for Works on, Over, Under or Adjacent to Railway Lines and Near High Voltage Equipment
E160	Maintenance of Railway Track with On-Track Machinery
	PRASA SHE Specification
Track Manual	Manual for Track Maintenance (2000)

29. PROJECT SPECIFIC TERMS AND CONDITIONS

29.1. PERFORMANCE LEVEL

29.1.1. The Contractor shall perform strictly in accordance with the levels required by this Agreement and any other specifications emanating there from and accept the penalties which will be instituted for non – performance.

29.2. INCREASE OR DECREASE IN COST

29.2.1. PRASA intends to enter into a fixed price contract with the winning tenderer. No escalation will be allowed in the contract, and no contract price adjustment will be applied to allow for all increases or decreases in production costs of a product, from any cause whatsoever, which may occur after the closing date of the submission of tenders and before the date of completion.

29.2.2. Price shall be firm for the duration of contract.

29.2.3. It is the tenderer's responsibility to ensure that they provide such explanatory notes and rationale to their tender submission as to satisfy PRASA that their proposal meets the user requirements, within the fixed allocated budget.

29.3. SITE PHYSICAL CONDITIONS

29.3.1. The tenderer must ensure that they make any provision in their tender price and programme for foreseeable and unforeseeable circumstances that may occur.

29.3.2. It is the tenderer's responsibility to obtain such information about the site and project circumstances, as is necessary for them to submit a fixed price.

30. CIBD REQUIREMENTS

Class of Work: CE

Minimum Grade: 7

31. PROJECT SPECIFIC SAFETY AND RELATED REGULATIONS

- 31.1 All work in this contract shall comply with the Occupational Safety Act No 85 of 1993, National Environmental management Act 107 of 1997 Act and construction regulation 2014. These items shall all be included in the tendered rates.
- 31.2. A copy of the act as well as an approved safety file shall be kept on site for the duration of the project.
- 31.3. The Contractor shall comply with all applicable legislation and PRASA's safety requirements adopted from time to time and instructed by the Project Manager or his/her delegated assistant. Such compliance shall be entirely at the contractor's cost and shall be deemed to have been allowed for in the rates or total prices in the contract.
- 31.4. The Contractor shall report all incident verbally or telephonically to the Project Manager or his/her delegated assistant within 5 minutes of occurrence and the contractor shall submit a written preliminary incident report to the Project Manager or his/her delegated assistant within 12 hours of its occurrence and a final report to be submitted within 24 hours of its occurrence.
- 31.5. All personnel employed by the Contractor shall have undergone a Health and Safety Induction.
- 31.6. The Contractor shall make necessary arrangements for sanitation, water, and electricity at these relevant sites during the installation of the equipment.
- 31.7. The safety file will be approved only after all the requirements on the checklist are met. WITS_LIB/RISK_MGT/SHE File Checklist (version 3) is attached in this regard.
- 31.8. All work shall always comply with the E7/2 Specification attached hereto.
- 31.9. Normal protection measures in accordance with the Protection Manual shall apply.
- 31.10. An effective safety procedure to be followed by all personnel on any work site in the case of approaching rail traffic shall be compiled by the Contractor and implemented before any work commences. This procedure shall be updated whenever the need arises, and any changes shall be communicated to all employees on a works site before work proceeds.
- 31.11. The contractor shall be responsible for the safety of personnel on site. The following shall also form part of the safety plan:
- 31.11.1. Transportation of equipment and personnel.
 - 31.11.2. Transportation, storage, and handling of hazardous equipment
 - 31.11.3. The site access certificate shall only be issued (to the successful bidder) after the evaluation and approval of the safety file.

- 31.12. It is the requirement of this contract that the contractor should provide PRASA with a detailed safety plan prior to being issued with a site access certificate, in accordance with the latest version of the OHS Act and the SPK7 and the PRASA SHE Specification.
- 31.13. The contractor is responsible for appointing the safety officer fulltime on site whose sole responsibility will be to manage and monitor safety related issues on site.
- 31.14. All drivers must have valid driver's licenses and Public Drivers Permits (PDP) where applicable. Vehicles must be road worthy.
- 31.15. The Contractor will be responsible for all protective clothing and equipment for his/her employees.
- 31.16. The method of rail replacement shall be such that work may proceed either under "total occupation" or "between trains occupation" and shall always comply with the E7/2 Specification.
- 31.17. Normal protection measures in accordance with the Protection Manual shall apply.
- 31.18. All protection arrangements shall always remain under the supervision and responsibility of a Track Inspector/Master.
- 31.19. The contractor shall always be required to supply adequate and competent supervision.
The contractor shall provide a fully qualified Track Inspector/Master - with valid Track Inspector/Master certificate (as required by PRASA) to properly supervise the execution of the work.
- 31.20. The contractor must supply his/her own flagmen with valid flagmen certificate as required per work site for protection duties. (At least 3 flagmen per site)
- 31.21. The contractor shall appoint at each work site a person whose sole task shall be to be on the lookout for approaching rail traffic. This employee shall operate an audible warning device to timeously warn all people on the work site of approaching rail traffic.
- 31.22. The contractor shall not allow any persons on the work site to venture within the structure gauge when this warning procedure is not operating effectively.
- 31.23. The warning device shall be such that its sound can be clearly and effectively heard above the noise on the work site by all personnel within a radius of 100m around the center of each work site. The cost to the contractor of providing the lookout as well as the warning device shall be deemed to be included in the rates tendered and no separate payment shall be made.

- 31.24. An effective safety procedure to be followed by all personnel on any work site in the case of approaching rail traffic shall be compiled by the contractor and implemented before any work commences. This procedure shall be updated whenever the need arises, and any changes shall be communicated to all employees on the work site before work proceeds.
- 31.25. The Contractor shall accept responsibility for safe custody of the material and care of PRASA assets from the time the site and material is handed over into his custody by PRASA RAIL.
- 31.26. Any loss or damage to Material and PRASA assets will be recovered in the contractor's account.
- 31.27. This clause will remain effective for the duration of the contract until the contractor hands back the site to PRASA Project Manager or his/her delegated assistant.