



Transnet Rail Infrastructure Manager
Contract Number: SIC26003CIDB/1 (HOAC HO 57813)
Description of the Service: For the Maintenance of Railway Track with an on-track Low Production Screening machine on all lines owned and maintained by Transnet for a period of twenty-four (24) months.

Part C 3.1

Service Information by the Employer

Maintenance of Railway Track with Low Production Ballast Screener: Open Line Countrywide For a Period Of 24 Months

CONTENTS

	Page No.
1. Definitions	2 - 3
2. Description of the Works	3 - 6
3. Procurement	6 - 6
4. Engineering	6 - 7
5. Construction	7 - 11
6. Management	11 - 21
7. Health and Safety	21 - 23
8. Training	23 - 25



Transnet Rail Infrastructure Manager
Contract Number: SIC26003CIDB/1 (HOAC HO 57813)
Description of the Service: For the Maintenance of Railway Track with an on-track Low Production Screening machine on all lines owned and maintained by Transnet for a period of twenty-four (24) months.

1. DEFINITIONS

The following definitions shall apply in addition to those of any specifications attached.

- 1.1 **Final screened km:** Kilometre of track section finalised (i.e. ballast screening plus all other necessary activities to restore track to the A-Standard) to the *Employer's* required specification.
- 1.2 **Free- on- rail:** Free on rail implies allowing the *Contractor* to move an On Track machine from one track destination to another with no track usage cost levied on the *Contractor*. The *Employer* provides the right of passage and the pilot required, without cost and at times whereby such a passage and pilot can be made available by the *Employer*. Free-on-rail passage will normally be allowed for at the start of a contract to deliver a machine to the starting place of work and at the end of the contract to return a machine to the *Contractors* depot if required by the *Contractor*. Free-on-Rail movement of a machine during a contract for major workshop repairs required of a machine may only occur if specifically agreed to by the *Service Manager*. Such a move shall then occur during the *Contractors* time.
- 1.3 **E7/1:** Specification for General Work and Works On, Over, Under, Or Adjacent to Railway Lines and Near High Voltage Equipment
- 1.4 **OEM** refers to the Original Equipment Manufacturer of the Machinery
- 1.5 **Ballast Screener:** Also referred to as the Machinery: All on-track machinery provided by the *Contractor* for executing the Work, i.e. the entire on-track machine package, complete with all fittings, accessories and all ancillary equipment, as may be required to comply with the Contract specifications.
- 1.6 **Project Manager.** Any person appointed by the *Employer* to administer the performance and quality of the services according to the NEC3 Term Services Contract (TSC3) and in terms of this contract.
- 1.7 **Normal Working Hours (NWH).** A continuous shift of 8 hours out of every 24 hours for 5 consecutive days out of every 7 days or for 10 consecutive days out of every 14 days. The Supervisor will determine the starting times, which may vary to suit seasonal changes or train time tables.
- 1.8 **Maximum Occupation Time (TOM)** means the total occupation time granted by the *Employer* to the *Contractor* to execute the services as per the contract agreement.
- 1.9 **Working time.** The time between the actual start and end times of an occupation, excluding time on the critical path of the day's relay operations lost which may be attributed by the Employer.
- 1.10 **Overtime.** Means any time worked in excess of the hours of a normal working day and any time worked on Saturdays, Sundays and statutory public holidays in excess of 5 consecutive days out of 7-day period or in excess of 10 consecutive days out of 14-day period, all on the written instruction of, or as approved by the Service Manager.
- 1.11 **Normal Shift Working** (not exceeding Normal Working Hours): Shifts (8 hours) worked on Saturdays, Sunday, or on Public Paid Holidays, up to Normal Working Hours.
- 1.12 **Night Shift Working** (Occupation time between 18h00 to 06h00): Night Shift Working will apply to any part of any shift for which occupation time has been approved and happens to fall between 18h00 and 06h00 on any day of the week inclusive of Public Paid Holidays.
- 1.13 **Double Shift Working:** A second shift of 8 hours within one particular 24 hour day. Double Shift Working may be used by the *Employer* as and when required.
- 1.14 **Occupation:** The formal closure of the line to normal rail traffic for a specified period of time arranged in accordance with Infrastructure Occupation Management System (IOMS) or any other system and implemented in accordance with the Protection Manual.
- 1.15 **Total Occupation Time (To):** shall be the total of the time from when the first on-track machine arrives on site until the last machine leaves the site. **Train Crossing Time (Tx):** means the time for the machine to wait for train crossings.



Transnet Rail Infrastructure Manager
Contract Number: SIC26003CIDB/1 (HOAC HO 57813)
Description of the Service: For the Maintenance of Railway Track with an on-track Low Production Screening machine on all lines owned and maintained by Transnet for a period of twenty-four (24) months.

- 1.16 **Travelling Time (Tt):** means the time for the machine to travel on track between work site and the staging site (or vice-versa), or between work sites, or to clear the section.
- 1.17 **Movement Time (Tm):** Time allowed to move from one staging area to another when machine is required to move to new depot or area.
- 1.18 **Breakdown time (Tb):** means all periods during which any machine or any part of a machine is non-available.
- 1.19 **Standing Time (Ts):** means the loss of Working Time (Tw) incurred by the Contractor due to reasons attributed to the Employer.
- 1.20 **Shutdown:** Closure of a specific line, for example the Iron Ore line once a year for limited period of time (e.g. 10 days) to perform a large volume of service. Shutdowns on various lines may be to varying degrees i.e. it may range from total shutdown perhaps requiring Double Shift Working where all normal train traffic on a line is suspended for the duration of the shutdown to a situation utilizing extended occupations with normal train operation windows in between. Some Shutdowns will be partial in the sense that while work is performed on one line and on one section of the line, normal train operations will proceed on adjacent line/s and adjacent sections of the same line.
- 1.21 **Standing Time:** means the loss of Working Time (Tw) incurred by the Contractor due to reasons attributed to the Employer
- 1.22 **Standing Time Allowance** is the time that the Employer allows for unforeseen disruption in the Working Time. Standing Time Allowance should be included in the tendered rates.
- 1.23 **Emergency work** means unplanned work that may be requested by the Employer as and when an incident or risk arises. The Employer will make all the necessary arrangements to move the machine to and from the emergency work side.



Transnet Rail Infrastructure Manager
Contract Number: SIC26003CIBD/1 (HOAC HO 57813)
Description of the Service: For the Maintenance of Railway Track with an on-track Low Production Screening machine on all lines owned and maintained by Transnet for a period of twenty-four (24) months.

2. DESCRIPTION OF THE SERVICES

2.1. Overview

This contract includes the maintenance of existing railway track, with an On -Track Ballast Screening machine. The work shall consist of the provision of all on track machines required for screening of ballast and related output, the operation and maintenance of all equipment, the provision of all associated labour, supervision, road vehicles, ancillary tools and equipment, fuels, lubricants, spare parts and consumables and support required to achieve the output

CIDB DUILD PROGRAM REQUIREMENTS

Standard for Developing skills through Infrastructure Contracts CIDB Grade 7 – 9

The Contractor shall determine the CSDG, expressed in Rand, which shall not be less than the sub-total multiplied by a percentage (%) factor of 0,25 for Civil Engineering. The percentage (%) factor is stated in the Final Tender Summary section of C2.2 Pricing List.

Standard for Indirect Targeting for Enterprise Development through Construction works contracts CIDB Grad 7 – 9 CIDB Classes of Construction works Civil Engineering:

The objective of the project is to provide for a minimum contract participation goal (CPG) of 30% of the total project value and to develop targeted enterprises by the main or lead partner Contractors.

The successful contractor shall:

- Subcontract a minimum of 30% of the total project total value to targeted enterprises.
- Develop the tarted enterprise/s in two development areas as specified in the Standard, and agreed by both the Main Contractor and the targeted enterprise/s.
- Perform needs analysis on the targeted enterprise/s to identify development goals.
- Provide internal mentorship support to improve the targeted enterprise/s performance.
- Develop a project specific enterprise development plan to improve the targeted enterprise/s performance in the identified development areas.
- Monitor and report on the progress of the agreed development areas with the targeted enterprise/s.
- Submit a project completion report to the *Employers Representative* for each targeted enterprise

2.2. Machine Requirements

2.2.1. The minimum requirements for this ballast screening contract shall include:

- (A) **Normal Production Ballast Screener:** Normal production mechanised ballast screening machine, plus 2 Ballast Regulators, 2 Heavy Ballast Tampers, Ballast Stabiliser, TLB, 7 self-discharging spoil wagons and a fan wagon for working in the tunnel.

2.2.2. Ballast screening shall entail the screening of ballasted track on open track, tunnels, bridges and culverts, and adjacent to turnouts.

2.2.3. The Services include open track screening (including screening in wet conditions or total rejection of ballast): Screening of ballast in track using an on-track ballast screening machine capable of delivering at least the minimum screening rate as specified.

2.2.4. The ballast screener, tampers, regulators and stabilisers shall be able to operate completely independently and be self-propelled.

2.2.5. The ballast screener package will be required to service individually.

2.2.6. Resources offered in this screener package may be required to service separately should the Employer require. This implies that contracted tampers, regulators and stabilisers and self-discharging spoil wagons may work individually or separately from the ballast screener.



Transnet Rail Infrastructure Manager
Contract Number: SIC26003CIDB/1 (HOAC HO 57813)
Description of the Service: For the Maintenance of Railway Track with an on-track Low Production Screening machine on all lines owned and maintained by Transnet for a period of twenty-four (24) months.

2.2.7. The following types of ballast screener capacity is required:

Machine and/or Type of Machine output required	Planned depot or area where machine is required to service	Estimated Workload: Number per year per machine*	Estimated Total Workload over 24 months per machine*
Normal production ballast screening machine capable of screening ballast at a rate of at least 400 m ³ per hour and or 120 meters per hour.	All depots country wide including neighbouring countries and Prasa lines.	Approximately 90 final track km per year.	Approximately 180 final track km over 24 months per machine

2.2.8. Bidders may offer different machine combinations other than the minimum requirement to optimise the track occupation time. Track occupation time and technical capability shall however be an important consideration in the award of the contract. The rate of service i.e. rates of screening, regulating, tamping, stabilisation capability and rate of spoil removal are factors which shall be considered for the award of the contract. Any machine combination offered shall however meet the minimum requirements outlined above and shall have the capacity to work at rates defined above.

2.2.9. The machines are required to complete and finalise all ballast screening, including all ballast work, lifting/aligning, tamping and ballast stabilising i.e. all service associated with the ballast screening project in an 8-hour occupation.

2.2.10. The *Contractor* shall give clear details of production rates (in m³ per hour) offered in his tender referenced to all factors e.g. track curvature, gradient, length of occupation time, weather (raining, cold and hot), rail temperature, ballast fouling, tunnels, platform and level crossing that might have an influence on his production rates.

2.2.11. Any factors that affect the Machinery's production shall be made known. These factors should be coupled by a scientific rationale/formula and values. Production rates for these factors should be supplied as well.

2.2.12. All machines shall be designed and able to work under the following conditions:

- All on-track machines shall fit within the vehicle gauge given in Annexure 2 of the Manual for Track Maintenance. Should any Machinery exceed the vehicle gauge in any respect, this shall be clearly indicated by the Tenderer by means of suitable drawings.
- Travel and work within the structure gauge given in Annexure 1 of the Manual for Track Maintenance, including open lines, lines in tunnels and along platforms.
- Track gauge: 1065 mm.
- The Equipment shall be limited to a maximum of 22 tonnes per axle when fully loaded for high production ballast screening machines, and a maximum of 20 tonnes per axle when fully loaded for low production ballast screening machines.
- Single lines or multiple lines with a minimum distance between track centre lines of 3,8m.
- Meet or exceed the minimum specified production rates while working self-propelled on uphill track gradient of 1 in 50, or flatter
- All on-track machines shall be capable of travelling self-propelled on a maximum uphill track gradient of 1 in 40
- All on-track machines shall be capable of travelling self-propelled on curves of minimum radius of 90 m
- All on-track machines shall be self-propelled and be capable of travelling free on level track at a minimum speed of 60 km/h
- Work during ballast screening on curves of a minimum radius of 125m for low production ballast screening machines.
- Work on rail sizes from 40 kg/m to 60 kg/m (inclusive)



Transnet Rail Infrastructure Manager
Contract Number: SIC26003CIDB/1 (HOAC HO 57813)
Description of the Service: For the Maintenance of Railway Track with an on-track Low Production Screening machine on all lines owned and maintained by Transnet for a period of twenty-four (24) months.

- Work on all types of sleepers in track: steel, wood or monolithic concrete
- Sleeper spacing of 500 mm to 800 mm.
- Work site altitude range: 0 to 2000m above sea level.
- Work within rail temperature range: -10°C to + 60°C.
- All machines shall have power service brakes with independent operation to each axle capable of providing a minimum retardation on dry rail of 12.5% of gravitational acceleration at travelling speed.
- All machines shall be equipped with emergency brakes which function independent of the service brakes, and which shall operate on at least one wheelset and be capable of providing a minimum retardation on dry rail of 6.5% of gravitational acceleration at travelling speed.
- All machines shall be able to reliably and consistently actuate all colour light signals working on the principle of either track circuits or axle counters.
- All machines shall have an adequate lighting system for operation at night and working in the tunnel.
- All machines shall be fitted with two electric headlamps of at least 100W each and two red warning lights at each end of each machine.
- All machines must be fitted with tracking device to be able to locate the machine when in movement from one depot to another.
- The Screener machine must be fitted with dust suppression.
- The *Contractor* must provide the armed security in all the machines while in transit and when camping for working in all sites.
- The *Contractor* must provide water and ablution facilities in all sites.

2.2.13. The contract shall include the provision of, and management of a suitable number of basic crew of qualified operators as well as all skilled and unskilled labour to operate the machine safely in line with tendered production rates and within available occupation times.

2.2.14. Spoil removal is required for this ballast screening contract. Screening therefore includes the requirement for spoil removal by self-discharging spoil wagons. Spoil removal shall be done by one of the following means:

- a) A High spoil removal rate is required for those sections of line where the screening may be severely restricted because of the requirement to remove all spoil. No spoil may be dumped directly next to the track on any *TRIM* line unless approved by the *Project Manager*. Spoiling next to the track may only be done temporarily on the condition that the spoil is moved by the *Contractor* to a designated spoil *Site* within 72 hours. This will apply Countrywide.
- b) Bidders shall clearly indicate capability and capacity offered together with all the rates of spoil disposal, labour and machine work required to support spoil disposal. The spoil removal restriction on potential screening output will be considered for the award of the contracts.
- c) *TRIM* workload shall also require splitting spoil removal wagons to work with separate screeners where this is required and possible. Bidders shall therefore also clearly indicate capacity to split spoil wagons and qualify any requirements such as additional match or runner wagons.
- d) Bidders shall also clearly indicate the traction requirements for the spoil removal system.

2.3. Location of the Services

2.3.1. The contract area will be all track owned, or maintained, by *Transnet Rail Infrastructure Manager* country wide, in addition to neighbouring countries and Prasa lines.

2.3.2. The *Contractor* may be required to service in areas where varying degrees and types of security situations are prevailing such as may occur in remote rural areas through to densely populated metropolitan areas.

1.1.1.1 *TRIM* will make available to the *Contractor* lines where the machine may be commissioned and tested. Service done during the commissioning or testing period is not eligible for payment under the Contract unless provided the standards as per Contract specification are met.



Transnet Rail Infrastructure Manager
Contract Number: SIC26003CIDB/1 (HOAC HO 57813)
Description of the Service: For the Maintenance of Railway Track with an on-track Low Production Screening machine on all lines owned and maintained by Transnet for a period of twenty-four (24) months.

2.4. Commencement and Duration of Contract

- 2.4.1. The commencement date will only be finalised after acceptance of tenders. The Contract will therefore commence on the date stipulated in the acceptance letter. The *Contractor* shall be able to commence with the service within one week of contract award.
- 2.4.2. Bidders shall also qualify their offers stating how soon after the award of the contract they will be able to start with the service. This shall include the provision and operation of any other on-track machines or support equipment. Where equipment offered may only be available later, the date at which this will be available shall be indicated clearly upon submission of tender.
- 2.4.3. The duration of this screener contract is twenty-four (24) months. The expiry date will therefore depend on the starting date of each part. The work output required shall depend on *Site* conditions and is expected to be carried out over the full duration of the contract period of twenty-four (24) months. The *Contractor* shall Supply, Operate and Maintain the machine.

3. PROCUREMENT

3.1. Subcontracting

No part of the contract may be sub-contracted in any way without written approval from *Transnet Rail Infrastructure Manager (TRIM)*

4. ENGINEERING

4.1. Design Procedures

- 4.1.1. It is a specific requirement of this Contract that all wagons for use with the machine, including any modifications, shall be pre-approved at the design stage by *TRIM* Train Design Department.
- 4.1.2. During commissioning and before putting any wagons into service, these shall be finally approved by *TRIM* Train Design Department as being "Rail Worthy".
- 4.1.3. It is also a specific requirement that all wagons for use with the machine, including any modifications, shall comply with the requirements of the Rail Safety Regulator (RSR).
- 4.1.4. The *Employer* will test all on-track machines regularly for rail-worthiness before being permitted onto operational tracks. The *Employer's* approval in this regard shall under no circumstances mean to imply that the *Contractor* is released from his liability and/or responsibility for ensuring that all machinery is operationally safe and rail-worthy. The *Contractor* shall remain ultimately responsible for the safety and condition of his machines and equipment. These tests will include:
- Regular testing of braking efficiency. The minimum required braking is measured by Tarpley meter, for the service and emergency brakes respectively. Brake testing shall also include for checking for pressure loss on brake cylinders and circuits, wear and setting of brake shoes.
 - Maximum wheel-tread and rim wear, distance between wheel-flanges and ultrasonic testing for flaws in running axles all measured for compliance with the standards of the *Employer*.
 - Speedometer, sirens, drawbars and mechanical locks on hydraulic components to function properly.
- 4.1.5. Should a joint inspection of the Machinery by representatives of the *Employer* and the *Contractor* reveal that any on-track machine or wagon is not in a safe working condition, the *Service Manager* may order the temporary withdrawal of the machine from the service.

5. CONSTRUCTION

5.1. Service Specifications

The following additional specifications shall apply:

- TFR Trains Working Rules



Transnet Rail Infrastructure Manager

Contract Number: SIC26003CIDB/1 (HOAC HO 57813)

Description of the Service: For the Maintenance of Railway Track with an on-track Low Production Screening machine on all lines owned and maintained by Transnet for a period of twenty-four (24) months.

- TFR Protection Manual
- TFR Electrical Safety Instructions
- TFR Infrastructure Safety Guidelines.
- TFR S410 Specification for Earthworks
- E10: Specification for Railway Trackwork.
- E10/1: Specification for laying of rails.
- E10/2: Laying of sleepers.
- E10/4: Ballasting and tamping.
- E10/5: Destressing of rails.
- E10/6: Building and Replacement of sets.
- E10/7: Field welding of rail joints.
- E10/9: Slewing and Alignment.
- E10/11: Surveying and setting out of track alignment and referencing.
- E10/12: Installation of insulated rail joints
- E4B (November 1996): Minimum Communal Health Requirements in areas outside the jurisdiction of Local Authority
- E4E SHE Specification for Contractors
- Addendum No 1 to Specification E7/1 (May 2011)
- Specification E7/1 (May 2011): Specification for works on, over, under or adjacent to railway lines and near high voltage
- Manual for Track Maintenance
- Track Welding Manual
- SANS 1921-1-2004 Part 1

5.2. Plant and Materials

- 5.2.1. The *Employer* will make available to the *Contractor* on specific request a limited number of rail freight wagons for transporting his Plant, Equipment and Materials from the Employer's Infrastructure Depot to Infrastructure Depot during execution of the work.
- 5.2.2. These wagons will be moved "free on rail" together with the relevant on-track machines in accordance with the requirements and processes applicable to normal train traffic.
- 5.2.3. The *Contractor* shall specify how many wagons and what type does he want for the usage of moving his Machinery and equipment as well for accommodating his employees during the contract. The *Contractor* to return the *Employer* wagons at the end of the contracting period. These shall be in the similar condition as when the *Employer* gave them away to the *Contractor*.
- 5.2.4. Arrival of these wagons at destinations during movement from depot to depot on *Employer's* network could be problematic and erratic in terms of predictability and no claims regarding delays or standing time resulting from the use of these wagons will be entertained by the *Employer*



Transnet Rail Infrastructure Manager
Contract Number: SIC26003CIDB/1 (HOAC HO 57813)
Description of the Service: For the Maintenance of Railway Track with an on-track Low Production Screening machine on all lines owned and maintained by Transnet for a period of twenty-four (24) months.

- 5.2.5. The *Contractor* will be allowed to effect modifications to these trucks to suit his requirements for work under the contract. Such modifications will be the *Contractor's* responsibility and for the *Contractors* account.
- 5.2.6. The *Contractor*, at his own cost shall have the trucks re-instated to their original condition and shall remove the modifications at the end of the contract.
- 5.2.7. Before the *Contractor* commences to carry out any alterations to the trucks, he shall provide the *Service Manager* with sufficient information of the alterations to enable him to approve that dimensional and structural tolerance will not be exceeded.
- 5.2.8. The *Contractor* shall clearly state in his tender the types and number of rail trucks required for the contract as well as the modifications he intend doing to the rail trucks
- 5.2.9. The *Employer* shall supply and control all flags and detonators for protection of the work sites
- 5.2.10. The *Employer* will supply all permanent way materials required for the execution of the works. Materials will be provided in railway wagons.
- 5.2.11. The following items of Plant will be provided on loan for the duration of the Contract at no cost to the *Contractor*:
- One set of locomotives will be allocated for shunting and for movement purposes. It will be advantageous should the process be able to move by itself without assistance of locomotives.
 - The locomotive set will be available (inclusive of fuel and driver crews and shunt crew) for the duration of the shunting work required.
- 5.2.12. Care of Plant Supplied by the *Employer*: The *Contractor* may have full use of the rail trucks associated with this contract, if he adheres to the structural, mechanical and safety limitations laid down by the *Project Manager*. The *Contractor* shall take all reasonable care to prevent damage to Plant supplied by the *Employer*. Any damage through neglect shall be made good, in accordance with the instructions of the *Project Manager*, to the cost of the *Contractor*.
- 5.2.13. Care of material Supplied by the *Employer*: Should lost or damaged material be replaced by the *Employer*, the value of the material plus the cost of transport, including re-railing at the normal tariffs applicable to the public, will be deducted from any moneys payable to the *Contractor*.

5.3. Construction Equipment

The *Contractor* shall in addition to what is stipulated in Maintenance of Track with On Track Machinery, provide the following additional facilities and support for a screening project:

- 5.3.1. The *Contractor* shall provide lighting to all workplaces in tunnels and other workplaces where service is to be taking place during the hours between 18:00 and 06:00. *Transnet Rail Infrastructure Manager* will notify the *Contractor* prior of lighting arrangements to be made. The lighting shall be of intensity and spread to satisfy the *Supervisor* that work can proceed efficiently and safely.
- 5.3.2. All tools/equipment, perway, small plant, earthworks plant, cranes, lifting equipment and vehicles of every description necessary for the execution of the services shall be supplied by the *Contractor* complete with fuel, spares, maintenance, competent operators and legally compliant with all applicable safety legislation. All ancillary and associated equipment together with all transport, accommodations, fuel, lubricants, spare parts for maintenance and repairs and consumables and any other resources necessary for the complete and effective and safe functioning of all Machinery shall be included in this contract to consistently and sustainably operate the machine safely in line with tendered production rates and within available occupation times.



Transnet Rail Infrastructure Manager
Contract Number: SIC26003CIDB/1 (HOAC HO 57813)
Description of the Service: For the Maintenance of Railway Track with an on-track Low Production Screening machine on all lines owned and maintained by Transnet for a period of twenty-four (24) months.

5.3.3. The *Contractor* shall supply all wagons that are being part of a work train and essential for the execution of the contract. Examples of such wagons:

- Wagons forming part of the basic machine such as spoil removal wagons or material wagons as part of the machine process and a fan wagon to work inside the tunnel.
- Match wagon with Spoil removal wagons
- Wagons to move support machines with e.g. Wagon to load tampers for moves with screener package
- Wagons for Water/fuel tanks (water tankers not included)
- Any other critically required wagon specifically being part of a machine package. (Tenderers to clearly specify what wagon and for what critical process used as well as consequence if wagon is not available.)

5.3.4. The *Contractor* shall supply all wagons that may be critically important for the execution of the contract but can be replaced by road transport. Any such wagons, if provided or allowed as part of the contract, shall under all circumstances be limited to a number, together with the essential wagons of the work group, which can be hauled as one train by one 37 class diesel locomotive or equivalent loco when moving camp. Examples of such wagons are:

- Fuel bowser wagon.
- Storage wagons for machine parts such as screener cutter bar, and parts of large contracts.
- Wagon or caboose for guards with train to ensure security of machine group when moving, stopping and when staged.
- Any other critically required wagon specifically being part of a machine package. (Bidders to clearly specify what wagon and for what critical process used as well as consequence if wagon is not available.)

5.3.5. Should *Transnet Rail Infrastructure Manager* require any ballast tamper or regulator or stabiliser for other work (e.g. emergency work), arrangements for payment will be made by utilising the relevant item in the schedule of prices of this contract relevant to each individual machine.

5.4. Existing Services

5.4.1. The *Contractor* shall take note of all OHTE equipment, red and other electrical bonds on the work Site and shall not interfere, damage or service on them unless under direct supervision of a designated and competent Transnet Rail Infrastructure Manager (*TRIM*) Electrical Officer.

5.4.2. The *Contractor* shall take note of all signalling equipment on the service Site e.g. signals, signal cables, block joints, signal bonds, axle counters, hotbox detectors etc and shall not interfere, damage or work on them unless under direct supervision of designated and competent *Transnet Rail Infrastructure Manager (TRIM)* signal technicians.

5.4.3. All bonds shall be supplied by the *Employer*, but the *Contractor* must install bonds under supervision of the *Employer*. The *Contractor* shall have the necessary tools to install the bonds. The *Contractor* shall be aware that where maintenance of the signalling and electrical equipment machines or assets change, he shall keep up with the latest technologies.

5.4.4. Before doing excavation service anywhere on a service site the *Contractor* shall be sure to consult on the presence of existing electrical/signal/telecom cables, water pipes or other services with the *Employer's* Maintenance Manager (Track). Only on his specific and written authorization shall any excavation service be carried out.

5.4.5. In the event of contact or damage to any overhead or underground cable on the service Site, service shall be stopped and the work Site evacuated. The Electrical Officer Contracts shall be notified immediately.



Transnet Rail Infrastructure Manager
Contract Number: SIC26003CIDB/1 (HOAC HO 57813)
Description of the Service: For the Maintenance of Railway Track with an on-track Low Production Screening machine on all lines owned and maintained by Transnet for a period of twenty-four (24) months.

Only subject to him or other competent *Transnet Rail Infrastructure Manager (TRIM)* Electrical Officer certifying the work Site safe, shall work be allowed to proceed again.

- 5.4.6. Where existing water supply is available within the railway reserve and is deemed sufficient by the *Employer's* Depot Engineering Manager to also supply the construction process, this supply may be made available to the *Contractor* for use in the construction process. If not allowed by the *Employer's* Depot Engineering Manager or where not available, the *Contractor* shall make his own arrangements to obtain suitable supplies.
- 5.4.7. It is the responsibility of the *Contractor* to provide water to his staff and machine. It shall be noted that it is not the responsibility of the *Employer* to stage the machines in areas where water is available; it will be an advantage if such places are available, but it is not a requirement.

5.5. Site Access

- 5.5.1. All *Contractor's* personnel shall be inducted before any services commence. Site access certificates will only be issued after all inductions have taken place.
- 5.5.2. Site access will be denied to the *Contractor* should the site access certificate not be issued.

5.6. Site Establishment

- 5.6.1. Subject only to the discretion of the Depot Engineering Manager responsible for the area, yard lines within the railway reserve may be made available to the *Contractor* for staging the wagons making up the consist of the machine.
- 5.6.2. Subject only to the discretion of the *Employer's* Depot Engineering Manager, areas within the railway reserve may be made available to the *Contractor* for accommodation, offices/workshops or stores. Where not allowed, the *Contractor* shall make his own arrangements elsewhere, at the expense of the *Contractor*.
- 5.6.3. If the *Contractor* is allowed by the *Employer's* Depot Engineering Manager to utilize areas within railway reserve for his purposes of whatever nature, it shall be noted that normally electrical, water supply and sanitation will not be available. The *Contractor* shall be required to make his own provisions for electrical, water supply and sanitation. Additionally, the *Contractor* shall comply with Environmental Health and Safety legislation when utilizing areas within railway reserve. On vacating the site, the site shall be cleared up and re-instated to the acceptance of the *Employer's* Depot Engineering Manager.
- 5.6.4. Security (armed) of the *Contractor's* property, equipment, materials, vehicles and workforce shall always during the contract be his sole responsibility. No claims will be entertained to Transnet in this regard.
- 5.6.5. The *Contractor* shall be required for each work Site to have available for his work force suitable sanitation including mobile toilets in accordance with the Act 85 Regulations. No claims will be entertained to Transnet in this regard.
- 5.6.6. On some lines or for some yards of Transnet Rail Infrastructure Manager (*TRIM*), the *Contractor's* staff will be required to obtain security permits from *Transnet Rail Infrastructure Manager (TRIM)* before being allowed to work there. These permits will be issued free of charge.
- 5.6.7. The *Contractor* shall note that not all the sites will be accessible via a service road in some instances. The *Contractor* shall have a plan to make the sites accessible to him/her to do the work at his own cost.

6. MANAGEMENT

6.1. Planning

Commented [LJ1]: Please also ensure this is placed properly.



Transnet Rail Infrastructure Manager
Contract Number: SIC26003CIDB/1 (HOAC HO 57813)
Description of the Service: For the Maintenance of Railway Track with an on-track Low Production Screening machine on all lines owned and maintained by Transnet for a period of twenty-four (24) months.

- 6.1.1. Monthly Project Meetings will be conducted to monitor progress and discuss contractual issues. These meetings shall be attended by *Contractor*, *Project Manager* and the *Service Manager*. A register will be kept of attendance, and a minute of the proceedings will be recorded and distributed afterwards.
- 6.1.2. A concise maintenance programme showing the *Contractor's* planned programme for the following month and the order in which he intends to execute the daily screening operations shall be provided by the *Contractor* based on the work area required by *Transnet Rail Infrastructure Manager*. The detail program will be agreed upon between the *Project Manager* and the *Contractor*.
- 6.1.3. *TRIM* will provide the plan of service sites to be covered. Furthermore, it is a specific requirement of this contract that the *Contractor* pre-plan the production of each month ahead. Monthly production shall be pre-planned directly with the *Project Manager* and be conducted on-site.
- 6.1.4. The *Contractor* is required to do inspection of each service site and must bring his/her own team of personnel to assist to box out (dig) ballast prior to the project starting and when task orders are issued to execute appropriate preparation for the service focused on ensuring maximum production during occupation time by minimizing delays. Any issues requiring the Employer's inputs to avoid delays during the occupation time shall be brought timeously to the attention of the Project Manager. This includes amongst other things volume of ballast in track, gradient, radius, length of track segments, level crossings, negative returns, tunnels. The *Contractor* and *Supervisor* shall do all the required measurements of the above mentioned and draw up programme to meet the planned targets.
- 6.1.5. All sections requiring screening are to be fully evaluated/inspected (by *Project Manager* or representative and the *Contractor*) in terms of estimating screening requirements and costs, including drain cleaning, ballast required, spoil conveyors etc. Information such as fouling indices, ballast depth, spoil *Sites* etc. may be provided by the depot if already available.
- 6.1.6. When screening around or over cross-over's in double track, a proposed flow chart detailing all activities for screening and finalising of cross-over's (when applicable) is also to be handed to the *Project Manager* for discussion at this meeting.
- 6.1.7. Sections of bad drainage are to be identified. Where cleaning of drains is required before screening, the *Contractor* shall agree on work to be done with the *Project Manager* beforehand and arrange for this work to be done in one of the following ways:
- As part of the actual screening, during the screening process, with spoil from drain placed on the formation, or
 - Before screening to allow formation time to dry out, with spoil placed on the formation; or
 - By separate means such as earthmoving and/or drain cleaning equipment or drain cleaning gangs.
- 6.1.8. All restricted screening sections where an anticipated production rate of less than that specified, per day of tendered Tw, is expected, shall be identified. The conditions not allowing the required production rate shall be recorded and the target shall be agreed by both the *Project Manager* and the *Contractor*.
- 6.1.9. An ongoing report is to be provided on the screen sizes and the effect on the required level of ballast quality.
- 6.1.10. The maximising of the use of the spoil conveyors on *Site* and the economic viability of the recovery of ballast shall also be continually considered and be discussed with the *Project Manager*.
- 6.1.11. The logistics surrounding the maximising of the use of new ballast supplied shall be discussed.

6.2. Site Records

- 6.2.1. A *Site Instruction Book* with triplicate pages shall be provided by the *Contractor*. The format for written communication on *Site* shall be the *Site Instruction Book*. A new page shall be used for each *Site Instruction*. *Site Instructions* shall be deemed to have been noted by the other party at the end of each workday. For this purpose, the *Site Instruction Book* shall be checked and new *Site Instructions* signed



Transnet Rail Infrastructure Manager
Contract Number: SIC26003CIDB/1 (HOAC HO 57813)
Description of the Service: For the Maintenance of Railway Track with an on-track Low Production Screening machine on all lines owned and maintained by Transnet for a period of twenty-four (24) months.

off by both *Transnet Rail Infrastructure Manager (TRIM)* and the *Contractor* at the end of each service day.

6.2.2. A Site Diary with triplicate pages shall be provided by the *Contractor* and always be available on site. The number of staff and plant on site for every day shall be recorded. The hours of actual work and the accurate amount of work measured per item as in the Schedule of Quantities completed for each day shall also be recorded and signed off by both by the *Employer* and the *Contractor* at the end of each day. The *Contractor* shall record following in the *Site diary*:

- Occupation and Working time
- Details of performance of the machines as well as the final length of track screened per day per track category (Track categories as in the Schedule of quantities and prices).
- An accurate recording of all material received or purchased.
- Details of plant, machinery and labour on Site, clearly indicating the staff used to perform various functions.
- Minutes of the Site meetings.
- The Site diary shall be signed daily by both parties.
- Information shall be reported as per the daily report, emailed electronically including train crossing numbers and minutes delayed, the following day before 08h00.

6.2.3. The information in the Site Diary shall be identical to the report generated by the machine. The *Employer* shall provide a template, and it shall be the source document for monthly payment certificates.

6.2.4. The daily report e.g. travels to site, cut in, screening, cut out, finalizing and travel return to staging sites times as well as production figures shall always be recorded and submitted to the *Project Manager* and *Service Manager* daily every morning for the previous day's occupation by email at 08:00.

6.2.5. A *Transnet Rail Infrastructure Manager (TRIM)* Track Inspector shall on completion of each project inspect and measure for purposes of verifying quality for payment purposes. A formal handing over of the completed project shall be signed off by the Depot *Project Manager*, for the project to be eligible for payment.

6.3. Occupations

6.3.1. Although not guaranteed, the *Employer* will realistically arrange occupations according to the approved programme of typically 8 hours for any one occupation.

6.3.2. It may be possible to arrange extended occupations and even double shifts on some sections of the line, on certain days, during which the ballast screener and all other machines may remain in the section. It is a strict requirement for the ballast screener and all other machines to work double shifts as and when required by the *Employer*, therefore the *Contractor* shall allow in his rates for double shift working during shutdowns or during normal occupations as and when required. In these cases, occupation time will be calculated as the total period that all or any of the on-track machines worked.

6.3.3. Travel time from the staging site to the work site and back to staging site will be included in the Occupation Time (To) and will not be paid for to the *Contractor* if less than 50 km radius.

6.3.4. During the occupation the line will be closed to normal rail traffic over the section on which the *Contractor* is working. Protection of the site shall be as per the protection manual under direct control and managing of the *Employer* Platelayer/Track Inspector.

6.3.5. The *Contractor* shall control and be responsible for the movements of all plant including that of the *Employer*, within the confines of the area of the occupation of the loading and off-loading operation and during its duration. At all times, the movement of plant will be undertaken as laid down by the *Project Manager*.

6.3.6. The *Contractor* shall however allow that:



Transnet Rail Infrastructure Manager
Contract Number: SIC26003CIDB/1 (HOAC HO 57813)
Description of the Service: For the Maintenance of Railway Track with an on-track Low Production Screening machine on all lines owned and maintained by Transnet for a period of twenty-four (24) months.

- Before midday during any shift the commencement time and duration of the following occupation will be advised in writing.
 - Occupations may commence at any hour of the day or night and on any day of the week. The *Employer* requires that all the on-track machines may work double shifts and therefore the *Contractor* is expected to price his tender based on similar requirement. The double shift will be paid against the tendered items.
- 6.3.7. Any adjacent track will run normal train services at normal section speed. The *Contractor* will be required to apply his Safety Procedure to safeguard his employees against the danger of normal rail traffic passing close by on the adjacent line.
- 6.3.8. Occupations shall be called for on any day of the week or month of the year. The Contract shall allow in his tender for the normal builder's break from middle December to 2nd week in January every year with the specific provision that in the case of an emergency the process may be called from leave during the builder's break to do ballast screening.
- 6.3.9. The *Contractor's* Track Master/Track Inspector shall take full charge of the *Contractor's* resources on the service *Site*. An employee/agent appointed by the *Contractor*, will not act as, or be allowed to take on any responsibility of *TRIM* Track Master/ Track Inspector. The function of the *TRIM* Track Master/ Track Inspector is restricted to competent *Transnet Rail Infrastructure Manager (TRIM)* employees only
- 6.3.10. The *TRIM* Track Master/ Track Inspector shall be a competent *Transnet Rail Infrastructure Manager (TRIM)* employee, reporting to the *Transnet Rail Infrastructure Manager (TRIM)* Depot Engineering Manager. This *TRIM* Track Master/ Track Inspector shall be responsible for the following on a service *Site*:
- Taking occupations
 - Placing and controlling the flagmen
 - Declaring the track safe for the passage of trains
 - Cancelling the occupation and recalling the flagmen
 - Communication with train traffic control regarding occupation matters.
 - The issue and control of all flags and detonators
- 6.3.11. All on-track machines shall be required to service on the finalising day to meet the target. The *Contractor* shall have a relief crew to carry on finalising and moving the machines to their staging points. The relief crew shall be deemed to be included in the tendered rates; no separate payment shall be submitted by the *Contractor*.
- 6.3.12. The *Contractor* shall provide a cell phone to the service site for the exclusive use of *Transnet Rail Infrastructure Manager (TRIM)* for logistical and operational arrangements.
- 6.4. Protection**
- 6.4.1. The method of service shall be such that work may proceed either under "total occupation" or "between trains occupation" and shall always comply with *Transnet Rail Infrastructure Manager (TRIM)* Specification E7/1.
- 6.4.2. Normal protection measures in accordance with the *Transnet Rail Infrastructure Manager (TRIM)* Train Working Rules shall apply.
- 6.4.3. All protection arrangements shall always remain under the supervision and responsibility of a *Transnet Rail Infrastructure Manager (TRIM)* Track Master/ Track Inspector.
- 6.4.4. The *Contractor* shall supply at least two flagmen per service *Site* for protection duties. The cost for these flagmen will be deemed included in the rates tendered and no separate payment shall be made.
- 6.4.5. The *Contractor* will be required to supply six of his employees to be trained and certificated in performance of protection duties. 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 service *Site* of approaching rail traffic.



Transnet Rail Infrastructure Manager
Contract Number: SIC26003CIDB/1 (HOAC HO 57813)
Description of the Service: For the Maintenance of Railway Track with an on-track Low Production Screening machine on all lines owned and maintained by Transnet for a period of twenty-four (24) months.

- 6.4.6. The *Contractor* shall not allow any persons on the service *Site* to venture within the structure gauge when this warning procedure is not operating effectively.
- 6.4.7. The warning device shall be such that its sound can be clearly and effectively heard above the noise on the service *Site* by all personnel within a radius of 100m around the centre of each service *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.
- 6.4.8. An effective safety procedure to be followed by all personnel on any service *Site* in the case of approaching rail traffic on adjacent lines shall be compiled by the *Contractor* and implemented before any service 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.
- 6.4.9. *Transnet Rail Infrastructure Manager (TRIM)* shall make available a Track Master to oversee the protection arrangements on *Site* and to declare the track safe for the passage of trains during the service and on completion of service. He may use flagmen provided either by *Transnet Rail Infrastructure Manager (TRIM)* or the *Contractor*.

6.5. Machine Movement

- 6.5.1. A free on rail facility will be made available to the *Contractor* for the conveyance of plant, equipment or material of the *Contractor* and no payment will be made to the *Contractor* for that movement for first movement from the siding to the first depot at the beginning of the contract and the last movement from the depot to the siding at the end of the contract. This will apply to *Contractor's* items coupled to a train or loaded onto railway trucks. This arrangement will be valid for the duration of the Contract and apply to all items for use under the contract.
- 6.5.2. The *Contractor* may make use of this facility for transport from the *Contractor's* workshop or depot to the area of operation or vice versa, or from one area of operation to another, or, in the case of plant imported specifically for use on this contract, from the port of off-loading to the service-site. Prior approval for the movement of any machines shall be obtained from the *Service Manager* in writing.
- 6.5.3. The initial move of the Machinery from the *Contractor's* premises to the first RTD as well as the final move on completion of the contract from the last RTD back to the *Contractor's* premises shall not be paid for. A free on rail facility will however be available for this purpose.
- 6.5.4. Should the *Contractor* elect to transport any Machinery and equipment by road the *Contractor* shall not be entitled to separate payment. The cost of such road transport shall be deemed to be included in the rates tendered
- 6.5.5. The *Contractor* will make all the arrangements directly with the National Command Centre (NCC) to move the Machinery by rail based on the programme agreed with the *Service Manager*. Movements inside a depot area will be arranged by the *Project Manager* for the depot. Each application shall reflect all relevant and specific details of special conditions for the handling of the machine consist by *TRIM* during each move. It is the responsibility of the *Contractor* to make sure that his machines are shunted and prepared for movement.
- 6.5.6. When required for productivity reasons, it will be necessary to move machines over an off period. The *Contractor* will then be required to arrange for security and supervision to have the machines moved by rail over this off period. The *Contractor* will be required as part of his tender to have an additional team available to facilitate the movement of the machines during the off periods. No overtime or additional move cost shall apply for such a move.
- 6.5.7. Included in the application for the move the *Contractor* shall provide name, identity number and grade of all employees travelling on the train. Specific details shall be given separately of the person in charge as well as staff required, to travel on machines.
- 6.5.8. Should the *Contractor* delay a move, the full occupation times thus not utilised will be counted as servicing



Transnet Rail Infrastructure Manager
Contract Number: SIC26003CIDB/1 (HOAC HO 57813)
Description of the Service: For the Maintenance of Railway Track with an on-track Low Production Screening machine on all lines owned and maintained by Transnet for a period of twenty-four (24) months.

time for the purpose of calculating required production.

- 6.5.9. Should *TRIM* delay a move of the Machinery from one Depot to the next by not starting the move on the scheduled day, no payment of standing time shall apply.
- 6.5.10. The distance of moving the machine from the *Contractor's* premises at the commencement date to the first Depot will not be paid for, although the free on rail facility will be available to the *Contractor*. No payment will be made to *Contractor* for the movement of machinery hauled by the locomotives.
- 6.5.11. The distance of moving the machine from the last Depot to the *Contractor's* premises on completion of the Contract will not be paid for, although the free on rail facility will be available to the *Contractor*. No payment will be made to the *Contractor* for the movement of machinery hauled by the Locomotives.
- 6.5.12 No payment will be made to the *Contractor* for the distance moved less than 50 km radius.
- 6.5.13 All the damages of the machinery during the works execution and in transit/movement from one depot to another, the Contractor must claim them from their Insurer, Transnet will not pay the cost for the damages.

6.6. Stoppages

- 6.6.1. Temporary stoppage, which may result from a non-continuous flow of the service, as and when required and shall be allowed for in the tendered rate.
- 6.6.2. *TRIM* will advise the *Contractor* of any temporary stoppage in the service, 30 days' notice will be given of such an impending stoppage. Thirty days (30 days) notice will also be given to commence service when the Machinery was standing due to a temporary stoppage.
- 6.6.3. No Payment for De-establishing from *Site* when temporary stoppage begin as well as Re-establishment on commencing of the work after a temporary stoppage will be made.
- 6.6.4. The *Contractor* shall allow that weather conditions may adversely affect his rate of progress and plan his progress as well as plant and labour capacity accordingly.
- 6.6.5. Should rain or snow falling during the period of occupation, make it impossible for the *Contractor* to make use of such occupation no claims for Standing Time will be entertained by *TRIM*.
- 6.6.6. The *Contractor* shall not claim any Standing Time against *Employer* for any force majeure and no penalties shall be imposed by the *Employer* to the *Contractor* for the same.
- 6.6.7. The *Employer* shall impose penalties against *Contractor* for task order deficit on item 2.1.1, 2.1.3 or 2.1.5 of the pricing data due to Time breaking (Tb) of the machine or unavailability of it.

6.7. Level Crossings and Obstacles

- 6.7.1. Concrete blocks and ballasted level crossings shall be opened and prepared by the *Contractor* prior to the occupation starting to ensure maximum production during service across the level crossing. Bitumen/tar level crossings are to be opened and repaired by the *Employer's* depot staff.
- 6.7.2. Arrangements with the road authorities for temporary closure of the level crossing shall be the *Employer's* Depot Engineering Manager/ Depot Engineer responsibility but shall be done according to and with the timeous direct inputs from the *Contractor*. For purpose of calculating the productivity factor, work across level crossings shall be expected to comply with the minimum production rate requirements.
- 6.7.3. When hidden obstacles e.g. pieces of rail, concrete, large rocks or other large foreign objects are encountered in the ballast during the service process the actual time taken to normalize the situation and return to normal production shall be recorded and for purposes of calculating productivity, the time shall be converted to the theoretical production that would have been possible in that time should normal production rate have been possible. The same shall apply to when rail breaks occur.



Transnet Rail Infrastructure Manager
Contract Number: SIC26003CIDB/1 (HOAC HO 57813)
Description of the Service: For the Maintenance of Railway Track with an on-track Low Production Screening machine on all lines owned and maintained by Transnet for a period of twenty-four (24) months.

6.8. Recording of Activity Times

- 6.8.1. The mutually agreed time the machine shall be available at its staging point, shall be the start of the occupation time (To) for the task order, therefore arriving late shall be deemed as breakdown time (Tb).
- 6.8.2. During the service activity the productivity, availability and utilization of the machine shall be recorded.
- 6.8.3. The time shall continuously be recorded for all work performed. The following types of time activity shall continuously be recorded to clearly define what time is available for working.

To = Total Occupation time for the day.
Ts = Standing time because of *Employer* reasons, not related to any fault of the *Contractor*.
Tx = Standing time due to Train crossing time
Tt = Travel time from staging site to work site and back to staging site or to clear the section.
Tm = Time allowed to move from one staging area to another when machine is required to move to new depot or area.
Tp = Time required to for preparation of track to allow working. (Only preparation that is purely related to machine on site that could not be phased apart from machine can be recorded for this purpose. This item may not be used for any problem related to the machine or staff inefficiency)
Tb = Breakdown of machine

Daily production report shall be e-mailed to the *Service Manager* at 08:00 am in the morning of the next day after each shift, and shall be in excel format.

Tw = Working time (As specified below)

6.8.4. Monitoring of machine availability will be calculated as: Availability (A) = $\frac{To - Tb}{To}$

6.8.5. Monitoring of machine utilization will be calculated as: Utilization (U) = $\frac{Tw}{To}$

- 6.8.6. A productivity factor, P shall be calculated every month to continuously monitor whether the machine consistently produces at the rates of production tendered.

Monitoring of machine productivity will be calculated as: Productivity (P) = $\frac{AR}{TR}$

AR = Actual Rate (screened metres/hour)
TR = Tendered Rate (screened metres/hour)

The productivity factor will always be limited to a factor of 1.

- 6.8.7. The tendered nominal production rate in screened metres/hour shall be maintained over a calendar month.

6.9. Quality

- 6.9.1. Standards for acceptance of track shall be in accordance with the Manual for Track Maintenance:
- 6.9.1.1. "S_c" Means the minimum track standard to allow the track to be opened to traffic under a speed restriction of at least 30km/h, when a track stabiliser is not used.
- 6.9.1.2. "S_r" Means the standards, to which the track shall be finally handed over after full completion of the *works*, when a track stabiliser is not used.



Transnet Rail Infrastructure Manager
Contract Number: SIC26003CIDB/1 (HOAC HO 57813)
Description of the Service: For the Maintenance of Railway Track with an on-track Low Production Screening machine on all lines owned and maintained by Transnet for a period of twenty-four (24) months.

6.9.1.3. "S_a" Means the A-standard to which the track shall be finally handed over after full completion of the works, when a track stabiliser is used.

6.9.1.4. Inspections for acceptance of the track when a dynamic track stabiliser is not used will take place as follows: Before the end of the occupation for S_c and again after a 72-hour period of train traffic for S_r.

6.9.1.5. The *Contractor* shall maintain the track on which he has serviced, between inspections for S_c and S_r, to a standard not lower than S_c.

6.9.1.6. Inspections for acceptance of the track when a dynamic track stabiliser is used, will take place as follows:

- Before the end of the occupation and again after a 72-hour period of train traffic for S_a.
- The *Contractor* shall maintain the track on which he has worked, between inspections for S_c and S_f, to a standard not lower than S_c.

6.9.1.7. All track service shall be completed to comply with the A-standard. Should the *Contractor* observe conditions which may prohibit him from completing a project to the A-standard then he shall bring this timeously to the attention of the Supervisor prior to starting service on a specific project, unless the *Project Manager* is prepared to make a concession the A-standard shall still apply and the *Contractor* may then refuse to continue with the specific project if he deems it impossible to achieve the A-standard on final quality.

6.9.2. Vertical Alignment

6.9.2.1. The final elevation of the track shall not exceed the existing by more than 10mm except if otherwise directed by the Supervisor.

6.9.2.2. The rate of deviation of the running top of any rail forms a straight line between any two points not more than 10 metres apart shall not exceed 1:1000 for S_r or S_a, and 1:250 for S_c.

6.9.2.3. The cant shall be the design cant to within a tolerance of ± 3 mm for S_r (or S_a) and $+ 12$ mm for S_c.

6.9.2.4. The rate of change of cant on tangent track and on circular curves shall not exceed 1:1000 for S_r (or S_a), and 1:400 for S_c.

6.9.2.5. The rate of change of cant on transition curves shall not exceed: 1:500 for S_r (or S_a), and 1:400 for S_c.

6.9.3. Horizontal Alignment

6.9.3.1. The *Contractor* shall determine the horizontal alignment (position) of the track by taking reference measurements at all mast foundations. Where electrification masts do not exist, reference pegs at 50m centres shall be installed by the *Contractor*. The *Project Manager* will prescribe and supply all the necessary pegs, concrete or paint.

6.9.3.2. The position of the track centre line shall remain within 10mm of the existing position for S_r (or S_a), and 40mm for S_c.

6.9.3.3. The standards for structural gauge shall be adhered to. The *Contractor* shall verify the structural gauge parameters himself and adhere to the specified standards.

6.9.3.4. On straight track, the rate of deviation of the running edge of each rail from a straight line between two points not more than 10m apart, shall not exceed 1:2000 for S_r (or S_a), and 1:500 for S_c.

6.9.3.5. On curves, including transitions, the offset midway between any 2 points 10m apart shall not differ from the design offset by more than 2.5mm plus 5% of the design offset for S_r and 2.5mm plus 20% of the design offset for S_c.

6.9.4. Standards of Workmanship and Accuracy for Ballast Screening



Transnet Rail Infrastructure Manager
Contract Number: SIC26003CIDB/1 (HOAC HO 57813)
Description of the Service: For the Maintenance of Railway Track with an on-track Low Production Screening machine on all lines owned and maintained by Transnet for a period of twenty-four (24) months.

6.9.4.1. The actual depth of cut shall not be greater than the depth of cut specified by the *Project Manager*. Furthermore, the actual depth of cut shall not be less than 90% of the depth of cut specified by the *Project Manager*. In tunnels, ballast shall be screened to the level of the tunnel invert.

6.9.4.2. The actual width of cut shall be determined by the width of ballast profile or the distance between the concrete drains in tunnels, and between concrete ballast walls on the viaducts.

6.9.4.3. 100% by mass of the screened ballast shall pass a 75mm sieve and not more than 5% shall pass a 26,5mm sieve.

6.9.4.4. Material disposed of by the machine shall not contain more than 5% by weight of acceptable ballast.

6.9.4.5. If the above-mentioned standards cannot be met because of wet conditions and/ or high clay content, the *Project Manager* will determine if screening shall proceed as Tww. Wet conditions (Tww) shall only apply when screening conditions have deteriorated to such an extent that screening capacity has reduced to more than 20% less than the rate of screening tendered to ensure the quality and standard screening as specified. Tww may only be worked under the following conditions:

- The quality standards can still and shall be met.
- The *Project Manager* and the *Contractor* are to agree on measures to be taken such as pre-lifting and loosening of track to assist with the screening.
- The *Project Manager* and the *Contractor* are to agree on a rate of progress (metre/hour).
- Payment will be made for the final metres produced

Where the *Project Manager* is not available on Site to agree to the working of Tw, the representative of the *Project Manager* may make the decision to work Tw if so, authorised by the *Project Manager*.

Should the *Contractor* dispute the *Project Manager's* visual inspection decision, the matter will be resolved by the *Contractor*, taking a sample of not less than 20kg in front of the screener and under a sleeper end to determine clay content. A ballast sample will be deemed wet if clay particles (i.e. size less than 75µm) are present, and moisture content is greater than or equal to 10%. The *Contractor* shall pay for these tests.

6.9.5. Ballast Profile

6.9.5.1. The ballast profile shall be within a tolerance of 25mm for ballast height, and within 65 mm of ballast width, specified in Annexure 4 Sheet 1 of 4 of the Manual for Track Maintenance

6.9.5.2. Should the *Project Manager* permit, any excess ballast should be placed on the shoulders of the cross-sectional profile. The ballast profile shall be formed to provide maximum protection against kick-outs. All available ballast shall be utilised to form part of the ballast profile. For curved track, excess ballast shall be placed and formed on the shoulder of the high leg. Where there are a shortage of ballast and the *Contractor* was required by *TFR* to continue screening any lift of track shall be restricted so as to ensure sufficient ballast both under the track and to the sides to ensure safe and proper compaction and safeguard against kick-out of track.

6.9.5.3. No material or ballast distributed by the *Contractor's* screening operations shall be left in the drains and no ballast shall remain beyond the toe of the ballast profile such that the depth of ballast stones remaining is more than 60mm, except where there is ballast in-fill between multiple tracks.

6.9.5.4. Additional ballast placed in the ballast profile because of any lowering of the track shall be shaped on to the shoulder of the ballast profile.

6.9.6. Measurement of Ballast Screening

6.9.6.1. Before ballast screening



Transnet Rail Infrastructure Manager
Contract Number: SIC26003CIDB/1 (HOAC HO 57813)
Description of the Service: For the Maintenance of Railway Track with an on-track Low Production Screening machine on all lines owned and maintained by Transnet for a period of twenty-four (24) months.

The required depth of cut "d" (measured from the underside of the sleeper, before any work is done) will be advised in writing to the Contractor by the Project Manager at the weekly or daily Site meeting.

Where insufficient ballast is available and the track is lifted before the screening operation, "d" will be equal to *the minimum cutting depth specified in the schedule of machines*.

6.9.6.2. After ballast screening

The *Project Manager* will take measurements to check the width and depth of cut and the length screened.

During each working day, one random sample of ballast and one random sample of disposed material per 500m shall be taken by the *Project Manager* for grading analysis. The weight of the samples shall not be less than 20kg each. The *Contractor* shall also arrange to take samples, as directed by the Project Manager on *Site*; at a rate of one sample per 200 metres. The results of these tests are to be recorded so that screen sizes and rates of screening can be adjusted on an ongoing basis.

If one of the results of the tests carried out on each of the two samples taken fails to meet the requirements, then a third random sample will be taken and tested. If the result of these or both first two results fail to meet the requirements, the following shall apply: Payment for the relevant 500m will be reduced with the factor K.

Where: $K = 2 \times$ the average percentage deviation from the given tolerance of the samples taken.

6.9.7. Measurement of Track Geometry

6.9.7.1. Track geometry after screening shall be finalised to the *TRIM* A-Standard.

6.9.7.2. The *Contractor* shall, over the total length of screened track, take and record all measurements required to determine the standard in both phases (that is for Sc and Sf) and hand it to the Project Manager for checking. Measurements may be taken manually and/or by electronic means.

6.9.7.3. Measurements taken manually for the vertical alignment shall be made with a level like the Geismar type. Or other approved means of ensuring quality.

6.9.7.4. Deviation from a straight line (slack): Determine positions by visual means and quantifies by Geismar type level. Measurements shall be taken along the top of the rail before and after the points of deviation

6.9.7.5. Cant and rate of change of cant: Measure cross level every five metres.

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

6.9.7.7. Each deviation between the two points on straight track, 10 metres apart, shall be measured by inserting a feeler gauge between the nylon line and the rail at the centre of the deviation. The number of sleepers between the beginning and end of the deviation shall be recorded as instructed by the *Project Manager*. All unacceptable measurements caused by permanent defects in the rail, that are impossible to eliminate after screening, and as notified to the *Project Manager*, shall be excluded. These measurements shall be recorded in the *Site* diary.

6.9.7.8. Curved track shall be marked out at 5-metre intervals, and each mark shall become a measuring station. Track standard shall be determined by measuring and recording the offset at each station from the 10-metre chord strung between adjacent measuring stations. All unacceptable measurements caused by permanent defects in the rail, that are impossible to eliminate after screening, and as notified to the *Supervisor*, shall be excluded. These measurements shall be recorded in the *Site* diary.

6.9.7.9. Compliance with the standards of workmanship and accuracy will be calculated from these measurements.



Transnet Rail Infrastructure Manager
Contract Number: SIC26003CIDB/1 (HOAC HO 57813)
Description of the Service: For the Maintenance of Railway Track with an on-track Low Production Screening machine on all lines owned and maintained by Transnet for a period of twenty-four (24) months.

6.9.8. Measurement of Contact Wire Height and Stagger

- 6.9.8.1. The standards for structural gauge shall be adhered to. The *Contractor* shall verify the structural gauge parameters himself and adhere to the specified standards.
- 6.9.8.2. The height of the contact wire shall be measured after the final tamp at both sides of all overhead bridges, as well as level crossings. Heights below or above the allowable limit quoted will not be acceptable.
- 6.9.8.3. The stagger of the contact wire, (offset from the perpendicular on the track centre line) shall be measured after the final tamp at all support structures, pull-off and knuckle points, as well as at mid-span on all curves. Where more than one contact wire exists, the stagger of the innermost wire shall be measured. The stagger on both the through and turnout lines of sets of points shall be checked, when turnouts are tamped.
- 6.9.8.4. Contact wire height and stagger measurements shall be reported to the *Project Manager* in writing (or computer printout) at the end of each shift. Measurements exceeding the allowable limits specified shall be immediately reported to *Transnet Rail Infrastructure Manager* for rectification. Each measurement shall indicate the mast location number as well as the relevant track section number.
- 6.9.8.5. Alignment and height of OHTE shall be continuously measured. The accuracy of contact wire height measurements shall be $\pm 10\text{mm}$ and the contact wire stagger measurements shall be $\pm 20\text{mm}$.
- 6.9.8.6. All overhead clearance and stagger measurements are to be done electronically with a Rail rod. The rail rod should be calibrated once every 12 months unless found to be inaccurate. A calibration certificate shall always be available on Site. Random checks by *TRIM* electrical measuring staff will be carried out by *TFR* to ensure the accuracy of measurements

7. **Health and Safety**

- 7.1. The *Contractor* shall comply with all applicable legislation as well as *Transnet* Safety requirements. The cost for such compliance shall be borne by the *Contractor* and shall be deemed to have been allowed for in the rates and prices of the Contract. Specifically important in this regard is compliance with:
- *TRIM* Safety Guidelines for Infrastructure (Latest Edition).
 - The Compensation for Occupational Injuries and Diseases Act (Act 130 of 1993).
 - The Occupational Health and Safety Act (Act 85 of 1993).
 - *TRIM* Specification E.4E, SHE Specification for Contractors
 - Basic Conditions of Employment Act as well as all other relevant labour legislation.
 - *TRIM* Specification for Work on, under or adjacent to Railway Lines and near high Voltage Equipment – E7/1.
- 7.2. The *Contractor* shall also comply with all other safety requirements, regulations and guidelines of *Transnet* applicable to the nature of work carried out under the Contract and shall obtain the particulars thereof from the Service Manager.
- 7.3. A formal risk assessment on the screening machine process has been conducted by *TRIM* and the under mentioned safety critical risks have been identified. The *Contractor* shall conduct his own formal risk assessment on the screening machine offered by him and add any additional risks identified by him, to this list.
- 7.4. The *Contractor* is required to prepare and submit with his tender a comprehensive safety case in accordance with the requirements of Act 85 and the Construction Regulations.
- 7.5. The *Contractor* shall specify in his safety case the list of all risks identified by *TRIM* together with any additional risks identified by his own risk assessment and indicated specific rules, processes, methods and designs of how he intends to mitigate these risks should he be awarded the contract.
- 7.6. Safety Critical Risks identified by *TRIM* for the screening machine are:
- Occupation - double line occupation



Transnet Rail Infrastructure Manager

Contract Number: SIC26003CIDB/1 (HOAC HO 57813)

Description of the Service: For the Maintenance of Railway Track with an on-track Low Production Screening machine on all lines owned and maintained by Transnet for a period of twenty-four (24) months.

- Executing work on one line while a normal train service is running on adjacent line/s
- Excessive Working hours
- Working at night
- Emergency procedure – to stop process due to wagon or equipment failure
- Material handling and working near or under live OHTE equipment: 50kV, 25 kV and 3.3kV
- Staging the accommodation units of workers in yards in proximity of live OHTE and lines on which rail traffic runs continuously.
- Danger area
- Competent operators
- Train driver/operator/ interaction/competency
- Site conditions
- Infrastructure equipment damage
- Machine working on sharp curves and steep gradients
- Machine working on embankments and in cuttings
- Machine working on fouled ballast
- Clearances
- Maximum and minimum temperatures
- Precipitation
- Integrity, i.e. Rolling stock structure, drawgear, brakes, wheels; and screening machine structural integrity
- Unauthorised access
- Use of various petrol and electrically driven small plant within team context i.e. disk cutters, MP12 and MC2 rail grinders, rail drills, handheld tampers, generators and associated electric equipment, joggle plates and joggle clamps etc.
- Environmental pollution/damage



Transnet Rail Infrastructure Manager
Contract Number: SIC26003CIDB/1 (HOAC HO 57813)
Description of the Service: For the Maintenance of Railway Track with an on-track Low Production Screening machine on all lines owned and maintained by Transnet for a period of twenty-four (24) months.

7.7. Safety Compliance

- 7.7.1 The *Contractor* shall prepare and implement a comprehensive health and safety plan covering all relevant legal safety aspects for their service teams. It shall include details of the *Site* management structures, all safety legal appointments as well as the written safe working procedures for all equipment used on *Site* considering the above risk assessments.
- 7.7.2 The *Contractor* shall be responsible to ensure the use of only technically competent trained staff on all types of service.
- 7.7.3 The Health and Safety plan together with all supporting documentation shall always be available in a health and safety file on site for compliance audit.
- 7.7.4 The *Contractor* shall ensure that all *Site* staff are trained and inducted in the written safe working procedures for all equipment used on *Site*.
- 7.7.5 The *Contractor* shall ensure that all workers are appropriately equipped and wearing Personal Protective Equipment (PPE) and that Safety Talks are conducted and noted in the *Site* Diary before the start of every shift.
- 7.7.6 The *Contractor* shall be responsible to ensure that *Site* staff is always competently trained with regards to Electrical Awareness Training and such training material should be acknowledged and approved by the *Employer's* School of Rail.
- 7.7.7 The *Contractor* shall be responsible to ensure that workers working on machines (high risk areas), operators, machine fitters, area supervisors and contract supervisor's *Site* staff are always competently trained with regards to PWC Electrical Educational Training.
- 7.7.8 The *Contractor* shall also be responsible to ensure that *Contract Managers* in charge of *Sites* are always competently trained with regards to COM Competency Electrical Training (to follow onto PWC Training).
- 7.7.9 Non-compliance with safety requirements will result in an immediate suspension of service without payment.
- 7.7.10 Non-compliance with environmental requirements such as oil spillages, waste, will result in penalties being levied against the *Contractor*. The *Employer* will appoint a private company to make the situation good and claim compensation from the *Contractor*.

8. TRAINING

- 8.1. The *Contractor* shall ensure that all staff working on or with the contract is adequately trained, to comply with any relevant safety and quality requirements.
- 8.2. It is the *Contractor's* responsibility to ensure that his staff is trained. At the commencement of the contract, *Transnet Rail Infrastructure Manager (TRIM)* shall assist the *Contractor* with the initial on-the-job training for the staff as specified below, to assist the *Contractor* to qualify the worker's / staff. The *Contractor* shall ensure that he has a core group of workers with sufficient previous experience to take the lead in undertaking maintenance tasks.
- 8.3. Where training is required by the *Contractor* and *Transnet Rail Infrastructure Manager (TRIM)* is committed to provide training, the *Contractor* shall qualify his tender as to what and how many staff, training will be required for and will be offered at the *Contractor's* cost. After award of the contract, the *Contractor* shall then arrange with the appropriate *Transnet Rail Infrastructure Manager (TRIM)* Perway Production manager, through the *Project Manager*, for this training / testing.
- 8.4. Training of Track Workers: At the commencement of the contract, assistance with the training, to qualify the *Contractors* workers to perform the following tasks shall be given:
- Track service (Level crossing blocks, cattle guards, sleeper & clip replacement / fastening,



Transnet Rail Infrastructure Manager
Contract Number: SIC26003CIDB/1 (HOAC HO 57813)
Description of the Service: For the Maintenance of Railway Track with an on-track Low Production Screening machine on all lines owned and maintained by Transnet for a period of twenty-four (24) months.

- lubricators, flagmen, ballast boxing etc.).
- Quality measurements as required for track service.

8.5. Training of Track Inspectors, Track Masters and or Trade hands (Perway): This training shall be solely the responsibility of the *Contractor*. Only fully qualified people shall be used by the *Contractor* for these positions. The *Contractor* shall ensure that staff used, do comply with requirements for the industry.

8.6. Training of Flagmen

8.6.1. The appropriate training for the flagmen provided by the *Contractor* can be provided by *Transnet Rail Infrastructure Manager (TRIM)* at the start of the contract at the *Contractor's* cost.

8.6.2. Where *Transnet Rail Infrastructure Manager (TRIM)* requires flagmen to be trained, the pre-requisites for such persons to qualify to be trained, shall be basic literacy skills and Basic English language ability.

8.6.3. *Flagmen* shall be officially trained, evaluated and certified competent, (*Transnet Rail Infrastructure Manager (TRIM)* 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 one (1) year only after, which re-testing and re-certification of competency will be required.

8.6.4. In cases where a person was not performing flagmen duties for a period of 6 months or longer, he shall be re-tested and again be re-certified competent, before he may be re-used for Protection Duties.

8.6.5. The *Transnet Rail Infrastructure Manager (TRIM)* Depot Engineering Manager remains ultimately responsible in terms of the requirements of Act 85 for the safe working environment of his own personnel as well as *Contractor's* personnel within the track maintenance environment on his depot.

8.6.6. The Depot Engineering Manager is therefore also responsible for ensuring that any changes in the Protection Procedures that may occur over time are effectively communicated to any flagmen prior to them being used for Protection Duties

8.7. Electrical Awareness, Educational and Competency Training

8.7.1. The electrical awareness training shall be arranged for before any service commences.

8.7.2. The electrical educational and competency training may be arranged for at either a depot's lecture room (*Transnet Rail Infrastructure Manager (TRIM)* property), or at a venue of the *Contractors* choice at the *Contractors* cost.

8.7.3. The Accredited Electrical trainer from *Transnet Rail Infrastructure Manager (TRIM)* will be provided by *Transnet Rail Infrastructure Manager (TRIM)* at *Contractors* cost, an arrangement for the training session required, is done beforehand and will fit in with the trainers training program for the year.



Transnet Rail Infrastructure Manager
 Contract Number: SIC26003CIDB/1 (HOAC HO 57813)
 Description of the Service: For the Maintenance of Railway Track with an on-track Low Production Screening machine on all lines owned and maintained by Transnet for a period of twenty-four (24) months.

8.8. The following training shall be arranged for the following Contractors staff at the Contractors cost:

Type of Training	Staff required to undergo training	Estimated duration of training	Location of training	Trainer to conduct training at start of contract	Alternative trainer to conduct training at contract start	Future Refreshment training
Induction	All contract staff including new entrants. Start of work at any new depot	+/- 2 hours	Depot where work starts	<i>Employer's Service Manager</i> or Track inspector	New recruits: <i>Contractors</i> accredited representative	<i>Contractors</i> accredited representative.
Electrical awareness	All contract staff including new entrants	+/- 2 hours	Depot where work starts	<i>Employer's</i> Depot's electrical officer or accredited trainer	New recruits: <i>Contractors</i> accredited representative	<i>Contractors</i> accredited representative.
PWC (Electrical)	<i>Service Managers</i> , Operators, fitters, Technicians & Workers supporting fitters, working in risky OHTE areas.	2 days	Depot where work starts	<i>Employer's</i> , Esselen Park or Depot accredited trainer, or <i>Employer's</i> hired accredited trainer : By appointment at depot*	Replacement/ new staff: <i>Contractors</i> accredited representative	<i>Contractors</i> accredited representative.
Competency (Electrical)	<i>Service Managers</i> (Follow up training in PWC)	1 day	Depot where work starts	<i>Employer's</i> accredited trainer, or <i>Employer's</i> hired accredited trainer : By appointment at depot*	Replacement/ new staff: <i>Contractors</i> accredited representative	<i>Contractors</i> accredited representative.
Flagmen Training	Flagmen and standby flagmen	5 days		<i>Employer's</i> accredited trainer, or <i>Employer's</i> hired accredited trainer : By appointment at depot	Replacement/ new staff: <i>Contractors</i> accredited representative	<i>Contractors</i> accredited representative.
Bonder Training	Bonder	5 days		<i>Employer's</i> accredited trainer, or <i>Employer's</i> hired accredited trainer : by appointment at depot*	Replacement/ new staff: <i>Contractors</i> accredited representative	<i>Contractors</i> accredited representative.

The crew time, transport and accommodation cost related to training will be for the *Contractor's* account. The crew members proposed to for this training shall as minimum requirement be literate in terms of reading, writing and speaking of Basic English.