ROLLING STOCK
REFURBISHMENT PROGRAMME
GENERAL OVERHAUL / UPGRADE AND
TECHNICAL SUPPORT SERVICES

DRAFT CONTRACT
BETWEEN

PASSENGER RAIL AGENCY OF SOUTH AFRICA
A company duly incorporated according to the Legal Succession to the South African Transport Service Act (Act 9 of 1989) - (VAT Reg. No.: 4900110612)

(Hereinafter referred to as “PRASA”)

Represented herein by in his capacity as
Group Chief Executive Officer

being duly authorised to enter into this CONTRACT

and

______________________________

(Registration number__________________________)

(Hereinafter referred to as “the Contractor”)

Represented herein by__________________________ in his capacity as

______________________________

being duly authorised to enter into this CONTRACT

(COLLECTIVELY/JOINTLY REFERRED TO HEREIN AS “THE PARTIES”)

CONTRACT PERIOD:
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PREAMBLE

A. During the period April 2006 to March 2018, PRASA, (and its precursor company the SARCC) has had 5694 occurrences through the General Overhaul Program with various Contractors, as overhauled and/or upgraded commuter rail coaches. In addition long distance passenger coaches have been upgraded and/or refurbished in the period 1st April 2012 and 31 March 2018.

B. Through the Rolling Stock Refurbishment Programme, PRASA has succeeded in bringing back into service coaches that were previously out of service or would have been stabled, thereby contributing towards increasing and sustaining service levels to its commuters. PRASA intends to continue to pursue the refurbishment of both its commuter rail fleet and long distance service fleet and desires to enter into a new 5 (Five) year contract with one or more than one Contractor (herein after referred simply as Contractor) for the overhaul and/or refurbishment of its passenger rolling stock.

C. PRASA also wishes to engage the services of the Contractor on an ad-hoc “as and when basis” to provide technical and such related support services necessary to optimise the exploitation of its rolling stock on the basis set out herein.

1. DEFINITIONS
The headings of the clauses in this Contract are for the purpose of convenience and reference only and shall not be used in the interpretation of nor modify nor amplify the terms of this Contract nor any clause hereof. In this Contract, unless a contrary intention is clear;

1.1 Words importing:
1.1.1. the singular includes the plural and vice versa;

1.1.2. natural persons include created entities (corporate or unincorporated) and vice versa; and

1.1.3. any one gender includes the other gender.

1.2 If any provision in a definition is a substantive provision conferring rights or imposing obligations on any Party, effect shall be given to it as if it were a substantive clause in the body of the Contract, notwithstanding that it is only contained in the interpretation clause.

1.3 If any period is referred to in this Contract by way of reference to a number of days, the days shall be reckoned exclusively of the first and inclusively of the last day unless the last day falls on a Saturday, Sunday or public holiday, in which case the last day shall be the next succeeding day which is not a Saturday, Sunday or public holiday.

1.4 Schedules and Annexures to this Contract, if any, shall form an integral part of this Contract, and this Contract shall be read in conjunction with such Schedules and Annexures, all of which should be taken into account in the interpretation of the Contract.

1.5 This Contract shall be governed by, construed and interpreted in accordance with the laws of the Republic of South Africa,

1.6 The following terms shall have the meanings assigned to them hereunder and cognate expressions shall have a corresponding meaning, namely:

1.6.1 “A-date” means the date that corresponds with the final completion and acceptance of Rolling Stock after a General Overhaul has been
effected. The A-date in respect of a Rolling Stock must be set out as the year and month in the format ‘yyyy/mm’ together with the Contractors Code e.g. ‘2005/09 RTS’. This date must coincide with the date of the Service Worthy Certificate;

1.6.2 “Acceptance Certificate” means a document issued by PRASA in which it declares that the product or service rendered is acceptable in terms of the agreed standards;

1.6.3 “Ad-hoc Contract Work” means Technical Support and/or ad-hoc repair work which falls outside GO which PRASA may require the Contractor to carry out from time to time as set out in Annexure E;

1.6.4 “Coach” means a suburban Motorised Coach or Trailer Coach, and/or Shosholoza Meyl Main Line coaches;

1.6.5 “Commissioning Test” means the series of tests required to demonstrate that a Coach or a Module or a trainset meets the criteria specified in the Specifications and Standards;

1.6.6 “Compliance Certificate”, previously referred to as the RMQA1, means a certificate in terms of which the Coach, Module or trainset is certified to be fully compliant with the requirements of the agreed specification and is fully fit for its intended operational use. This shall be issued after a fault free operational use as set out herein

1.6.7 “Contract” means this written agreement between PRASA and the Contractor, including all attachments and appendices thereto and all documents incorporated by reference therein;

1.6.8 “Contractor” means any person or persons or body of persons corporate, incorporated or unincorporated, whose Contract for the supply of goods and/or services has been accepted by PRASA;
1.6.9 “Contract Price” means the price payable by PRASA to the Contractor under this Contract for the full and proper performance of its contractual obligations herein;

1.6.10 “Contract Programme” in relation to each specific year means the agreed contract programme between the Parties in respect of that particular year as is referred to in the Contract;

1.6.11 “Contractual Delivery Date” means the date of delivery as stated on the official PRASA Contract/ Tender Document and the Contract Programme. The delivery date of the individual Rolling Stock shall be determined as per the agreed program/ production schedule agreed upon annually between the parties;

1.6.12 “Contract Value” means, in relation to each specific year, the amount payable to the Contractor in respect of Coaches/Modules delivered during such year as determined in terms of the Special Conditions of Contract based on the agreed pricing;

1.6.13 “Corrupt practice” means the offering, giving, receiving, or soliciting of anything of material value to influence the actions of an official of PRASA or any other public official in the procurement process or in the execution of this Contract;

1.6.14 “Day” means calendar day;

1.6.15 “Defect” means any condition or state of a component or system that does not perform its intended functional requirements;

1.6.16 “Delivery” means delivery in compliance with the terms and conditions of this Contract or agreed order;
1.6.17  “Delivery Point” means the address stated on the Service Request;

1.6.18  “EMU” means an Electrical Multiple Unit rail commuter train;

1.6.19  “Ex-Works” means the Rolling Stock which has been completed as per this Contract, which have left the Contractor’s Site;

1.6.20  “Fault” includes but is not limited to, failure to comply with PRASA’s performance requirements as set out in the Specifications and Standards, non-compliance with agreed service levels in respect of the Ad-hoc Contract Work, inferior service and/or inferior workmanship, and include Works that do not meet their intended function and/or use;

1.6.21  “Fault Free” means the use of the Rolling Stock without it causing any Service disruptive faults or the need to issue an NCR does not arise;

1.6.22  “Financial Year” means a period of 12 (twelve) consecutive months starting 1 April and ending 31 March of the next year;

1.6.23  “Fraudulent practice” means a misrepresentation of facts in order to influence a procurement process or the execution of this Contract to the detriment of PRASA, and includes collusive practice by the Contractor and any other parties (at any time) designed to establish tender prices at artificial non-competitive levels and to deprive PRASA of the benefits of free and open competition;

1.6.24  “Free Issue Material” means any material that PRASA buys in bulk or has in stock that is made available free of charge to the Contractor to complete the Works
1.6.25 “General Overhaul” (abbreviated as “GO”)) means the complete stripping and re-building of a Rolling Stock to its original design standard. For the avoidance of doubt minor modifications introduced shall be considered as minor changes and shall not be construed as changes to change the original design, its appearance or performance;

1.6.26 “Goods” means all of the equipment machinery and/or other materials that the Contractor is required to supply to PRASA under this Contract;

1.6.27 “Inspection and Test Plan” or “ITP” means a plan superimposed on the Production Plan that highlights any activities and/or milestones within the Production process that requires validation or confirmation before the process may continue;

1.6.28 “LCM” means life cycle management of an asset, which includes the phases of: acquisition, operation, maintenance, upgrading and disposal;

1.6.29 “MC” means a Motor Coach or a passenger carrying vehicle able to move under its own traction;

1.6.30 “Major Defects” means to all faults not classified as 'Minor';

1.6.31 “Minor Defects” means defects on Rolling Stock that can be corrected without the requirement for special tools and facilities and would under the ordinary course of business be repaired by the fault staff or shedding personnel. Examples of such equipment failure under this classification shall include switch gear, relays, switches, push buttons, electronic control equipment, light inverters, fuses, door limit switches, electro-pneumatic valves etc;
1.6.32 “Module” refers to a combination/configuration of motor and trailer coaches that forms the smallest train set. For the purpose of this document for commuter rail vehicles it is generally one MC and 3 TC’s and in respect of Shosholoza Meyl Main Line vehicles it means a combination of dining cars, kitchen car, van, power car, sitter and sleeper coaches as specified in the Repair Programme or as may be varied and communicated by PRASA from time to time. A train-set is a consist that can be put into service in that configuration and in the Metrorail domain means a combination of modules and in the Shosholoza Meyl domain it means a module complete with a locomotive coupled

1.6.33 “NCR” or “Non Conformance Reporting” means the report issued pursuant to a structured reporting process in respect of Defects and Faults;

1.6.34 “OEM” means the Original Equipment Manufacturer;

1.6.35 “Order” means an official document issued by a duly authorised PRASA representative calling for the supply of Goods pursuant to this Contract;

1.6.36 “Party /Parties” means collectively the Contractor and PRASA and “Party” shall, as the context indicates, either the Contractor or PRASA;

1.6.37 “Pre-Production Unit” means to the first units built within a facility before commencement of full production units
1.6.39 “Pricing Schedule” means a schedule of prices associated with the required Services;

1.6.40 “Primary Contractor” means an assembler of parts and components who shall be solely and entirely responsible for all work carried out in fulfilment of this Contract and any subsequent contract whether by itself or by any of its Sub-Contractors. (Also defined as Service Provider in General Conditions of Contract document);

1.6.41 “Production Plan” means the pre-designed sequential ordering of production processes in establishing a product or service as prepared by the Contractor and approved by PRASA in accordance with clause 5

1.6.42 “PT” means Plain Trailer or Trailer Coach or such a vehicle not capable of moving under its own traction;

1.6.43 “SQA” mean Supplier Quality Assurer, the PRASA Quality Assurance Officer duly delegated by PRASA to perform quality assurance functions, witness and/or perform tests, measurements and inspections for the works provided for in this Contract during the works execution and thereafter until the discharge of the contractual responsibility of each Party;

1.6.44 “Roadworthy” means the activity of certifying or declaring that Rolling Stock may be used on the South African rail network with compliance to operations requirements. It is a declaration by a qualified person that the coupling-, steering- (bogies and wheels) and braking system are safe to use under normal operational condition. This is not a declaration to carry passengers;
1.6.45 "Roadworthy Certificate” means a document produced by the Contractor confirming that Rolling Stock dispatched by it to any operational depot, is Roadworthy for use on the South African rail network and that it complies with all requirements without restrictions;

1.6.46 “Rolling Stock” means all vehicles which move on a railway and interalia includes both powered and unpowered vehicles such as Locomotives, Coaches and wagons; For the purposes of this Contract the Rolling Stock shall be limited to those vehicles included in the open Tender leading to this Contract.

1.6.47 “Request for Tender/Quote” (also abbreviated as “RFQ”) means an invitation by PRASA for tenders/quotes for Ad-hoc Contract Work;

1.6.48 “PRASA”, “the Employer” or “SARCC” means Passenger Rail Agency of South Africa or a business unit of PRASA;

1.6.49 “Services” means the whole of the services, tasks, work and requisites to be supplied, rendered, provided or performed by the Contractor in respect of the General Overhaul, Upgrade and Ad-hoc Contract Work for the Rolling Stock owned by PRASA in accordance with this Contract;

1.6.50 “Service disruptive fault” means any fault that causes an in-service cancellation or a delay of more than 5 (five) minutes;

1.6.51 “Service Location” means the address where the Service shall be performed;

1.6.52 “Service Provider” means any natural person or legal entity, including its Service Provider, sub-service provider, agents and employees that are a party to the Agreement with PRASA;
1.6.53 “Service Request” means a request in writing by PRASA for the provision of Services following the acceptance of the Tender;

1.6.54 “Service Worthy” means a declaration that includes all elements of a Roadworthy certificate, but also certifies and declares the Coach, module or trainset to be safe for transporting commuters and/or declares the Locomotive to be safe for hauling Coaches;

1.6.55 “Service Worthy Certificate” means the certificate issued by Metrorail Rolling Stock in which it refers to a declaration from the Operational depot that the relevant Rolling Stock can perform its full operational role and is Service Worthy at a point of handover. The Rolling Stock depot shall issue this certificate and a copy thereof must accompany the Contractor's completion invoice for final payment. The A-date of the Rolling Stock shall correspond with the date of this certificate;

1.6.56 “Site” means the place where the Contractor performs the Services as contemplated in this Contract. The Site may be extended to include a siding within the PRASA operating environment, where applicable;

1.6.57 “SOW” means Scope of Work;

1.6.58 “Specifications and Standards” means the technical and functional specifications and standards, drawings and manuals for GO’s of Rolling Stock, which are annexed to this Contract as Annexures B1, B3 and B4

1.6.59 “Sub-Contractor” or “Sub Service Provider” means any person or persons or anybody of persons corporate or unincorporated, approved by a duly authorised representative of PRASA to render services required by the Contractor in the execution of this Contract;
1.6.60 “Technical Support” means ad-hoc repair and/or maintenance and/or technical support services provided by the Contractor from time to time as detailed in Annexure E;

1.6.61 “Tender” means an offer / response to a request for tender for the supply of service/s in accordance with certain terms and conditions;

1.6.62 “Tender Documents” means all documents which are supplied to the Contractor for the purpose of the Tender and includes, inter alia, the Conditions of Tender, the General Conditions, the Special Conditions and the Specifications and Standards;

1.6.63 “Tests” refers to the activity/action of confirming/validating/verifying that the product/system/component comply with its intended and/or designed functionality;

1.6.64 “Type-test” is the 1st Functional test performed on a newly designed system or Pre-Production Unit;

1.6.65 “Unit” is a single exchangeable component of Rolling Stock;

1.6.66 “Upgrade” (abbreviated as “UG”) refers to the components or sub-systems upgrades carried out from time to time to either address obsolescence, incorporate new available technology, compliance to new regulations, improve safety, improve reliability, improve efficiency, Product development etc

1.6.67 “VAT” means Value Added Tax;
1.6.68  “Works” means any GO, Upgrade, refurbishment, technical support or Ad-Hoc works duly authorised in terms of this contract

1.6.69  “Working Day” means Monday through Friday between the hours 07:30 to 16:00, excluding Saturdays, Sundays and Public holidays in South Africa; and

1.6.70  “Year” means any defined period of 12 (twelve) consecutive months.

2   SCOPE

2.1  This Contract defines PRASA’s current requirements with regard to the General Overhaul, Upgrade and Ad-hoc Contract Work in respect of some of the Rolling Stock fleet owned by PRASA.

2.2  It is hereby recorded that this Contract does not cover any new and/or alternative Rolling Stock proposals and at any rate does not cover any Rolling Stock not included in the open Tender leading to this Contract.

2.3  During the GO production technology establishment phase within the Contractor’s facilities in the instances where some minor upgrades may be included, the production of Pre-Production Units shall be monitored and managed within a less stringent performance regime. Only when production period goes beyond PRASA’s expected norms as set out in clause 5.4, shall negotiated punitive interventions be made.

2.4  In the allocation of the works and/or workload from one year to the next, consideration shall be given to price, quality of service and timeous delivery of the Services by the Contractor in the preceding year, and shall be at the sole discretion of PRASA.

3   CONTRACTOR’S OBLIGATIONS

3.1  The Contractor’s general obligations under the contract comprises of the pre-examination, repair/GO, Testing, Commissioning and warrant under working conditions (from final issuing of Roadworthy Certificate and Service Worthy Certificate) of the Rolling Stock and, unless otherwise stipulated, the provision, at the Contractor’s expense of all, but not limited to, labour, plant, tools, equipment, material, transport (excluding the coach), consumable stores, and services in this regard, whether of a temporary or permanent nature, required in and for the examination and repair of the Rolling Stock.
3.2 All Services shall be executed in an approved, substantial and workmanlike manner according to the Specifications and Standards.

3.3 Should there be any ambiguities in the Specifications and Standards; the Contractor must request from PRASA in writing, through the Contract representative, clarity as to the true meaning applicable to the Specification and Standards.

3.4 Further to the provisions of clause 3.3 above, the Contractor shall be held responsible for any errors that may occur in the Services.

3.5 The Contractor shall provide all reasonable facilities and apparatus required by PRASA's representatives for the purpose of carrying out Tests and inspection. The cost of providing such facilities shall be solely borne by the Contractor.

3.6 PRASA's representative/s shall be afforded unrestricted opportunity and access to review the techniques and procedures used by the Contractor or Sub-Contractors to ensure compliance with the Specifications and Standards.

3.7 The Contractor shall not be entitled to charge any additional price over and above the Contract Price for any additional Services, unless PRASA has, prior to the execution of such Services, agreed in writing to pay for such additional Services. Such further services shall constitute ‘Additional Services’.

3.8 The GO and Ad-hoc Contract Work process shall be executed in accordance with the Process Flow schedule and interfaces between PRASA and the Contractor as depicted in Annexure D herein.

4 SPECIFICATIONS AND SCOPE OF WORK

4.1 Specifications and scope for the Ad-hoc Contract Work shall be addressed as detailed in Annexure E hereto.

4.2 For the avoidance of doubt, the Contractor, except where specifically instructed otherwise, shall be responsible for ensuring that the Rolling Stock are Overhauled and/or repaired and the Services rendered by the Contractor in order to comply with the performance and other requirements contained in the Specifications and Standards.

4.3 It is hereby recorded that the technical information provided in terms of the Specifications and Standards was compiled from previous technical specifications and it primarily covers the
“What” and not necessarily the “How”. This information is not a comprehensive set of instructions for the GO and/or rendering the Services of a Rolling Stock in terms of the Contract, however, this information serves as a minimum standard.

4.4 The Contractor shall be responsible for:

4.4.1 performing all repair work associated with the GO of the Rolling Stock and such Services to meet the requirements of the Specifications and Standards;

4.4.2 supplying components for, and undertaking the GO and refurbishing of, the Rolling Stock and associated components, both mechanically and electrically, in accordance with the information contained in Appendix B1 of Annexure B General Overhaul Specification and Technical Guidance for Mechanical and Electrical Items, including modifications contained in Appendix B2 Modification Instructions.

4.4.3 replacing various items with overhauled items in accordance with the information contained in the Specifications and Standards;

4.4.4 renewing various items and components in accordance with the information contained in this Specifications and Standards; and

4.4.5 installing and testing new, modified and/or overhauled equipment to an agreed test schedule. PRASA may, from time to time require additional tests during the type-testing of the first prototype or Pre-production Units where this is applicable in the event of upgrades.

4.5 Prior to the commencement date of this Contract, the Contractor shall thoroughly familiarise with the contents of the Specification and Standards to be achieved and the products to be used.

4.6 The Contractor shall be responsible, prior to the commencement of the Services for identifying any dimensional variations between Rolling Stock which variations may have an effect on the installation of any equipment specified or their associated components. Any variations that may cause problems with interfacing with any other system needs to be reported to PRASA prior to commencement of work.

4.7 The Contractor shall make an allowance in its programme for joint inspections of the Rolling Stock with PRASA’s representatives to determine the SOW where the quantity of modifications are unknown, or where decisions are required, as to the repair and/or replacement of equipment based on condition. (Refer to PRASA’s SOW, Menu Items and additional work schedules that are covered in Annexure A of this document)
4.8 The Contractor shall ensure that no deviation from the prescribed specifications takes place that shall negatively affect the centre of gravity and wheel loadings and running stability of the Rolling Stock.

4.9 The Contractor is responsible for providing an Inspection and Test Plan for overhauled Rolling Stock and any Services. The inspection and Test Plan shall be submitted to a duly authorised PRASA Representative for review, by no later than 2 (two) weeks prior to the commencement of the Works. PRASA reserves the right to witness any or all of the tests. The Contractor shall carry out all testing. Further Testing details are shown in Annexure B4.5 Functional System and Rolling Stock Testing and Annexure B4.13 Testing and Testing, Measuring and Inspection”

4.10 Notwithstanding the above, the Contractor shall be responsible for ensuring that all test certificates on serialised- and safety related (wheels springs, bogies) equipment is retained with the Contractor in the Contractor’s rolling stock file and the following shall apply:

4.10.1 Upon request the aforementioned documentation and/or information must be readily made available to a duly authorised PRASA representative;

4.10.2 The rolling stock file and documentation must be kept by the Contractor for a period equal to the warranty period as defined in clause 8.1.1 below after which it shall be handed over to PRASA for safe keeping.

4.10.3 Extracts from date of issue of the rolling stock file shall be made available for the depot rolling stock file.

4.11 As a minimum requirement, the Contractor shall overhaul items as specified in Appendix B1 of Annexure B 5M/SA/1.0/GOS General Overhaul Specification and Technical Guidance for Mechanical and Electrical Items as well as the OEM’s requirements.

4.12 The disposal of material or scrap or other waste shall be carried out in accordance with the provisions of PRASA’s disposal policy. The Contractor shall be required at any rate to have skips for separate holding of the scrap, a weighing facility at site and a compliant system for disposal of scrap that has no resale value.

4.13 Nominated redundant or obsolete equipment shall remain the property of PRASA and shall be stored by the Contractor in a secure location for up to 1 (one) year for their subsequent sale, re-use or disposal as required by PRASA. Special attention shall be made to ensure proper treatment to prevent any rust or deterioration. The disposal or scrapping of the components and material shall be carried out in accordance with PRASA.
4.14 It is recorded between the Parties that human safety is a top priority. The repair and/or refurbishment of the body and bogies and all safety critical components must ensure the safety requirements as specified in Annexure B.

4.15 Any Additional Services or requirements not covered by this Contract and its effect on price and delivery dates shall be separately negotiated and agreed between the parties and shall only have force or effect if reduced to writing and signed by both parties.

5 PRODUCTION PLAN AND QUALITY CONTROL

5.1 The Contractor is required to submit a draft Production Plan within 2 (two) weeks of its Rolling Stock allocation.

5.2 This Production Plan shall be evaluated and approved by PRASA prior to its implementation by the Contractor.

5.3 A reviewed Production Plan shall be submitted in Microsoft Project format by the contractor at the end of each fortnight and information regarding progress and completion dates shall be updated and submitted in respect of each Rolling Stock. The minimum information contained within the plan (“Production Plan”) shall include, inter alia:

- 5.3.1 planned ‘Call-in’ date vs. Actual date received;
- 5.3.2 planned Expected Completion date - vs. Actual Completion date;
- 5.3.3 percentage of Services completed; and
- 5.3.4 a clear indication of the Rolling stock number as well as a Works Order number.
- 5.3.5 A clear indication of the progress on the key vehicle sub-systems

5.4 The production plan shall aid the projection of cash flows at various milestone payments. At the end of each month, the Contractor shall be required to submit to PRASA the accrued value on each vehicle (value addition not claimed from PRASA)

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5.5 It is the sole responsibility of the Contractor to ensure that the components and/or equipment, whether supplied by itself or any Sub-Contractor, are manufactured or refurbished to specified requirements.

5.6 Notwithstanding any Acceptance Certificate and/or receipt that may have been issued by or on behalf of PRASA, PRASA retains the right to reject the Rolling Stock supplied before or after they have been placed in use, should they be found to be defective during the warranty period.

5.7 The Contractor shall nominate and appoint a competent representative who shall accept responsibility for the overall Contract quality management. The Contractor shall also undertake to assign an adequate number of suitably qualified staff to control the quality of material and workmanship during the course of the Contract and monitor quality and conformance to specification of each Sub-Contractor engaged in the supply of critical and major components and sub-assemblies.

5.8 The Contractor shall maintain close control of all procurement, manufacturing and “in process” activities.

5.9 The Quality Control Plan shall list all quality-related events, tests, measurements, inspections and documentation relevant to quality for each state of the GO process, as per the Production Plan. PRASA reserves the right to witness such listed items on the Quality Plan. In addition, the Quality Plan shall list product realization Hold Points which are mandatory for PRASA sign off, unless PRASA elects otherwise and informs the Contractor in writing.
5.12 The Quality Plan shall also incorporate the following:

5.12.1 stipulation and adherence that only the correct and acceptable products, materials, equipment and free issue material as defined are used or installed;

5.12.2 stipulation and adherence that products, materials and equipment which do not conform to specified requirements are prevented from inadvertent use or installation; and

5.12.3 measures to prevent the occurrence of non-conformity.

5.13 The Production and Quality Plans shall indicate at what stages of the QCP (i.e Hold Points) is a PRASA’s representative to be involved. These points also need to be reflected in the Production Plan. The QCP shall also have Witness points for sign off by the Contractors own Quality Assurance personnel.

5.14 The Contractor and its Sub-Contractors shall use ISO 9001: 2015 as a basis for their Quality Management System or the latest version if applicable. Should the Contractor and/or Sub-Contractor not comply with this requirement at the time of contracting, this Contract shall be awarded subject to an undertaking by the Contractor to enhance its and/or the Sub-Contractors Quality System to a level that is acceptable to PRASA, that is premised on ISO 9001. At any rate the Contractor and its Sub-contractors must be ISO 9001 certified by the 9th month from award of the Contract.

5.15 PRASA reserves the right to reject a Sub-Contractor if such a Sub-Contractor that is considered not to be competent or has been black listed to manufacture goods required by the Contractor.

5.16 PRASA shall appoint an authorised Quality Assurance Representative to perform an audit and/or surveillance function (permanent or temporary) at the Contractor’s or Sub-Contractor’s site. The authorised Quality Assurance Representative shall have the right of access to where the contracted works and/or Services are to be performed.

5.17 The Contractor shall notify PRASA’s representative in reasonable time should their involvement in the process be required.

5.18 In the event that, during course of the Contract, the quality systems mentioned above should fail, PRASA reserves the right to employ an independent Quality Assurance firm or to place appointed Quality Assurance personnel at the Contractor’s or Sub-Contractor’s site. The costs of such appointment or replacement shall be borne by the Contractor.
5.20

6 TRANSPORTATION

6.1 The contractor shall be responsible for the movement of the coaches from and to the PRASA rolling stock depots.

6.2 All movements and associated activity shall be arranged by the Contractor with a rail operator of their choosing.

6.3 PRASA shall ensure that the Rolling Stock to be moved to the Contractor site is presented as train-sets or modules and is fully provisioned/completed the PRASA maintenance depot and certified Roadworthy for movement by the Contractor. The contractor shall quote for the movement of such trainsets and modules as part of the offer and such costs shall be subject to the price escalation set out in Annexure F.

6.4 The Contractor shall be responsible for all costs involved in the transportation of Rolling Stock and components should this be required to remedy a Defect or Fault that is deemed the Contractor’s responsibility.

6.5 Further to the provisions of clause 12 below, the Contractor shall be obliged to ensure that its insurance portfolio in terms of risks is in line with the above transport responsibilities. PRASA shall have the right, at any time, to demand proof of the insurance, such demand for proof shall not imply that the insurance cover is adequate.

7 PAYMENT / PRICING/MILESTONES

7.1 GENERAL

7.1.1 Payment of invoices to the Contractor shall be effected within 30 (thirty) days from the date of receipt of an original invoice at the designated office within PRASA working hours and statement;

7.1.2 If the invoices and statement are not correct or incorrectly submitted, they shall be returned to the Contractor for rectification and 30 (thirty) days shall be recalculated from receipt of the rectified invoice;
7.1.3 All payments shall be made by PRASA to the Contractor's specified bank account. The following particulars of the Contractor banking details must be furnished:

a) Account name;
b) Account number;
c) Branch and code; and
d) Bank name and country.

7.1.4 The Contractor shall ensure that PRASA has its correct banking information at all times;

7.1.5 All invoices on the Contractor statement must comply with the current VAT Act, before payment can be effected;

7.1.6 All Invoices must reflect PRASA’s VAT number in compliance with South African Revenue Services requirements;

7.1.7 Any invoice used for the purpose of this Contract shall be in a format acceptable to PRASA;

7.1.8 Payment shall be effected by electronic bank transfer;

7.1.9 PRASA’s liability towards the Contractor shall be deemed to have been met upon a bank transfer having been made into the Contractor’s specified bank account by PRASA;

7.1.10 All original invoices reflecting the contract number must be forwarded to a PRASA representative who will acknowledge delivery for payment processing;

7.1.11 The Contract Price for the Services and the method of determining the price shall be as set out in the Annexure A of this Contract;

7.1.12 Should a price which is subject to price adjustment be quoted, charges due to changes in the cost of production factors shall be calculated in accordance with the escalation formula as per Annexure F;

7.1.13 Any adjustment to the Contract Price for additional work or change of scope of work for any particular Rolling Stock or any Goods shall, subject to written application and together with
documentary proof, be submitted by the Contractor to PRASA for approval.

7.2 CONTRACT PRICING
7.2.3 The prices of this Contract shall be reflected in the price schedule which shall form an integral part of this Contract and on completion of the pricing process shall be incorporated into this contract.

7.2.4 The price schedule shall reflect:
   7.2.4.1 SOW Price Schedule; and
   7.2.4.2 Menu / “Picklist” Price Schedule,

which is attached hereto as Appendix A and Annexure A1 of this document.

7.2.5 All prices used in pricing schedules are to be inclusive of VAT.

7.2.6 All prices shall be per Unit basis unless stated otherwise.

7.2.7 Contractors shall be obliged to declare their own actual costs for material and labour as per the requirement of Annexure A.

7.2.8 Contractors shall declare their overhead costs and mark-up as per the requirements of Annexure A. PRASA reserves the right to verify this through an independent auditor should it not be satisfied with the Contractor’s declaration.

7.2.9 Contractors shall submit an anticipated invoicing cash flow schedule based on the allocated General Overhaul, based on their Production Plan and the Progress payments allowed within the Contract.

7.2.10 All payments for GO shall be done in accordance with the Payment Schedules detailed in Annexure A.

7.2.11 The principle of delivery to PRASA of complete trainset shall apply and in exceptional circumstances determined by PRASA delivery of Modules and individual vehicles shall apply. The train set-, module- and coach configuration shall be determined before commencement of the work.

7.2.12 The Tables in 7.3 allows for Progress payments to be made during the Production processes

7.2.13 Notwithstanding any of the above, PRASA reserves the right to renegotiate prices with sub-contractors where prices are deemed unrealistic.
7.2.13.1 Any savings realized through negotiations/discussions with any of the Sub-Contractors shall also be reflected on the price schedule.

7.2.14 Any additional costs associated with General Overhaul shall be agreed between the Parties before the commencement of the work.
### 7.3. MILESTONES PAYMENTS

#### 7.3.1 MILESTONES

<table>
<thead>
<tr>
<th>Milestones</th>
<th>Deliverable</th>
<th>Payment Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1st Progress</td>
<td>Individual coach / locomotives</td>
<td>After Stripping of Coach.</td>
</tr>
<tr>
<td>3 Completion Payment</td>
<td>Individual Motor Coach / Shosholoza Meyl Coaches or Locomotive</td>
<td>After PRASA Representative acceptance and the issuing of Completion Certificate. Total cost minus 10% / retention minus 1st progress payment x 80%</td>
</tr>
<tr>
<td></td>
<td>Individual Trailer Coach</td>
<td>After PRASA Representative acceptance and the issuing of Completion document. Total cost minus 1st progress payment x 80%</td>
</tr>
<tr>
<td>4 Service Worthy Payment</td>
<td>Individual Motor Coach / Shosholoza Meyl Coaches or Locomotive</td>
<td>After PRASA Representative acceptance and issuing of Service Worthy Certificate Total cost minus Retention/10%</td>
</tr>
<tr>
<td></td>
<td>Individual Trailer Coaches</td>
<td>After PRASA Representative acceptance and issuing of Service Worthy Certificate Balance of total payment</td>
</tr>
<tr>
<td>5 Retention Release</td>
<td>Individual Motor Coach / Shosholoza Meyl Coaches</td>
<td>3000km fault free declaration or 2 (two) weeks and Compliance Certificate</td>
</tr>
<tr>
<td></td>
<td>Individual Trailer Coach</td>
<td>Retention not applicable on Trailer Coaches</td>
</tr>
</tbody>
</table>
7.3 INVOICING AND FORMAT

7.3.1 PRASA has adopted the General Accepted Accounting Principles (GAAP) and complies with the Public Finance Management Act, 1999 (PFMA).

7.3.2 It shall be required from the Contractor to submit with their completion invoice, a summary with the necessary breakdown of the Components as defined in Annexure C1 “Rolling Stock General Overhaul Financial Guidelines for Compliance to the Public Finance Management Act (PFMA)”

7.3.3 This summary, with the detailed Work list/Job Card, containing all SOW, menu and additional items, shall be submitted with the completion invoice of GO’s and 10M Modules. See Annexure C1.

7.3.4 The retention release shall be made on the submission of the Advice/Declaration from PRASA, confirming 3000 km Fault free operational service in respect of the Coaches and the issuing of a Compliance Certificate.

7.3.5 Should the Contractor not receive any Fault report within 2 (two) weeks after the issuing of the Service Worthy Certificate, the assumption shall be made that the 3000 km operational use or as the case may be, was performed fault free. Contractors shall then be allowed to invoice and claim their retention.
8 WARRANTIES AND UNDERTAKINGS

8.1 GENERAL WARRANTIES

8.1.1 Unless stated otherwise, the Contractor warrants, for a period of 12 (twelve) months (hereinafter referred to as “the warranty period”) commencing when the Rolling Stock is Commissioned, declared Service Worthy and completed a 3000km Fault free in service test, :

8.1.1.1 adequate workmanship was used in the Service;

8.1.1.2 the Service complies strictly with this Contract.

8.1.2 If the Service or any part thereof is defective or fails to comply with the Specifications and Standards and with the requirements of PRASA during the warranty period, the Contractor shall, without any charge to PRASA, repair or replace the same to the satisfaction of PRASA but strictly within the scope of the Contract.

8.1.3 In respect of “bought out” or proprietary items not of the Contractor’s manufacture, the Contractor gives no greater warranty and accepts no greater liability than that given or accepted by and enforceable against the supplier/manufacturer thereof, provided that the warranty period of any such “bought out” or proprietary items is at least 12 (twelve) months.

8.1.4 Any major faulty components on any Coach/Module during the warranty period shall itself be subject to a further 12 (twelve) months warranty period if the entire Unit is replaced.

8.1.5 Upon conclusion of the 12 month warranty period, PRASA shall within one (1) week of that conclusion be obliged to issue a certificate declaring that the Contractor has successfully discharged their Warranty obligations.
8.1.6 Both Parties’ obligations in terms of this clause shall survive the completion or termination of the Contract.

8.2 THE CONTRACTOR WARRANTS THAT:-

8.2.1 It has the necessary expertise and skill including but not limited to critical skills such as certified welders, qualified artisans, certified Carriage and Wagon personnel, access to qualified structural engineer, to carry out its obligations allocated to it in terms of this Contract;

8.2.2 It shall deliver its allocated responsibilities at the agreed time between itself and PRASA;

8.2.3 If any reports are to be submitted, such reports shall represent the true state of work undertaken; and

8.2.4 If the Contractor delays remedial action, PRASA may have the fault remedied at its own discretion and for the cost of the Contractor after giving notice to the Contractor in terms of clause 8.3

8.2.5 It shall maintain an adequate insurance for all its obligations in terms hereof.

8.2.6 It understands and shall adhere to the regulatory requirements of the Railway Safety Regulator (RSR)

8.3 UNDERTAKINGS

8.3.1 The Contractor shall be entirely responsible for making good all Defects found, whether before or after the Rolling Stock has been placed in service. This excludes any Defects related to normal wear and tear and vandalism.

8.3.2 If during the warranty period, any Defect is found which, in the opinion of PRASA, is due to improper or faulty materials or workmanship, or from any other fault or neglect on the part of the Contractor, then notwithstanding any supervision, inspection, approval or certificate that may previously have been given or issued or carried out, or any payment made to the Contractor on account of such work, the Contractor shall within 24 (twenty four) hours respond to remedy the defects reported.

8.3.3 All Parties involved shall have the responsibility to limit the period “Out of Service” to the absolute minimum. With this in mind the following minimum standards shall apply:

8.3.3.1 Minor Defects that do not require any special tools or facilities, must be corrected within 24 (twenty four) hours;
8.3.2 PRASA reserves the right, to repair minor in-service Defects without prior notification to the Contractor subject to Clause 8.3.1. The Contractor shall be liable to compensate PRASA for the expenses incurred in effecting the repairs. The Contractor warranty referred to in Clause 8.1 shall persist.

8.3.3 Major Defects shall be rectified within 7 (seven) days of being brought to the Contractor’s attention. The Contractor shall submit a plan of rectification of the Defect at its sole cost, which obligation shall involve the replacement of all defective materials and/or the carrying out of all necessary work of rectification;

8.3.3.1 Should the Contractor fail to repair the Rolling Stock within the 7 (seven) day period, PRASA reserves the right to repair the Rolling Stock for the account of the Contractor. The Contractor warranty referred to in clause 8.1 shall persist.

8.3.3.2 Any additional arrangements between PRASA and the Contractor to reduce turnaround times and speed up repairs may be accommodated for instance by way of utilizing the PRASA maintenance depots. These arrangements are subject to discussion and agreement with PRASA providing that no additional cost shall be placed on PRASA in any way as a consequence, and

8.3.3.3 The Contractor must ensure that warranty spares are available either at its own premises or that of the Sub-Contractor to allow for quick response and minimum time out of service and.

8.3.3.4 A list of such spares is to be drawn up in consultation with PRASA, but may typically include rotating machines, critical electro-pneumatic valves, HV contactors, Ownership of such spares shall remain with PRASA

8.3.4 Any Unit found to be defective within the warranty period shall be returned to the Contractor’s Site at the Contractor’s expenses and after repair shall be returned to the PRASA home maintenance at the Contractor’s expense. Should the Contractor fail to carry out the necessary repairs covered by the warranty, the Contractor shall be liable for any cost incurred by PRASA in the rectification of the Unit.

8.3.5 Should the Contractor fail, when called upon, to either itself make good or remedy such defect within a reasonable time following a request by PRASA to do so, PRASA may forthwith proceed to make good or remedy such defects and thereafter recover the cost and expenses as aforementioned.

8.3.6 The Contractor shall be obliged to schedule a customer meeting with PRASA at least once a month where such failure reports are to be discussed. After such meeting a report must be written on the failure(s) and copies are to be issued to PRASA.
8.3.4 Notwithstanding these undertakings, the Contractor shall solely be responsible for the maintenance of the vehicles/modules/train-sets that the Contractor has refurbished (GO and/or Upgrade) according to the roles and responsibilities and pricing as set out in ANNEXURE G

9 DELAYS ATTRIBUTABLE TO PRASA

9.1 If the Contractor suffers unreasonable delay and/or incurs extra expenses as a result of:

9.1.1 failure by PRASA to make available the Rolling Stock or part thereof or any right of access thereto which may have been agreed upon;

9.1.2 unreasonable delay on the part of PRASA in supplying such material as is to be provided by it; and

9.1.3 delay on the part of PRASA in giving or supplying orders or drawings or in complying with any of its respective duties and obligations under this Contract, with which compliance is necessary to enable the Services to proceed in accordance with any approved program.

9.2 The Contractor, if it intends to claim additional time (waiver of the penalty) referred to in clause 13 and/or compensation attributable to any of the aforementioned circumstances, shall within 7 (seven) days of the commencement of such circumstances, notify PRASA in writing of its intention to claim in this regard.

9.3 For purposes of this Contract, an unreasonable delay shall be understood to mean a delay in excess of 7 (seven) days from the date on which the relevant action was to have taken place.

10 NON-EXCLUSIVITY

The Parties hereby acknowledge and agree that this Contract is entered into on a non-exclusive basis and PRASA reserves the sole and exclusive right to purchase Services from any other contractor should the Contractor fail to meet its obligations as set out in this Contract.

11 INDEMNITIES

11.1 The Contractor hereby indemnifies and holds PRASA harmless against any loss or damages to property, belonging to PRASA and/or any of its appointed representatives, employees or agents. It is recorded that “property” herein may include property in which PRASA has an interest therein, whether or not PRASA is the owner thereof.
11.2 For the avoidance of doubt, the Contractor shall be liable to PRASA for any financial or physical loss of, or damages to the property of PRASA arising from any cause whatsoever suffered by PRASA including legal costs, if such loss, damage or claim is attributable, whether directly or indirectly, to the negligence, willful act or omission to act of the Contractor, any of its personnel or agents, and indemnifies and hold PRASA harmless against all claims, liability, damage, loss or penalty, expense and/or costs of any nature whatsoever which a third party may sustain including such claim, liability, damage, loss or costs arising out of death of or injury or any person (including appointed representatives of PRASA) where such loss, damage, death or injury result from any negligent act or omission of the Contractor, whether directly or indirectly, which occurred in and during the actual course of the carrying out of the Contract services.

11.3 Notwithstanding the above, the Contractor and/or its employees shall be required to comply to all applicable Legislation, PRASA/Metrorail High Voltage Safety regulation requirements and Safe Working Procedures when work is performed at the premises of PRASA/Metrorail.

12 INSURANCE

12.1 Notwithstanding anything elsewhere contained in this Contract and without limiting the obligations liabilities or responsibilities of the Contractor in any way whatsoever (including but not limited to any requirement for the provision by the Contractor of any other insurances), PRASA shall effect and maintain in so far as practicable, in the joint names of the Parties and where relevant Sub-Contractors or Sub Service Providers for their respective rights and interests, the Scope of Work including Ad-hoc Contract Work, General Overhaul, Goods, Services, Upgrade and any free issue material under a Contract Works insurance policy and keep each part thus insured for the Contract Price or such other value as may be mutually agreed in writing between the Parties, against all accidental physical loss or damage, subject to the terms limits exceptions and conditions of the policy, arising from date of delivery of any Rolling Stckok to the Contractor or the date upon which the Contractor acquires an insurable interest in the works or any part thereof becomes the property of the Contractor, whichever is the earlier, until the Contractor ceases to have an insurable interest in that part of the works insured. The Contractor shall be liable for the amount of the Deductible (First Amount Payable) in respect of any claim made by the Contractor or Sub-Contractors.

12.2 Notwithstanding anything elsewhere contained in this Contract and without limiting the obligations, liabilities or responsibilities of the Contractor in any way whatsoever (including but not limited to any requirement for the provision by the Contractor of any other insurances), PRASA shall effect and maintain in so far as practicable, in the joint names of the Parties and where relevant Sub-Contractors or Sub Service Providers for their respective rights and interests, prior to the commencement of any work on the Site or on PRASA’s premises, Public Liability insurance to insure against legal liability for accidental death of or injury
to any person (including any employee of PRASA) or accidental loss of or damage to any property (other than property forming part of the works), due to or arising out of the execution of the Contract with an Indemnity Limit of R10,000,000 (ten million) in respect of each claim or all claims of a series consequent upon or attributable to one source or cause. The Contractor shall be liable for the amount of the Deductible (First Amount Payable) in respect of any claim made by or against the Contractor or Sub-Contractors.

12.3 The Contractor shall effect and maintain insurance in respect of motor vehicle liability (including passenger liability), Contractors equipment (including plant tools offices contents and other things), the terms of the provisions of the Compensation for Occupational Injuries and Diseases Act No. 130 of 1993 as may be amended, unemployment (Unemployment Insurance Fund) and common law liability in such an amount and upon such terms as it may determine in consultation with their insurance brokers.

12.4 Such insurance under clause 12.3 shall be effected with an insurer and in terms to be approved by PRASA, which approval shall not be unreasonably withheld. Copies of the aforementioned Policy Covers shall be forwarded to PRASA prior to commencement of this Contract and thereafter the terms thereof shall not be substantially altered without the consent of PRASA. Proof of payment of the premiums shall be furnished annually by the Contractor to PRASA and the Contractor shall from time to time, when so requested by PRASA produce satisfactory evidence of the insurance cover.

12.5 Should the Contractor elect to terminate such policy covers for any reason whatsoever, the Contractor shall notify PRASA in writing at least 30 (thirty) days before such termination and PRASA shall the option to terminate this Contract forthwith.

12.6 Notwithstanding anything to the contrary herein contained, an insurance policy so issued under clause 12.3 shall include a waiver by the insurers of their subrogation rights against every insured party and director and other employees and agents of every insured party, except where fraud or any other act of dishonesty on the part of any of them is the cause of the loss indemnified by the insurer.

12.7 The Contractor shall not be liable to PRASA, or its insurers, for any damages caused by PRASA, including any claims deductibles resulting from PRASA’s claims on its insurer and PRASA shall ensure that any policies arranged by PRASA shall include a full waiver of subrogation rights that the insurers may otherwise have against the Contractor, its directors, employees or agents.

12.8 Furthermore each Party shall be responsible for insurance as per the following segregation;
12.8.1 PRASA shall insure the Rolling Stock from withdrawal of service up to the delivery to the Site.

12.8.2 PRASA shall insure all free issue material issued to the Contractor for incorporation into the works.

12.8.3 PRASA shall insure the Rolling Stock and material that are required to complete the Services, on Site.

12.8.4 PRASA shall insure the Rolling Stock Ex-Works as it leaves the Site.

12.8.5 PRASA shall insure the Rolling Stock during its in-service Commissioning off-site.

12.8.6 PRASA shall be responsible for the insurance if the Coaches are to be moved from one Region to another as agreed in this Contract.

12.8.7 The Contractor shall provide proof to PRASA of its insurance as arranged per clause 12.3.

13 PENALTIES

Without prejudice to clause 9.2 above, penalties for late delivery shall be enforced as follows:

13.1 The maximum penalties shall be limited to 10% of each Rolling Stock with an absolute ceiling of 5% of the total annual Contract Price, calculated in retrospect.

13.2 Late delivery of Coaches outside the Contractors delivery schedule / Production Plan shall result in the following:

13.2.1 If the maximum amount of Rolling Stock is exceeded, the next Rolling Stock from PRASA shall not be released. The principle of “one in one out” shall apply.

13.2.2 1% of the final Rolling Stock value for the 1st month (30 days) or part thereof, increasing by 1% per month.
13.2.3 A grace period of 5 (five) working days shall be allowed for late delivery according to the Production Plan. This shall only apply to the 1st month.

13.2.4 Application of clauses 13.2.2 and 13.2.3. is illustrated in the graphical presentation below-

![Graphical presentation](image)

Figure 2: Delay vs. Penalty relationship

13.3 Any run over of Rolling Stock due to the above late deliveries shall form part of the new financial year’s quota.

13.4 Any request for penalty waiver must be submitted to PRASA for consideration and approval. These requests must be channeled through PRASA regional office for submission at least 1 (one) month in advance.

13.5 The penalties for poor performance of a Rolling Stock during operations after the Commissioning and issuing of Service Worthy Certificate shall be handled in the following way:

13.5.1 Each day a Rolling Stock is not in operational use because of Defects/Faults or Faults causing delays and cancellations attributed to the Contractor shall be added to the total production delay period as per clause 13.3.2 and be penalized accordingly.

13.5.2 As an example, should a Coach be delayed by 3 (three) months and 14 (fourteen) days, a total of 4% (see Figure 2: Delay vs. Penalty relationship) of the Coach value shall be penalised.
Should this Coach experience any reliability problems during its first 6 (six) months of operational use, the days out of service shall be added to the 14 (fourteen) days and if the total is more than 30 (thirty), the 4\textsuperscript{th} month penalty shall be added, totaling 5\%.

13.6 Notwithstanding the above, where a Contractor is under performing with respect to the delivery of completed Rolling Stock as per its delivery schedule, PRASA reserves the right to, at its discretion, reduce the contractual allocated Rolling Stock made to the Contractor, at any time during the year, and allocate these Rolling Stock to another Contractor that has demonstrated performance and that shall be able to deliver within the specific financial year.

13.7 PRASA shall take into account the following performance criteria: quality, delivery, turn-around times, final Rolling Stock costing and handling of warranties when determining future Rolling Stock allocations to the Contractor.

13.8 If the Contractor incurs extra expenses as a result of failure by PRASA to make available the Rolling Stock, the Contractor shall be allowed to penalise PRASA 0.05\% per working day to a maximum of 5\% or any amount which may have been agreed upon. The conditions for applying these claims are:

13.8.1 The Contractor has submitted its agreed Production Plan in the agreed format;

13.8.2 PRASA was notified timeously within 3 (three) working days; and

13.8.3 Maximum allowed Rolling Stock at the Contractors’ facilities are not exceeded.

13.9 PRASA shall be granted a grace period of 5 (five) working days for late delivery according call in dates.

14 DISPUTE RESOLUTION

14.1 All disputes or differences whatsoever which shall at any time hereafter whether during the continuance in effect of this Contract or after its termination, arise between the Parties hereto concerning any matter specified in this Contract, or as to the rights, duties or liabilities of the Parties hereto or either of them under or by virtue of this Contract or otherwise, or as to any other matter arising out of the subject matter of this Contract shall be referred to mediation by a mediator appointed by agreement between the Parties.

14.2 Should the Parties not resolve the dispute through the process of mediation or decide not to refer it to mediation, the dispute or difference...
between the Parties shall be finally settled by an arbitrator or arbitrators mutually agreed by the Parties.

14.3 It is the intention that the arbitration shall, where possible, be held and concluded within 21 (twenty one) days after it has been demanded. The Parties shall use their best endeavors to procure the expeditious completion of the arbitration.

14.4 Save as expressly provided in this Contract to the contrary, the arbitration shall be subject to the arbitration legislation for the time being in force in the Republic of South Africa.

14.5 The arbitrator shall be, if the matter in dispute is principally:

14.5.1 a legal matter, a practicing senior advocate of not less than 10 (ten) years standing, or an impartial admitted attorney of not less than 15 (fifteen) years standing;

14.5.2 an accounting matter, an impartial practicing chartered accountant of not less than 15 (fifteen) years standing; and

14.5.3 any other matter, an independent suitably experienced person agreed upon between the Parties.

14.6 If the Parties fail to agree on an arbitrator within 3 (three) days after the arbitration has been demanded, the arbitrator shall be nominated, at the request of either of the Parties by the President for the time being of the Law Society of the Northern Provinces. If that person fails or refuses to make the nomination, either Party may approach the Chairman for the time being of the General Counsel of the Bar to make such an appointment.

14.7 If the Parties fail to agree whether the dispute is of a legal, accounting or other nature within 3 (three) days after the arbitration has been demanded, it shall be a matter referred to in clause 14.5.3.

14.8 The arbitrator shall have the fullest and freest discretion with regard to the proceedings save that he shall be obliged to give his award in writing fully supported by reasons.

14.9 The arbitrator's award shall be final and binding on the Parties to the dispute.

15 CONFIDENTIALITY
15.1 Each Party shall keep all Confidential Information of the other Party confidential while this Agreement remains in force and after it terminates for any reason. Each Party shall also use reasonable endeavours to prevent its employees, agents and subcontractors from making any disclosure to any person of any Confidential Information of the other Party while this Agreement remains in force and after it terminates for any reason.

15.2 The disclosures permitted in the definition of Confidential Information may only be made subject to obtaining appropriate confidentiality restrictions consistent with the provisions of this clause from the intended recipients.

15.3 A receiving Party shall not be liable for disclosure of any such information if the same:

15.3.1 Was in the public domain at the time it was disclosed, or

15.3.2 Becomes part of the public domain without breach of this Agreement, or

15.3.3 Is disclosed with the written approval of the disclosing Party, or

15.3.4 Is, at the time of disclosure and through legal means, already known by the receiving Party, or

15.3.5 Was independently developed by the receiving Party, or

15.3.6 The receiving Party obtained the information from a third party that had the authority to disclose such Confidential Information and did not violate any confidentiality or proprietary rights of the disclosing Party and did not receive such information, directly or indirectly, from the disclosing Party.

15.3.7 Is disclosed pursuant to the provisions of a court order, tax authority or must be given to a tax accountant or lawyer. In this case the receiving Party has to give the disclosing Party sufficient prior notice of such a requirement to ensure the disclosing Party a reasonable opportunity to defense.
16  BREACH AND TERMINATION

In the event of either of the Parties committing a material breach of any of the terms and conditions of this Contract, and remaining in default for a period of 30 (thirty) days after receipt by it of a written notice from the other Party calling for such breach to be remedied, the Party delivering the notice shall be entitled to, without prejudice to any other rights it may have in terms of this Contract or in law, terminate this Contract by written notice to that effect given to the defaulting Party.

17  NOTICE AND DOMICILIUM

17.1 The Parties choose as their domicilium citandi et executandi the following addresses, provided that any of them may change such address to any address in the Republic of South Africa by giving 7 (seven) days written notice:

17.2 PRASA’s address:

Umjantshi House
30 Wolmarans Street
Braamfontein
2001

17.3 The Contractor’s address:


18  CESSION AND ASSIGNMENT

The Contractor shall not cede or assign in part or in full its obligations arising out of Contract without the written consent from PRASA. If the Contractor should
desire to cede or assign rights or obligations, it shall make application therefore to PRASA and shall submit the names and addresses of the proposed Contractor and the ceding Contractor shall be responsible for ensuring that such Contractor(s) as may be approved of, in writing by a duly authorized representative of PRASA, shall abide by all terms of the Contract or Service Request in so far as those terms apply to them.

19 CLAIMS BY THIRD PARTY

If a third Party makes a claim on PRASA based on any negligent act or omission by the Contractor, the Contractor shall after notification by PRASA, deal with such a claim in such a manner as to avoid all prejudice to PRASA and keep PRASA fully informed. The Contractor shall be responsible for the loss or damages.

20 MISREPRESENTATION

20.1 All information submitted by the Contractor shall be assumed accurate;

20.2 PRASA reserves the right to investigate and analyse the said information during the term of the Contract.

20.3 Should there be inconsistencies on what was submitted and/or disclosed and the true status of the Contractor, PRASA reserves the right to disqualify the Contractor or cancel the Contract.

21 MODIFICATION

If the Parties require amending or varying the Contract during the duration of the Contract, all such amendments or variations must be in writing and signed by both Parties' duly authorised representatives.

22 THE CONTRACTOR’S PERSONNEL

22.1 The Contractor shall provide competent personnel necessary to ensure that its obligations contemplated by this Contract are efficiently and effectively performed;

22.1.1 The Contractor shall pay rates of wages in terms of Bargaining Council Contract;

22.1.2 The Contractor shall in relation to labour matters conform in all respects with:

22.1.2.1 The Labour Relations Act 66 of 1995;

22.1.2.2 The Occupational Health and Safety Act 85 of 1993;
22.1.2.3 The Compensation for Occupational Injuries Act no. 130 of 1993;

22.1.2.4 The Unemployment Insurance Act no. 63 of 2001;

22.1.2.5 The Basic Conditions of Employment Act 75 of 1997; and

22.1.2.6 The Employment Equity Act 55 of 1998;

22.1.2.7 Any other legislation and laws that the Contractor is obliged to conform with.

23 FORCE MAJEURE

23.1 No failure by either Party to perform in accordance with any provision of this Contract shall constitute a breach of this Contract if the failure arose from force majeure, including Acts of God, riots, civil insurrection, acts of public enemy, acts of civil or military authority, floods, earthquakes, winds, war, strike, sanctions or changes in laws, regulations, ordinance or the like made by any competent authority, or other circumstances wholly outside the control of the Parties.

23.2 The Party who is incapable of performing in terms of this clause shall immediately notify the other Party of the reason or reasons and cause for its inability to perform and shall submit the estimated duration of such inability to perform.

23.3 Where a Party is (or claims to be) affected by an event of Force Majeure:

23.3.1 it shall take all reasonable steps to mitigate the consequences of such an event upon the performance of its obligations under this Agreement and resume performance of its obligations affected by the event of Force Majeure as soon as practicable and use all reasonable endeavours to remedy its failure to perform;

23.3.2 it shall be relieved from liability under this Agreement to the extent that it is not able to perform, or has not in fact performed, its obligations under this Agreement due to its failure to comply with its obligations.

23.3.3 The Contractor will not be relieved from its liability under this Agreement for all services, provided to PRASA before the event of Force Majeure occurred.

23.3.4 PRASA will be obliged to pay the remuneration for all services provided by the Contractor until the event of Force Majeure occurred.
23.4 The Party claiming relief shall serve written notice on the other Party within 5 (five) days of it becoming aware of the relevant event of Force Majeure. Such initial notice shall give sufficient details to assist the other Party to identify the particular event claimed to be an event of Force Majeure.

23.5 A subsequent written notice shall be served by the Party claiming relief on the other Party within a further 5 (five) days, or such longer period as may be agreed between the Parties, which shall contain such relevant information relating to the failure to perform (or delay in performing) as is available, including (without limitation) the effect of the event of Force Majeure on the ability of the Party to perform, the action(s) being taken by that Party to mitigate the effect of Force Majeure event and an estimate of the period of time required to overcome it (and/or its effects).

23.6 The Party claiming relief shall notify the other as soon as the consequences of the event of Force Majeure have ceased and when performance of its affected obligations can be resumed.

23.7 If, following the issue of any notice referred to in clause 23.5, the Party claiming relief receives or becomes aware of any further information relating to the event of Force Majeure (and/or any failure to perform), it shall submit such further information to the other Party as soon as reasonably possible.

If the Force Majeure event persists, for a period of more than 30 (thirty) days either Party may terminate this Agreement.

24 MARKING AND PACKING OF GOODS.

24.1 Merchandise Marks Act

24.1.1 The Contractor acknowledges that it is acquainted with the provisions of the Merchandise Marks Act 17 of 1941 as amended pertaining to the marking of merchandise and the use of certain words and emblems in connection with its business.

24.1.2 The Contractor is prohibited from advertising the fact that it is a Contractor to PRASA unless written authority thereto has first been obtained, and vice versa.
24.2 **Marking**

24.2.1 Unless specially ordered as a requirement in Technical Requirements of this Contract, Goods shall not be stamped or branded with a distinguishing mark.

24.2.2 The Parties agree that the markings on the Rolling Stock already supplied by the Contractor to PRASA are acceptable and shall apply as the norm for further Rolling Stock to be supplied.

25 **TESTING FACILITIES**

All testing equipment required for acceptance testing purposes shall be covered by a calibration test certificate issued by a recognized National Calibrating Services issued not more than twelve (12) months before use in any test.

Testing facilities deemed mandatory shall include a 3KV test line, Vehicle Structural gauge, Water Test facility, .....
GENERAL OVERHAUL, UPGRADE AND TECHNICAL SUPPORT CONTRACT

SIGNED ON BEHALF OF PRASA, A COMPANY DULY INCORPORATED ACCORDING TO THE LEGAL SUCCESSION TO THE SOUTH AFRICAN TRANSPORT SERVICES ACT (ACT 9 OF 1989)

IN WITNESS WHEREOF, The Parties hereto have caused this Contract to be executed by their duly authorized representatives signing this document, incorporating all the documents stated above shall come in force on the date set in the Contract.

THIS CONTRACT IS SIGNED AT BRAAMFONTEIN ON THIS ___ DAY OF ___________________________ 2019 BETWEEN:

1.0 PASSENGER RAIL AGENCY OF SOUTH AFRICA

_________________________ ______________________
(Please print name) DATE
GROUP CHIEF EXECUTIVE OFFICER

WITNESSES:

1. _________________________ Signed ____________________
   (Please print name)

2. _________________________ Signed ____________________
   (Please print name)

   and

2.0 __________________________

_________________________ ______________________
FULL NAME DATE

WITNESSES:

1. _________________________ Signed ____________________
   (Please print name)

2. _________________________ Signed ____________________
   (Please print name)
ANNEXURE A – CONTRACT SCHEDULES

A1 INTRODUCTION

1.1 Annexure A is a list of all information to be supplied as requested elsewhere in this Contract document (i.e. list of Sub Contractor, price schedules, etc.).

1.2 The Contractor shall index the supplied information as per this Contract.

1.3 Failure to supply the required information may lead to disqualification.

A2 PRICING SCHEDULES

2.1 Contractor shall note that the most important Schedules are the itemised pricing list, forming the base for Costing of the Services. The Total cost of a Rolling Stock shall have the following costing elements:

2.1.1 Standard Scope of Work (SOW) - Work that has to be done on all coaches that is not dependant on condition.

2.1.2 Menu Items and Pick lists (Menu) – Work that has to be done that was identified during pre-inspection or during repair work e.g. Windows, Doors, wiring etc. Any options or variance in quantities shall also be covered within this schedule.

2.1.3 Additional work – based on the condition of the Rolling Stock and as Contractors identify potential work to be done not covered within either the SOW or Menu items. Only after approval from PRASA representative, may the work commence. Examples are rust repair, panelling, investigative- or engineering work etc. Any of these items must be submitted separately as “Additional Work” in the same format but not to be included in either the SOW or Menu Schedule items.

2.2 The Single price schedule attached as Appendix A1 shall be completed and shall include all cost associated with that work. The price schedule shall include your base cost for material- and labour elements as well as your overhead and profit element. The format of the schedule must be developed accordingly. This format shall be used during the Pricing evaluation phase.

2.3 After final acceptance and approval, the SOW and Menu Pricing Schedules shall be produced as given in 2.1.1 and 2.1.2.

2.4 Pricing will be based on the latest applicable specification and provides for both 5M2A and 10M’s.
2.5 It shall be requirement to complete the pricing for both 5M2A and 10M because of the base technology used and in the process also finding a mechanism for quoting for work outside this Contract e.g. Wreck repairs, Intermediate Bogie Overhauls etc.

2.6 Price schedules shall be submitted format and must include 2 hard copies and an electronic version on CD.

2.7 No changes are allowed to be made on the original formatted sheet ‘SOW and MENU’.

2.8 All the costs in the schedules for work specified to be completed in detail. Non-completion thereof could be interpreted as incapable to repair and could lead to disqualification from the Contract process.

A3 SCHEDULE OF MAJOR SUPPLIERS AND SUB-CONTRACTORS

3.1 Contractors shall furnish its information in respect of Sub-Contractors for components of the vehicles including those involved in:-

3.1.1 The manufacture and installation of new electrical equipment and allied control equipment and operating mechanisms in Rolling Stock coaches.

3.1.2 The manufacture and installation of 3kV heating equipment in Rolling Stock coaches.

3.1.3 The manufacture and refurbishment of wheel, bogie and braking equipment.

3.2 Only quotations from suppliers capable of guaranteeing delivery should be considered.

3.3 It is essential that vehicles be returned during the financial year of allocation (1 April to 31 March next year) in order that Rolling Stock may be put into service with the minimum delay.
A4 SCHEDULE OF ALTERNATIVES, OPTIONS AND NON-COMPLIANCE

3.4 Within this schedule, Contractor shall be able to note any alternatives or options given in this Contract.

3.5 Contractors should note that the minimum requirements of this Contract should be adhered to and that alternatives or options shall not act as a substitute for any other requirement in this Contract.

3.6 When Contractor cannot comply with any part of these requirements, the detail of non-compliance must be given with alternative/s.
# Appendix A – Contract Schedules

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**Appendix A1 – PRASA Price Schedule for Coaches**
### Appendix A2: Schedule of Major Suppliers and SubContractors

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Appendix A3: Schedule of Alternatives, Options and Non-compliance

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<th>Changes (A, O, N)(^1)</th>
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\(^1\) A = Alternatives, O = Options and N = Non-Compliance
**Document Title:**
GENERAL OVERHAUL AND UPGRADE CONTRACT

**Document Type:** Contract

**Document Number:** 5M/SA/1.0/GOC

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### ANNEXURE B  – Technical Requirements and General Information

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Appendix B1  5M/SA/1.0/GOS - General Overhaul & Upgrade Specification and Technical Guidance for Mechanical and Electrical Items
Appendix B2  Modification Instructions
Appendix B3  Codes of Practice and Standards
Appendix B4  Related Documents
Appendix B5  Maintenance Schedule
Appendix B6  Infrastructure / Regulator Requirements
Appendix B7.  Regional Standardisation on 5M2 and 10M Components
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Appendix B10- Professional Technical Staff Requirements
ANNEXURE B – TECHNICAL REQUIREMENTS AND GENERAL INFORMATION

This Part of the document must be read in conjunction with the other technical requirements of this Contract.

B1 BACKGROUND

1.1 PRASA is responsible for the total Rolling Stock Life Cycle- and fleet management.

1.2 It is the responsibility of PRASA to ensure that the life extension of the fleet be managed from a risk and availability point a view.

1.3 At appropriate time-frames in the life cycle of the specific rolling stock,( e.g half-life in the case of the Coaches or as obsolescence creeps in), PRASA may opt to embark on an upgrade program to realise the full life potential of the specific rolling stock type. Upgrades will extend the life of the rolling stock by a nominal 20 years.

B2 FLEET MANAGEMENT STRATEGY

2.1 PRASA has accepted, as a fundamental principle, the philosophy of TOTAL LIFE CYCLE MANAGEMENT of its Rolling Stock fleet asset. This requires that all parts of the LCM are integrated and supportive of each other. The philosophy will be based on the condition, utilisation and age of the asset with due regard to the recommended maintenance/overhaul cycles by the OEM.

2.2 PRASA expects a substantial continued cost improvement in its overall fleet General Overhaul/Upgrade program due to the maturity of the program and PRASA’s long-term commitment to the industry , the latter which creates an environment of long-term stability.

2.3 PRASA has accepted in its LCM processes that its fleet shall be rebuilt to two (2) standard body designs e.g. 10M4s2 and 10M5 in the case of the case of the commuter rail coach upgrades, for the 5M fleet.

2.4 It is envisaged that the geographical distribution of the two body designs shall be such that maintenance depots shall only have one type/design to cope with per depot.
2.5 Standardisation of all equipment, systems and components, shall be a main focus. Where more than one supplier shall be accepted, regional depot standardisation shall/might still be pursued.

2.6 The principle approach of the upgrade shall be based on modular systems, be consistent with the LCM.

2.7 PRASA shall be responsible for the facilitation of skills transfer to allow contractors other than those that have been utilised in the prototype developments to undertake upgrades to the same design and standard at competitive prices.

2.8 Production of in any upgrade program shall be done on a complete module, as defined herein.

2.9 This contract only deals with the current PRASA rolling stock fleet and specifically excludes any new rolling stock acquisition.

2.10 PRASA shall not specify nominated Sub-Contractors for the acquiring of selected parts, materials, equipment, components etc, but reserve the right to regulate it.

2.11 However, the principle of confining a particular technology to any PRASA operating region in to minimize PRASA maintenance depot stock holding costs, technical and maintenance complexities as well as logistics requirements, must be adhered to.

2.12 This implies that the technology that is supplied by the Sub-Contractor must be consistent throughout the duration of the principle contract (extensions included). The principle Contractor may not change technology without the express written permission PRASA.

2.13 PRASA shall remain responsible for the research & development of selected technologies as well as the selection of and confinement in this respect to accredited Sub-Contractor suppliers. See attached Appendix B9.

2.14 This shall free the principle Contractor to use a competitive bid approach for the suppliers but at the same time meet the requirements for the consistent technology on a particular region.

2.15 The Regional Standardisation of components is given in Appendix B7. Any departure from the current Regional Standardisation appearing in Appendix B7 with regard to technology/ parts/ materials/ equipment /components/ etc. shall be at the sole discretion of PRASA.
B3 5M2A- TO 10M STANDARD MIGRATION PROCESS

Where PRASA opts to undertake an upgrade, it will be informed by the cost effectiveness thereof.

3.1.

3.2 The upgrade where it is deemed necessary shall ensure that the current 5M2 design shortfalls are reduced. The design has evolved over a period of 7 years and is based on the latest 10M design.
   ✦ Vandal resistant.
   ✦ Interior is easier to clean.
   ✦ Less Maintenance intensive.
   ✦ Will last the GO cycle.
   ✦ Modular design approach reduces the production and maintenance material and spares with the added advantage of giving more operational flexible functionality.
   ✦ Should improve the production rates.

3.3 This design is based on modular concept. It allows for alternative ‘modules’ with the same form, fit and functional characteristics. This also implies that interfaces shall be managed very strictly. E.g. a window from supplier A shall fit in exactly the same way on the body and inside panelling as a window from supplier B.

3.4 It shall require that corroded bodies need to be replaced with a modular body design that shall allow for both 4 and 6 door coaches.

3.5 Any changes to the current 10M upgrade shall be critically assessed within the LCM philosophy, the value addition and the extent that this value addition can be exploited. The extent of changes shall also depend on the available funding to sustain a continuous improvement/repair program.

3.6 Upgrades/improvements already mdone
   ✦ Traction Motors refurbishment
   ✦ Micro Processor installation
   ✦ Modular Body design
   ✦ Single Handle Master Controller etc.
   ✦ Compressors & Exhausters
3.7 For the Contractors, other than TRW and UCW&P from which the body panels and the cabs might be procured, PRASA shall prefer to free supply such equipment where the 10M upgrade is to be executed.

3.8 The initial costing of the 10M pre-production coaches shall be done on a cost plus basis until such time as an acceptable total cost is determined.

3.9 The costing shall be segmented into “once off” and “production” cost.

3.10 Facilities development shall go hand in hand with prototype and pre-production unit preparation, but shall be moderated by the LCM constructs for the fleet

3.11 The SOW shall be developed consistent with the LCM philosophy and mindful of cost effectiveness, while the Menu Items and the Pick List shall be reduced.

3.12 .

B4 TECHNICAL REQUIREMENTS

4.1 System interface information

4.1.1 The Contractor shall ensure that all the equipment and components overhauled, supplied and/or fitted to the Rolling Stock complies with the current interface between trains and all other areas of interfacing like:

4.1.1.1 Stations – to ensure correct platform height, stepping distance and clearing distances.

4.1.1.2 Overhead Traction Equipment (OHTE) – Coaches maximum voltage of 3.9kV and minimum voltage of 2.7kV. The rated system supply voltage shall be taken as 3150 V.

4.1.1.3 Track – gauge / structures / mass distribution / wheel condition and profile.

4.1.1.4 Signals – no interference allowed.

4.1.1.5 Electro Magnetic Compatibility standards for passenger interface.

4.1.1.6 Radio and Communications.

4.1.1.7 Coupling to other trains (mechanically & electrically) and recovery vehicles for breakdown.
4.1.8 Jacking for derailment recovery.

4.1.2 The Contractor shall ensure that all the equipment and components overhauled, supplied and /or fitted to the Rolling Stock complies with the current compatibility between 5M2/A coaches and other PRASA vehicles in every respect.

4.1.3 The Contractor shall ensure that no deviation from the prescribed specifications takes place that shall negatively affect the centre of gravity and wheel loadings of the coach.

4.1.4 The characteristics of all circuit breakers shall be selected to protect all equipment and cabling from abnormal currents.

4.1.5 The equipment and components overhauled, supplied and /or fitted to the Rolling Stock shall be able to work on line voltages as specified in Appendix B6 Infrastructure/Regulator Requirements.

4.1.6 The equipment and components overhauled, supplied and /or fitted to the coaches shall not cause Electro Magnetic interference in the existing signalling and communication equipment.

4.2 SYSTEM RELIABILITY

4.2.1 PRASA has accepted, as a fundamental principle, the philosophy of TOTAL LIFE CYCLE MANAGEMENT of its Rolling Stock fleet. This requires that all parts of the LCM are integrated and supportive of each other. The philosophy will be based on the conditions of these assets and utilisation with the recommended cycles of the OEM. The overhaul cycle will be based on the condition and age of these assets.

4.2.2 As a general principle the reliability of the overhauled Rolling Stock shall be better than that of the existing Rolling Stock prior to overhaul.

4.2.3 PRASA requires that the Rolling Stock and equipment are capable of a mean distance between functional failures (MDBF) of not less than 35,000 km after the first year of entering service. These figures are quoted per CoachDuring the first year of service after overhaul PRASA requires that Coaches and equipment are capable of achieving an MDBF 50,000 km.

4.2.3.1 As an alternative measure of performance, the Mean Time between Failure (MTBF) should be more than 50 days.

4.2.4 A functional failure shall be interpreted as significant if it causes a delay of 5 minutes to passengers or 10 minutes in the availability to the Operating
Department, or cause full or partial loss of traction- or braking effort which does not allow the train set to be fully utilised in terms of the requirements of this Specification.

4.2.5 The following are not classified as functional failures:

- If the protection system operates during powering or electric braking and the system can be reset without any damage having occurred and the resetting procedure did not take longer as specified e.g. Any overload tripping, MCB resetting (excluding malfunction attributable to Contractor's scope of work).
- Any fault caused by poor maintenance or incorrect maintenance performed by PRASA’s appointed maintenance Contractor’s personnel.
- Any fault caused by incorrect operation by Operator’s personnel e.g. Driving technique.
- Any fault caused by abnormal condition of track or overhead line or other abnormal situation.
- Vandalism and “damage” (e.g. shaft encoders or any under frame equipment “knocked-off”).
- Cables damaged by shunt personnel and passengers.
- Damage of equipment due supply voltages out of tolerance e.g. (excessive over and under voltage).

4.2.6 It is the intention of PRASA to monitor the performance of the GO and UG Rolling Stock against these standards and shall result in action against the Contractor if acts of poor workmanship and/or material defects are the causes of not achieving these standards.

4.3 SYSTEM SUPPORT

4.3.1 As a consequence of these existing inspection intervals and as mentioned in Clause 5.3 Maintenance Requirements, the reliability of equipment and components overhauled, supplied and /or fitted to the Rolling Stock must be such that 2nd level tasks done at the maintenance centres shall not be required for distances travelled of less than 18,000km.

4.3.2 The 2nd level maintenance tasks include functional checks to locate otherwise hidden failures, conduct preventative maintenance activities or to replace consumable items. This may include test routines that can be confirmed by either indicator lamps or by a lightweight, portable, plug-in test unit on the equipment.
4.3.3 All installed and modified equipment must be maintainable with the necessary tools, spares, technical documentation, manuals, maintenance specifications and training. Maintenance personnel shall have easy access for planned / scheduled maintenance activities within the allocated time allowed.

4.3.4 Trade specific qualified and certified staff shall normally carry out 2nd level maintenance tasks.

4.3.5 Selected Technicians shall be required to do basic faultfinding.

**4.4 GENERAL ELECTRICAL INSTALLATION REQUIREMENTS**

4.4.1 All cables shall be in accordance with PRASA’s Specification [Reference Appendix B4 – Related Documents, APPENDIX I and 5M-CMS-S-EW001

4.4.2 Unless specified elsewhere, the cable size for control circuit coach wiring shall have a minimum conductor cross sectional area of 2.5 mm² (stranding 50/0.25).

4.4.3 The Contractor shall provide details of the cable brands and types proposed to be used for approval by PRASA’s Representative in case of non-compliance of the above.

4.4.4 All cables and wiring must be tested at a certified body such as the SABS, against the latest specification and must be able to give proof of the test certificate before the Contractor is allowed to use the cable.

4.4.5 All control circuit cables shall be clearly and uniquely marked at each cable end or termination.

4.4.6 Components such as incandescent globes, fluorescent light tubes and fuse elements shall be renewed where required. The renewed component shall have the correct power and/or current rating.

4.4.7 Conduits that are damaged, defective or functionally not acceptable or shall not last within the current maintenance schedules, shall be replaced. Flexible conduits in the vicinity of the compressor / exhauster that have been subjected to prolonged periods of exposure to oil, heat and/ or ultraviolet shall be replaced.
4.5 Functional SYSTEMS and Rolling Stock testing

4.5.1 The Contractor is responsible for providing an Inspection and Test Plan (ITP) for each Overhauled and Upgraded Rolling Stock, to include at least the following.

- Continuity checks on all new and old re-routed cables.
- Insulation checks to ensure correct circuit separation.
- Leak tests of the pneumatic system.
- Megger (insulation resistance) checks to ensure isolation from frame.
- Sequence checks to validate the control system.
- Function checks on each circuit and equipment item.
- System checks to verify correct performance and function.

4.5.2 It is allowed that this Test Plan be incorporated within the Contractor Quality and Production Control Plan as per Clause 4 of the Main Contract document.

4.5.3 The ITP shall be provided six (6) weeks prior to the commencement of the work.

4.5.4 The equipment and components overhauled, supplied and/or fitted to the coaches shall be tested in accordance with this ITP and inspection and test records shall be supplied for each separable portion.

4.5.5 For a first vehicle in the GO or Upgrade program, this Inspection and Test Plan shall take the form of a more comprehensive test and commissioning program, which shall include such areas as:-

4.5.5.1 The Contractor shall be responsible for conducting all testing and make provision for PRASA to provide a representative for the duration of testing.

4.5.5.2 A full functional test to include power, auxiliary and control circuits, air, braking, passenger interface, drivers, drivers, bogies, body and under frame.

4.5.5.3 PRASA shall be given the opportunity to witness any inspections and testing of the Rolling Stock and equipment overhauled, supplied and/or fitted. The Contractor shall inform PRASA of the proposed testing schedule and location at least 10 business days in advance so that plans for attendance can be made if deemed necessary.
**4.5.5.4** Testing shall be conducted to ensure that the Rolling Stock are functional and operating correctly and in line with this specification.

**4.5.6** Separately to the type testing PRASA shall have the option of requesting a test to be conducted on any Rolling Stock to ensure its correct operation. The Contractor shall assure itself that such tests can be performed and that the coach shall conform to such tests.

**4.5.7** A rewired Rolling Stock shall, when included in a train consist, operate without any adverse or detrimental effects when interfaced with the electrical system of any other Rolling Stock.

**4.5.8** All cables (old and new) shall be subject to testing (using an insulation resistance tester) to ensure there are no short circuits to frame. Any defective cables shall be identified and replaced.

**4.5.9** Power shall not be applied to the traction motors unless the insulation resistance of the motor windings to frame is tested, measured and is greater than five (5) M& at 4000V D.C.

**4.5.10** Prior to the Rolling Stock proceeding onto a running operational line, the Contractor shall carry out a single Rolling Stock vacuum brake test and a routine service inspection as part of issuing a Roadworthy Certificate. This shall comprise a PS&C and FS as a minimum.

**4.5.11** Only after the above is done, shall PRASA RAIL be able to issue a Service Worthy Certificate, allowing the coach/train set into operational service.

**4.5.12** All Rolling Stock, which are tested as compliant with the requirements of this specification, shall be labelled accordingly with the appropriate A-date.

### 4.6 WELDING

**4.6.1** Information to be submitted by the Contractor on safety critical related welding:

**4.6.1.1** The Contractor shall, supply two copies each of drawings of all components, assemblies etc., on which welding operations are to be affected at least 5 working days before manufacturing/repair of the components commences.

**4.6.1.2** These drawings shall be suitably marked to identify all highly stressed welds and all critical welds which contribute to the strength of the component, sub-assembly, etc.
4.6.2 All staff employed on welding operations shall be qualified and competent for the operations to be performed by them. Should any special coded welding be required, e.g. bogies and under frame, the Contractor shall provide the necessary proof that the welder is qualified according to the welding standard required. Accreditation of the welder shall be done by a qualified approval authority. Proof of this might be required on safety critical welding processes.

4.6.3 PRASA may require the Contractor to test any welder whose competence is doubted under supervision of a representative of PRASA

4.6.4 The Contractor shall have available at the site where welding operations take place detailed procedures of each welding operation involved. These procedures shall include:-

4.6.4.1 Item/component description or drawing number.
4.6.4.2 Description of weld to which procedures apply.
4.6.4.3 Process to be used (that is CO2, submerged arc, etc.)
4.6.4.4 Consumables required (Wire/electrodes type, size of gas, etc) and how such consumables are to be prepared before welding.
4.6.4.5 Down hand welding position.
4.6.4.6 Weld size, number of runs and weld preparation.

4.6.5 The Contractor shall arrange regular calibration of the equipment used in accordance with ISO 9000 series of specifications.

4.6.6 An independent authority shall regularly calibrate such equipment.

4.6.7 All equipment shall be maintained in good working order.

4.6.8 All consumables shall be treated and stored in a manner which shall ensure that such consumables are suitable for use.

4.6.9 All the above-mentioned requirements/procedures/conditions as stated in clauses 4.6.4.1 to 4.6.4.6 shall be checked and verified by PRASA's representatives.
4.7 DOCUMENTATION

4.7.1 The Contractor shall ensure that any new equipment supplied or re-designed shall comply with the requirements of this Section. This section need not apply for the Overhaul and re-fitting of existing designs and equipment.

4.7.2 Serial numbers of all serialised items shall be documented and submitted to PRASA representative with the final payment documents.

4.7.3 Existing technical drawings such as electrical schematics, physical vehicle layouts and others might have to be amended.

4.7.4 A cost per drawing shall be quoted for those drawings not included in this specification but later found to be amended. This shall be handled as Additional work.

4.8 ENVIRONMENTAL REQUIREMENTS

The Rolling Stock operate in the following environmental conditions:

4.8.1 Ambient Temperature: Air temperatures between −10°C and +45°C measured in the shade and up to 60°C under roof hatch.

4.8.2 Humidity: Relative humidity levels between 0% and 100%.

4.8.3 Ice and Dust: Ice, severe dust and iron particle laden wind conditions, with frequent lightning storms occur in areas in which the train sets /modules shall operate. Snow conditions occur, but this is infrequent. Wind driven dust particle sizes range from 1.4µm to 100µm.

4.8.4 Rain: Average annual rainfall of 1150 mm/year with conditions varying from light drizzling rain of 1mm/hour to heavy rainfall storms of up to 100 mm/hour (over a continuous 5 minute period), where the pH of the rainwater ranges from 6.3 to 7.0.

4.8.5 Altitude: The altitude at which the train sets/modules shall operate is between 0m and 1860m above sea level.
<table>
<thead>
<tr>
<th>Document Title:</th>
<th>Document Type: Contract</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENERAL OVERHAUL AND UPGRADE CONTRACT</td>
<td>Document Number: 5M/SA/1.0/GOC</td>
</tr>
</tbody>
</table>

+
4.10 MATERIAL AND EQUIPMENT

4.10.1 Contractor’s attention is also drawn to the Quality Assurance Requirements. Materials used shall be to prescribed specifications and free from any defects whatsoever and, except where otherwise provided for in the contract, shall be manufactured by the Contractor or be obtained from makers whose names shall be submitted to, and approved by, PRASA who shall have the right to adopt any means considered advisable in order to ascertain that only the types of material stipulated are actually used throughout the contract.

4.10.2 The standard of workmanship on materials and equipment shall be according to all relevant documentation, procedures, drawings, specifications and PRASA’s and/or its representatives’ requirements. The standard of workmanship shall be defined upfront or agreed upon by PRASA and/or its representatives and shall not be deviated from without consent from PRASA and/or its representatives.

4.10.3 Material and equipment susceptible to vandalism or which could be deemed dangerous shall be reported to the manufacturer and PRASA. Such a problem must be resolved and be put in writing before a vehicle, fitted with the equipment is released for service.

4.10.4 Should the authorized Supplier Quality Assurer (SQA) find, during inspection/audit/ surveillance/testing that the material equipment accepted by the Contractor is not in conformance with the relevant specification and/or drawings, all other material/equipment, on the premises of the Contractor, of this type may be rejected.

4.10.5 The Contractor shall after rectification/replacement of rejected material/equipment arrange for re-inspection/test of all such material/equipment at no cost to PRASA.

4.10.6 PRASA may also require the Contractor to satisfactorily prove the correctness of all material/equipment, of the type found to be unsuitable by PRASA’s representative already built into other components, assemblies, etc.
4.10.7 A quarantine area shall be provided for rejected items by the Contractor or Sub-Contractor to avoid rejected items being used in the manufacture of the components for the contracted work.

4.10.8 Should the workmanship, and/or materials of any component/s appear to be either defective, inadequate, not capable of effective functioning or not fully complying with contract requirements, the materials, components or work in question may be either rejected or set aside for the evaluation by PRASA’s technical officers who shall have full power to reject all such materials, components or was performed under inspection or not and in the event of rejection, the materials, components or work rejected shall be replaced, renewed, rectified or made good by the Contractor at its own expense, to the satisfaction of PRASA.

4.11 SUBCONTRACTORS AND SUPPLIERS

4.11.1 PRASA’s SQA shall audit the Contractor.

4.11.2 The Contractor shall be responsible for the auditing of its Sub-Contractors. All material findings shall be reported to PRASA through the SQA.

4.11.3 The Contractors shall provide PRASA’s appointed SQA with a complete Schedule of Audits on Sub-Contractors.

4.11.4 If the Contractor changes any of the Sub-Contractors during the course of the contract, PRASA must give written consent to do so, which consent shall not be unduly withheld. Even with such consent given by PRASA, it shall not relieve the Contractor from any liability or obligation of the contract.

4.11.5 The Contractor shall ensure that each Sub-Contractor, prior to the commencement of manufacture of any material, part, component, etc., has available at its works site a full set of approved specifications, drawings and procedures to work to, which are relevant to those works to be performed by the Sub-contractor. The Contractor shall ensure acknowledgement that any such information shall be used solely for the performance of such contracted works during the term of that sub-contract.

4.12 MAINTENANCE MANUALS

4.12.1 PRASA shall, in consultation with the Contractor, ensure that all relevant documentation for new and approved equipment, be sourced and held by PRASA and accessible according to the PRASA procedures.
4.13 TESTING, MEASURING AND INSPECTION

4.13.1 The Contractor shall be responsible for the testing/measuring and inspection of material/equipment at its and its Sub-Contractor’s works site.

4.13.2 The Contractor shall ensure that each Sub-Contractor has available full details of all dimensional physical, chemical and other inspections/tests.

4.13.3 The Contractor shall ensure that each Sub-Contractor has available at their works site a full set of gauges, test equipment and instruments required for testing/measuring or inspection of material/equipment.

4.13.4 The Contractor and its Sub-Contractors shall establish and maintain a system for the control and calibration of gauges, measuring or test equipment used in fulfilment of the contract. A recognised testing institution in terms of the National Standards Authority of the country shall certify all test instruments.

4.13.5 This also applies to production jigs, templates, etc., where such equipment is used for the manufacturing of material/equipment.

4.13.6 Records shall be kept of gauges, jigs, templates, measuring/test equipment, welding machines, etc., to ensure regular calibration

4.13.7 Records, traceable to the actual material/equipment measured/tested, shall be kept.

4.13.8 The Contractor shall provide all reasonable facilities and apparatus required by PRASA’s representatives for the purpose of carrying out tests and inspection.

4.13.9 The cost of providing such facilities shall be borne by the Contractor, unless otherwise agreed to.

4.13.10 All tests laid down in the specifications shall be carried out at the Contractors’, associated companies or Sub-Contractors’ works site and the tests specified shall not be deviated from without the prior authority of PRASA.

4.13.11 The specified tests shall be repeated if necessary and the Contractor shall submit certificates, in duplicate, in respect of all tests performed.

4.13.12 The Contractor shall submit specimens of all test certificates to be used, for approval by PRASA within 21 days after placing of the contract.
4.13.13 Test schedules for items such as the electrical portion, door control etc., shall be submitted for approval as soon as possible after the placing of the contract, but not later than 21 days thereafter.

4.13.14 Where tests are required to be witnessed by PRASA representative(s), at least 5 working days notice of readiness for inspection shall be furnished by the Contractor.

4.13.15 Where the Contractor is engaged in the 10M works, the Contractor needs to ensure on a continuous basis compliance with PRASA's Contractors 10M Accreditation Requirements as per Appendix B4 – Related Documents no. RTS-STD-0003. PRASA reserves the right to audit Contractor's compliance to the above requirements.
**B5 GENERAL INFORMATION**

### 5.1 OPERATIONAL INTENSITY OF USE

5.1.1 The 5M2/A sets shall run a minimum of 6,400 km and a Maximum of 16,800 km in a month with an average of around 8,000 km.

5.1.2 The operational pattern is that almost 90% of passengers are carried in a morning and afternoon peak.

5.1.3 The 5M2/A operational availability requirements are expected to be 98% but the goal is to achieve more than this.

5.1.4 The Contractor shall note that these trains are often left connected to the 3.3kV overhead whilst stabled, resulting in continuous operation of auxiliary equipment. Rolling Stock may spend up to 35% of the time waiting in yards with the auxiliaries running.

### 5.2 RS Regional Distribution

5.2.1 The active fleet deployment and distribution varies from time to time at the discretion of PRASA RAIL and operational requirement of the Operator. The

<table>
<thead>
<tr>
<th>Train length</th>
<th>Motor Coaches</th>
<th>Trailer Coaches</th>
<th>Modules</th>
<th>Module consist (MC+PT)</th>
<th>Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1+3</td>
<td>Seldom</td>
</tr>
<tr>
<td>6 to 8</td>
<td>2</td>
<td>4 to 6</td>
<td>2</td>
<td>1+2 to 1+3</td>
<td>Typical</td>
</tr>
<tr>
<td>10 to 12</td>
<td>3</td>
<td>7 to 9</td>
<td>3</td>
<td>1+2 to 1+3</td>
<td>Typical</td>
</tr>
<tr>
<td>12</td>
<td>4</td>
<td>8</td>
<td>4</td>
<td>4 x (1+2)</td>
<td>Occasional for high density lines</td>
</tr>
<tr>
<td>14</td>
<td>4</td>
<td>10</td>
<td>4</td>
<td>3x (1+3) and 1x (1+1)</td>
<td>Typical for high density lines</td>
</tr>
</tbody>
</table>

5M2/A train sets operate in various consist formations, and the ratio of

| fleet Manager | Configuration Manager | 75 of 119 |
motor/trailer coach may vary. Known configurations are listed below as a guide:

5.2.2 These Configurations shall apply to the 10M upgrade train sets.

5.2.3 Configuration variations within the module/train-set for Metro- & Metro Plus class shall be done with the issuing of works orders and/or aligned in the delivery of coaches to the contractors.

5.2.4 The Operational fleet distribution given in the following table is one of the determining factors for allocating the quantity of coaches to Contractors in a region.

<table>
<thead>
<tr>
<th>REGION</th>
<th>Status</th>
<th>Qty²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Cape</td>
<td>Operational</td>
<td>1200</td>
</tr>
<tr>
<td>KZN-Natal</td>
<td>Operational</td>
<td>800</td>
</tr>
<tr>
<td>Eastern Cape</td>
<td>Operational</td>
<td>140</td>
</tr>
<tr>
<td>Gauteng North</td>
<td>Operational</td>
<td>800</td>
</tr>
<tr>
<td>Gauteng South</td>
<td>Operational</td>
<td>1500</td>
</tr>
<tr>
<td>Grand Total</td>
<td></td>
<td>4440</td>
</tr>
</tbody>
</table>

5.3 MAINTENANCE REQUIREMENTS

For the avoidance of doubt, the terminology for levels of maintenance listed below is a descriptive summary for information only, and the specified maintenance plan is shown in Appendix B5 Maintenance Schedule. The effectiveness requirements for the 3 levels of maintenance are as follows:

5.3.1 1st LEVEL MAINTENANCE

The system shall not require any train crew maintenance other than reporting of an event or automatic fault indication. The train crew shall have the capability to reset or isolate the equipment and components overhauled, supplied and/or fitted to the Rolling Stock in the event of a non-self-correcting fault.

5.3.2 2nd LEVEL MAINTENANCE
This shall be limited to a two-weekly safety inspection, hidden failure finding tasks or preventative maintenance activities.

The reliability of the system shall require a distance travelled of not less than 18,000km, to perform functional checks to locate otherwise hidden failures or to check calibrations. (See also Clause 4.3 – System Support: Second Level Support.)

### 5.3.3 3rd LEVEL MAINTENANCE

Workshop repair maintenance represents 3rd level maintenance and does not include warranty repairs. The Contractor shall be required to:

- Support these repairs from at least one customer support facility in the regional area served.
- Return repaired equipment within 5 business days after receiving it at Contractor’s office or as per agreed schedule.
- The following statements shall apply to new design systems and equipment:
  - Supply replacement parts to the maintenance centre requesting them within two (2) business days of receiving an order at the Contractors Office if formally requested in writing by PRASA to do so and supported by a formal Service Level Agreement entered into by PRASA and the Contractor detailing the replacement parts in question.
  - Provide technical support and spare parts irrespective of any design, manufacturing or other changes to ensure effective and reliable operation of the 5M2/A coaches for the life of the equipment where reasonably possible.

### B6 PERFORMANCE REQUIREMENTS

#### 6.1 General

6.1.1 The Contractor shall ensure that the performance requirements are complied with as per this total specification.

6.1.2 PRASA requires that the Rolling Stock shall not only look renewed but the body shall have their life extended by a nominal further twenty (20) years. Major components are designed to be removed and overhauled in shorter maintenance periods, but the non-rotating components such as air pipes, pressure / vacuum vessels, wiring, panels, floors and structural members
shall be capable of a further maximum twelve (12) years of life at the completion of the overhaul.

6.1.3 The paintwork on the Rolling Stock should give the protection and aesthetics for a period of 12 years. Contractors should nominate any additional preventive measures to ensure the life of the paint. The paint and preparation shall comply with PRASA specification RTS-SPC-0023.

6.1.4 The Contractor shall ensure that the Rolling Stock interior and exterior are thoroughly clean and that all surfaces have been painted and labels applied where appropriate to achieve a very high standard of finish.

6.1.5 The Contractor shall ensure that no part of the Rolling Stock or associated components falls outside of the structure gauge.

6.1.6 The Contractor shall ensure that all new redesigned and maintained equipment is installed in accordance with the manufacturer’s requirements and is certified by the manufacturer such that all warranties are preserved.

6.1.7 Notwithstanding the above, the performance requirements for each of the main areas are summarised in the following section.

6.2 MOTOR COACH

6.2.1 Air System, Excluding Brakes
The air system shall be free of all contaminants and leaks. All equipment, piping and components shall be clean, correctly installed and labelled as prescribed. The Contractor shall ensure that the air system and equipment meets the reliability- and functional requirements taking into account the specified maintenance. The air system and equipment shall be tested and certified as ready for service.

6.2.2 Brake System
The brakes air / vacuum system shall be free of all contaminants and leaks. All equipment, piping and components shall be clean, correctly installed and labelled as prescribed. The Contractor shall ensure that the brake system and equipment meets the reliability- and functional requirements taking into account the specified maintenance. All linkages and pins shall operate freely with no excessive play and wear permitted. It shall be tested and certified as ready for service.

6.2.3 Bodywork
The bodywork, floors, walls, roof, windows, partitions, gangways, cupboards and other equipment shall be clean, free of leaks, damage and corrosion and all panels true and straight as per standards defined. The Contractor shall
ensure that the bodywork and equipment meets the reliability, functional and safety requirements taking into account the specified maintenance.

**6.2.4 Electrical Battery / Control Systems and Equipment**
The batteries (where fitted) shall be renewed and all electrical equipment and components shall be clean, free of any damage and correctly rated for the application. The Contractor shall ensure that the control systems and equipment meets the reliability and functional requirements taking into account the specified maintenance. The electrical control systems and equipment shall be tested and certified as ready for service.

**6.2.5 Pantograph and roof Equipment**
The equipment shall be renewed/refurbished correctly rated for the application. The Contractor shall ensure that the equipment meets the reliability and functional requirements taking into account the specified maintenance. The equipment shall be tested and certified as ready for service.

**6.2.6 Heating**
The heating system and equipment shall be clean, free of any damage and correctly rated for the application. The Contractor shall ensure that the heating and ventilation system meets the reliability, functional and safety requirements taking into account the specified maintenance. The heating and ventilation system shall be tested and certified as ready for service.

**6.2.7 Interior Trim / Fittings**
The interior trim and fittings shall be clean, safe and secure with appropriate labels and all panels true and straight. PRASA shall review any colour and material changes. The use of valuable materials like aluminium or brass should be minimised to reduce the probability of theft and vandalism. The traditional 5M2 interior trim shall be phased out and Contractors shall then performing this work according the standards, philosophies and principles set out in Clause E20.

**6.2.8 Auxiliary Machines**
In general all machines, motors, generators, alternators and associated equipment shall be clean, free of any damage and correctly rated for the application. These machines shall not vibrate or emit noise that is unacceptable in terms of prescribed standards. The Contractor shall ensure that the machines meet the reliability, functional requirements taking into account the specified maintenance. The machines shall be tested and certified as ready for service.

**6.2.9 Doors**

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3 If applicable
The doors, control system and associated equipment shall be clean, safe, and secure with appropriate labels and all panels true and straight. The Contractor shall ensure that the doors meet the reliability, functional and safety requirements taking into account the specified maintenance. The doors shall be tested and certified as ready for service.

**6.2.10 Electrical Traction Power Equipment**

The electrical equipment and components shall be clean, safe, free of any damage, correctly rated for the application etc. The Contractor shall ensure that the electrical traction power equipment meets the reliability, functional requirements taking into account the specified maintenance. The electrical traction power equipment shall be tested and certified as ready for service. When new doors are required, the Contractor must be able to fix.

**6.2.11 Under frame**

The under frame, couplers, draw gear and other equipment shall be clean, free of cracks and corrosion, properly coated/painted and be safely secured. The Contractor shall ensure that the under frame and associated equipment meets the reliability/functional requirements taking into account the specified maintenance. The under frame and associated equipment shall be certified as ready for service. Repair of under frame shall be done to PRASA Spec.

**6.2.12 Water / Toilet**

The water/toilet system shall be clean, free of damage and leaks. The Contractor shall ensure that the water/toilet system meets the reliability, functional requirements taking into account the specified maintenance. Repair shall ensure easy cleaning without damage to floors and structures.

**6.2.13 Bogies and Wheels**

The bogies and associated equipment shall be clean, free of cracks and corrosion and is properly protectively coated. Bogies shall not have any dimensional or other variant that shall in any way influence the wheel weigh distribution, safety and introduce secondary problems on the coach. The Contractor shall ensure that the bogie and associated equipment meet the reliability, functional and safety requirements taking into account the specified maintenance. The bogie and associated equipment shall be certified as ready for service.

It may be required that the Contractor proves that the weight distribution on wheel sets is within specified limits. Refer to Appendix B4 – Related Documents, IEC 1133.

**6.2.14 Fire Protection / Emergency Equipment**
The cab safety equipment, fire extinguisher and other safety equipment shall be installed where prescribed. The Contractor shall ensure that the fire protection / emergency equipment meet the reliability, functional requirements taking into account the specified maintenance. The fire protection / emergency equipment shall be tested and certified as ready for service.

6.3 TRAILER COACH

6.3.1 The trailer coach shall have the same performance requirements as the motor coach as above in 6.2 except for clauses 6.2.5, 6.2.8, 6.2.10 and 6.2.14, which do not apply.

6.4 SHOSHOLOZA MEYL MAIN LINE COACH

The Shosholoza Meyl Main Line coaches shall have the same performance requirements as the motor coaches as above in clause 6.2 except for clauses 6.2.5, 6.2.8 and 6.2.10 which do not apply
Appendix B – Technical Requirements

This Section contains the following Information:

<table>
<thead>
<tr>
<th>Appendix number</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appendix B1</td>
<td>5M/SA/1.0/GOS General Overhaul/ Upgrade Specification and Technical Guidance for Mechanical and Electrical Items.</td>
</tr>
<tr>
<td>Appendix B2</td>
<td>Modification Instructions</td>
</tr>
<tr>
<td>Appendix B3</td>
<td>Codes Of Practice and Standards</td>
</tr>
<tr>
<td>Appendix B4</td>
<td>Related Documents</td>
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<tr>
<td>Appendix B5</td>
<td>Maintenance Schedule</td>
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<tr>
<td>Appendix B6</td>
<td>Infrastructure / Regulator Requirements</td>
</tr>
<tr>
<td>Appendix B7</td>
<td>Regional Standardisation on 5M2 Components</td>
</tr>
<tr>
<td>Appendix B8</td>
<td>Approved paints and suppliers</td>
</tr>
<tr>
<td>Appendix B9</td>
<td>Available Technologies</td>
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</tbody>
</table>
APPENDIX B1 5M/SA/1.0/GOS - GENERAL OVERHAUL & UPGRADE SPECIFICATION AND TECHNICAL GUIDANCE FOR MECHANICAL AND ELECTRICAL ITEMS

Please refer to the separately attached electronic copy on CD contained in directory Appendix B.
## APPENDIX B2 AVAILABLE IMPROVEMENTS

5M2:10M all improvement will have compatibility and capability to the superseded system.

<table>
<thead>
<tr>
<th>Description</th>
<th>Ref document</th>
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<td>Micro Processors</td>
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<td>Brake cylinders, oversize</td>
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<td>Windows, Hopper</td>
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<td>Windows, Half drops</td>
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<td>HT Cabling replacement</td>
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<td>Description - area of relevance</td>
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<td>---------------------------------</td>
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<tr>
<td>1</td>
<td>5M2 Maintenance manuals</td>
<td>Description of preventative and corrective maintenance to be done on systems, sub-systems and sub-assemblies. Will be used during PS&amp;C (Intermediate-), full sheds, fault finding and repairs. Will be used as baseline for upgrades &amp; modifications. Supplied from original suppliers.</td>
</tr>
<tr>
<td>2</td>
<td>5M2 Repair manuals</td>
<td>Description of how repairs are done on sub-assemblies and components. Will also give specifications and testing procedures. Supplied from original equipment manufacturer/ suppliers.</td>
</tr>
<tr>
<td>3</td>
<td>Maintenance procedures</td>
<td>Original Equipment Manufacturer's developed maintenance standards. Used during Full- and Intermediate shedding on specific components and sub-assemblies.</td>
</tr>
<tr>
<td>4</td>
<td>Carriage and Wagon manuals (Volume 1 &amp; 2)</td>
<td>Complete instruction manual with procedures to maintain, inspect, test and measure plain trailer braking systems, bogies, wheels, draw gear and complete undercarriage. Used extensively by Carriage and Wagon maintenance personnel during shedding, fault finding, breakdowns, inspections and liftings.</td>
</tr>
<tr>
<td>5</td>
<td>High Voltage Safety instructions.</td>
<td>Safety Instructions governing the way maintenance personnel work with or on High voltage equipment. It provides the safe working procedures when working on High voltage equipment in the Rolling Stock maintenance environment.</td>
</tr>
<tr>
<td>6</td>
<td>Code of practice no. 2 Wheel and Axle manual</td>
<td>Use extensively during wheel inspections, measurements and repairs.</td>
</tr>
<tr>
<td>7</td>
<td>Code of practice no. 4 Rolling Stock Springs</td>
<td>Is applicable to determine the condition &amp; maintenance standards of springs.</td>
</tr>
<tr>
<td>8</td>
<td>Code of practice no. 29 Safe Operation of machinery, plant and equipment.</td>
<td>This governs the way machinery and equipment are maintained and tested. The overhead cranes, lathes, compressors, Air system, Depot heaters, etc. have to apply to these standards.</td>
</tr>
<tr>
<td>10</td>
<td>6M, 7M, 8M Manuals</td>
<td>Same as item 1 &amp; 2 above</td>
</tr>
</tbody>
</table>
APPENDIX B4 RELATED DOCUMENTS

The following index contains the reference to documents that were used in this Contract document and General Overhaul Specification and shall be made available on request. The more regularly used documents are included electronically in the related subfolder.

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<tr>
<th></th>
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<tbody>
<tr>
<td>05200/A</td>
<td>Examination, Strip and Repair Commonwealth Bogies. Repair Specifications</td>
<td></td>
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<tr>
<td>5M-CMS-S-EW001</td>
<td>5M2A Single-core and Multicore Cable Technical Specification</td>
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<tr>
<td>5M-CMW Doc Ref: X*001</td>
<td>5M2/5M2A Commonwealth Bogie Overhaul Instruction</td>
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<tr>
<td>5M-CMW-W-MT001</td>
<td>5M2A Traction Motor Component Overhaul Instruction</td>
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<tr>
<td>5M2A-EQ-IM-001</td>
<td>Micro Processors Installation Instruction</td>
<td></td>
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<tr>
<td>RTS-POL-0001</td>
<td>Disposal /Scraping of Surplus Rolling Stock Components</td>
<td>2002-01-15</td>
<td>Not</td>
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<tr>
<td>RTS-STD-0003</td>
<td>10M TYPE CONTRACTOR ACCREDITATION</td>
<td>2006-12-01</td>
<td>Approved</td>
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<tr>
<td>ABR 11515.2</td>
<td>Treatment of steel coaches for the prevention of corrosion</td>
<td>1962-10-06</td>
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<tr>
<td>GO Appendixes 1997-I</td>
<td>General</td>
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<td>GO Appendixes 1997-II</td>
<td>Auxiliary contacts: Type 28NN &amp; 30NN</td>
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<td>GO Appendixes 1997-III</td>
<td>Auxiliary contacts (interlock unit): Type 49NN</td>
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<td>GO Appendixes 1997-IV or Spec No RS.0001</td>
<td>Diodes and Capacitors</td>
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<td>GO Appendixes 1997-IX</td>
<td>Miniature circuit breakers (Heinman 125 V DC)</td>
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<tr>
<td>GO Appendixes 1997-V</td>
<td>Shunt straps</td>
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<tr>
<td>GO Appendixes 1997-VI</td>
<td>Support bars and support panels</td>
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<td>GO Appendixes 1997-VII</td>
<td>Contact and arcing horns</td>
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<td>GO Appendixes 1997-VIII</td>
<td>Springs</td>
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<td>Headlight alignment</td>
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<td>Temperature correction table</td>
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<td>LV and HV coils</td>
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<td>LV and HV resistors general</td>
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<td>Lubrication</td>
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<td>Modifications Electrical and Mechanical</td>
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<td>Springs</td>
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<td>BE 82-15 (Although not referenced directly in specification yet)</td>
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<td>CE.A 122/15904</td>
<td>Arrgt of earthing bonds bogie frame axlebox</td>
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<td>CE.A 272/1/15904</td>
<td>Assy of earth cable between bogie and frame</td>
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<td>CME 103 13-B09/B</td>
<td>Housing, Pantograph hookstick 1979-03-01 B</td>
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<td>CME 3984/0-100</td>
<td>Gauge (Repair) 1982-05-27 B</td>
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<td>CME 4011/0-100</td>
<td>Vacuum cylinder piston rod A</td>
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<td>CME 641/13-A97/A</td>
<td>Stencilling Diagram</td>
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<td>Code of Practice 4</td>
<td>Code of Practice No. 4. Rolling Stock Springs</td>
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<td>Code of Practice No 6</td>
<td>Code of Practice No. 6 Vacuum Brake Gear 1953-05-01 Unknown</td>
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<thead>
<tr>
<th>Code of Practice No 8</th>
<th>Code of Practice No. 8 Repair Code for Automatic Couplers</th>
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<tr>
<td>Code of Practice No. 29</td>
<td>Code of Practice No. 29</td>
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<td>Component Overhaul Manual</td>
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<tr>
<td>COP No 7, Part IF 1404</td>
<td>Code of Practice Number 7. Boilers, Air Reservoirs and Other Pressure Vessels Manufacture, Inspection, Maintenance and Repair</td>
<td>1973-02-01</td>
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<tr>
<td>CZC 16/4/1</td>
<td>Modification: Excessive Clearances between tread plate and vestibule buffers: coaches</td>
<td>1988-04-11</td>
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<td>CZR 11463</td>
<td>Buffing and Drawgear: Broken tail-rod pins</td>
<td>1972-02-03</td>
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<td>CZR 11480.2</td>
<td>Parting of suburban train sets: coupler release wires</td>
<td>1976-05-17</td>
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<td>CZR 16/3/2/3</td>
<td>Coaching stock: design and development: 5M2A Sliding Door stock: body end doorway tread plate</td>
<td>1981-01-16</td>
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<td>CZR 16/3/5/3</td>
<td>Coaching stock: Design and Development: Train Lighting: Housing for twin headlamps</td>
<td>1980-10-15</td>
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<td>CZR 16/3/6/2</td>
<td>Design and development: underframes: drawgear back stop: main line coaches</td>
<td>1983-12-08</td>
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<td>CZR 16/3/7/3</td>
<td>Coaching stock: design and development: Commonwealth bogie: horn liners</td>
<td>1979-01-12</td>
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<tr>
<td>CZR 16/4/3</td>
<td>Suburban motor coaches: Modification to pantograph Hookstick Housing</td>
<td>1978-11-30</td>
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<tr>
<td>CZR 22/3/0</td>
<td>Design and Development: twin cushion type draw gear: follower block: coaching stock</td>
<td>1981-03-13</td>
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<tr>
<td>NZR.221/11650</td>
<td>Metrication and standardisation of springs: Electrical suburban coaches</td>
<td>1976-06-03</td>
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<table>
<thead>
<tr>
<th>Document Title</th>
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</table>
| **GENERAL OVERHAUL AND UPGRADE CONTRACT**  
**SPECIFICATION**  
APPENDIX B – Technical- and General Info. | **Document Number:**  
5M/SA/1.0/GOT |
| IEC 1133 | **Rules for the Testing for Electric Rolling Stock on Completion of Construction and Before Entry into Service**  
1992-01-01 |
| IEC 165 | **Water Test**  
1973-01-01 | Second |
| K842/9000.1 | **Configuration Management Plan for the SARCC**  
2001-07-27 | 1 |
| K842/7400.1 | **Document Numbering System for the SARCC**  
2001-08-22 | 1 |
| M Lab 11/2/6/2 (84/107) | **CRACKS IN BOGIE BOLSTERS**  
1984-06-28 |
| MRS/RS/5 | **Specification for surface preparation, painting and cleaning of Metrorail Rolling Stock**  
1999-11-01 | Rev C |
| MTE 19/3/12/1 | **Manufacture of "no-go" gauge for "twin Cushion" drawgear rubber springs: stores item 88/28313**  
1986-11-04 |
| MXN 15/5/17/14 | **Class 5M/5M2A suburban couaches:safeguarding of driver's cabin and safety of footplate personnel: Modification of door lock: Modification number 5M2/7/M-5M2A/14M**  
1991-01-25 |
| PVW 11467 | **Maintenance of rubber drawgear: Waugemat "twin cushion" type drawgear**  
1976-01-28 |
| PVW 11566 | **Introduction of "B" repairs to coaches**  
1974-01-16 |
| PVW 20/5/3/5/2/1 | **Sliding doors: Electric suburban coaches 5M: compressed air supply system: overhaul and repair**  
1979-04-26 |
| Referred to as 'new floor specification' in Overhaul Specification. No document reference. | **Floor System Requirements**  
2000-11-21 |
| RR 16/3/1/3 | **Repair procedure: Corroded cladding and roofs: Modern steel coaches: all types**  
1990-08-28 |
| RR15/5/17/P | **Classes 5M2 and 5M2A 3rd Class Commuter Motor and Trailer Coaches: Vestibule Partition**  
1989-04-14 |
<table>
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<tr>
<th>Document Number</th>
<th>Specification Description</th>
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<tr>
<td>RS/AE1/1999</td>
<td>Pantograph Type AE1 Overhaul Specification</td>
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<td>RS/DH-16/1991</td>
<td>Compressor Type DH-16 Westinghouse</td>
<td>1991-01-01</td>
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<tr>
<td>RS/V V - 64/1991</td>
<td>Compressor: Knorr-Bremse Type VV-64</td>
<td>1991-05-07</td>
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<td>RW 20/4/3/1</td>
<td>Quality Assurance: Carriage and Wagon Wheels: By shop 12 staff</td>
<td>1981-04-03</td>
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<td>RW 20/4/3/1</td>
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<td>1981-04-03</td>
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<td>RW 20/4/4/1</td>
<td>Flanging of Brake Blocks</td>
<td>1981-01-21</td>
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<tr>
<td>RW 20/5 Clause 3.1 to 3.1.3. Should be RW 22/5</td>
<td>Quality Assurance: Carriage and Wagon Wheels: By shop 12 staff</td>
<td>1985-04-04</td>
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<td>RW 22/2/5</td>
<td>Vacuum brake cylinder piston strokes: All wagons and coaches fitted with Vacuum brakes and or air brakes and slack adjusters</td>
<td>1990-06-15</td>
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<tr>
<td>S.RM/WE15/8/1/2/3</td>
<td>Wheel profiles and Gauging: All Rolling Stock</td>
<td>1995-08-22</td>
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<tr>
<td>TL 22/22/5</td>
<td>Design and Development: Commonwealth Bogies: Side bearer clearances and bogie centre liners</td>
<td>1986-01-21</td>
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<td>TXD 15/4/26/5</td>
<td>Repair of drawgear yokes</td>
<td>1984-04-20</td>
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<td>TXM 15/5/17/16</td>
<td>Crossing treadplates</td>
<td>1987-08-24</td>
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<td>TXM 15/5/27/9</td>
<td>Classes 5M2 and 5M2A Motor Coaches and Driving Trailers: Design and Development: Twin Sealed Beam Headlamp</td>
<td>1986-06-05</td>
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<td>TYE 15/5/17/11</td>
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<td>1985-07-27</td>
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<td>TYE 15/5/17/13</td>
<td>Stainless Steel Strip for sliding door entrance</td>
<td>1984-01-17</td>
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<td>TYE 15/5/17/16</td>
<td>5M2 and 5M2A Electric suburban coaches: Buffing gear: washer: amendment to drawings</td>
<td>1984-02-28</td>
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<td>TYE 15/5/17/26</td>
<td>5M2 and 5M2A suburban coaches: Fitting of back stops by means of &quot;Huck&quot; bolts</td>
<td>1985-01-07</td>
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<td>TYE 15/5/22/6</td>
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<td>1984-05-15</td>
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<td>TYM 15/5/17/13</td>
<td>Classes 5M2 &amp; 5M2A (series 1&amp;2) suburban coaches: Change in method of opening electric switchbox doors</td>
<td>1986-10-05</td>
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<tr>
<td>TYM 15/5/17/8</td>
<td>Classes 5M2 &amp; 5M2A Coaches and Motive trailer coaches: Seats in Drivers’ cabs</td>
<td>1986-04-11</td>
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<tr>
<td>TZM 15/5/17/13</td>
<td>Classes 5M2 &amp; 5M2A Coaches and Motive Trailer Coaches: Driver side door: Replacement of threshold plate</td>
<td>1986-05-01</td>
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<tr>
<td>TZM 15/5/17/8</td>
<td>Classes 5M&amp;5M2A (series 1-9) suburban coaches: Seat back frame: Fitting of strengthening plate</td>
<td>1986-04-10</td>
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<td>TZM 15/5/17/8</td>
<td>Classes 5M&amp;5M2A (series 1-9) suburban coaches: Removal of seat armrests and introduction of drainage holes.</td>
<td>1986-10-23</td>
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<td>TZM 15/5/18/9</td>
<td>5M2 and 5M2A Electric suburban coaches and 5E1, Electric locomotives: bogie centre bearing liners: item no. 68/040440</td>
<td>1986-06-13</td>
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<tr>
<td>WIS-0001</td>
<td>Repair Document for 5M2A and 10M Metro Coach Underframes</td>
<td>2000-10-18</td>
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</table>
APPENDIX B5 MAINTENANCE SCHEDULE

PRASA's specifies the following Preventative Maintenance opportunities:

**Passenger Safety & Comfort (PS&C or) (A Shed)**
In service inspection which entails measurement, cleaning, change out, repair and testing of all safety critical aspects such as wheels, doors, hooters, brakes, lights and control instrument gauges. Check passengers comfort requirements e.g. heating. Check oil levels and brush wear on all rotating machines. Do non-critical in-service repairs.

**Intermediate shed (IS) (B Shed)**
This intervention includes the Passenger Safety & Comfort inspections as well as maintenance specific interventions on mission critical components.

**Full Shedding (FS) (C Shed)**
The Full Shedding is carried out at 18,000km intervals and is an in-service preventative maintenance program. The program entails the inspection, condition monitoring, lubricating, cleaning and/or replacing of all High Tension (HT) and low Tension (LT) electrical and mechanical, roof equipment, body and undercarriage. Suitably qualified personnel must do the required work in the inspection pits in the allocated maintenance sheds. Program work and smaller modifications are done. Sequence, power- and brake tests are done after completion of work and the train set is then certified as road worthy and ready for service. All Passenger Safety & Comfort maintenance is also done.

**Carriage and Wagon Lifting (CL) (F Shed)**
Scheduled 18 month preventative maintenance of undercarriage, frame, body and brake system on Plain Trailers, and on Motor Coaches as-and-when they undergo Corrective Maintenance. Coaches are withdrawn from service for the inspection, measurement, replacement or renewal of all defective or worn components or parts. Before being placed back into service, all systems and components are tested and the coach is then declared roadworthy. Work is performed by suitably qualified personnel.

In addition to the above, corrective maintenance, coach repair, component change out, component repair and heavy maintenance is also required. These are currently planned at 8 years for bogies and 12 years for body overhauls but the future plan is that repairs shall be done on condition based maintenance.

The Contractor shall note that PRASA is in the process to instate a new maintenance regime which is summarised on the following Table.
### 2nd Level Maintenance

<table>
<thead>
<tr>
<th>PSC</th>
<th>Every two weeks, as per current PRASA requirements. Include inspect floors, etc., if attention required obtain material and plan in for next FS</th>
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<tbody>
<tr>
<td>IS</td>
<td>Maintenance specific interventions on mission critical components</td>
</tr>
<tr>
<td>FS</td>
<td>Maintenance based on 18,000 km periodicity</td>
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</table>

Basic FS is as per current PRASA requirements

### 3rd Level Maintenance

| CL1 | Carriage and Wagon lifting – drawgear, brake system, coach steering and support                                               |
| CL2 | Carriage and Wagon lifting as CL1 plus vacuum cylinders, other components to be confirmed                                     |
| IBR | Includes all the activities CL1 and CL2 but includes a intermediate bogie overhaul, checking bogie straightness, snubber condition and bogie cracks. |
| GO  | GO bogies, HV contactors, Traction motors, Compressor, Exhauster plus bodies, wiring, etc.                                      |

See Table 1 below for details

**Cycle:** GO - CL1 - CL2 - IBR - CL1 - CL2 - GO  
18 and 36 month periodicity CL  
4.5 year periodical IBR  
12 year periodicity GO

GO replaces CL where coincident

GO replaces IBR where coincident

**Deferment**

If GO deferred beyond planned periodicity cycle of CL should be maintained at 18 month periodicity  
If GO1 deferred significantly beyond planned periodicity (12 years) GO2 should be carried out
<table>
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<tr>
<th>Table 1: Proposed Preventative Maintenance Content</th>
<th>CL1</th>
<th>CL2</th>
<th>IBR</th>
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<th>GO2</th>
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<td>Air pipework and hoses renew</td>
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<td>Air reservoirs overhaul</td>
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<td>Valves and cocks overhaul</td>
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<td>Brake rigging examine and repair on condition</td>
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<td>Inspect</td>
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<td>Vacuum exhauster</td>
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<td>Bodysteel and structural corrosion full repair</td>
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<td>Coupler and Drawgear Overhaul</td>
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<td>Bogie Examine</td>
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APPENDIX B6 INFRASTRUCTURE / REGULATOR REQUIREMENTS

For the purposes of IEC Publications the rated supply system voltage (U) shall be taken as 3,150 VDC.

The nominal overhead supply voltage shall be taken as 3.3 kV which under normal working conditions may vary between 2.7 kV and 3.9 kV and under abnormal conditions may vary between 2.0 kV and 4.0 kV.

The overhead system comprises a copper catenary, copper contact wire and aluminium feeder with cross sectional areas of 80mm², 161mm² and 800mm² respectively.

The normal working height of the contact wire is 5,000mm but this may vary between 4,200mm and 6,000mm. The maximum contact wire stagger is 300mm on either side of the track centre line.

The ordinary running rail, which is not earthed, constitutes the negative return of the system and one (normally) or both rails may be used for this purpose.
APPENDIX B7. SUPPLIER AVAILABILITY LIST ON 5M2 AND 10M COMPONENTS

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<th>Tshwane</th>
<th>Wits</th>
<th>PE/EL</th>
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PRASA has an obligation to open up opportunities for small and emerging suppliers. PRASA therefore reserves the right to continually scan the market to procure new suppliers.
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## GENERAL OVERHAUL AND UPGRADE
## CONTRACT SPECIFICATION
## APPENDIX B – Technical- and General Info.

**PRODUCT DESCRIPTION** | **COACH TYPE** | **SUPPLIER** | Western Cape | KwaZulu Natal | Tshwane | Wits | PE/EL
---|---|---|---|---|---|---|---
DoorGear Outside Sliding | ALL 10M | IMFUYO | X | X | X | X | X
DoorGear Outside Sliding | ALL 10M | SIYAHAMBA TRADING (PTY) LTD | X | X | X | X
DoorGear Pocket Sliding | 5M2A | SIYAHAMBA TRADING (PTY) LTD | X | X | X | X
Driver's Brake Valve | 5M2A | KNORR BREMSE SA (PTY) LTD | X | X | X
Driver's Brake Valve | 6M/8M | WABTEC - NGOLOVAN CC | X | X | X | X | X
Driver's Brake Valve Single Handle | ALL 10M | ROLLMECH | X | X | X | X | X
Driver's Control Key Switch | ALL 10M | ROLLMECH | X | X | X | X | X
Driver's Door Key | ALL | ABLOY | X | X | X | X | X
EVV | 5M2A | KNORR BREMSE SA (PTY) LTD | X | X | X | X
Exhauster IME-10 | ALL | IMFUYO | X | X | X | X
Exhauster LPS 44 | ALL | KNORR BREMSE SA (PTY) LTD | X | X | X | X | X
Exhauster LPS 54 | ALL | KNORR BREMSE SA (PTY) LTD | X | X | X | X | X
Fire Extinguishing System 24Vdc Solenoid Actuator | ALL 10M | CHUBB FIRE (PTY) LTD MIDRAND | X | X | X | X | X
Fire Extinguishing System FM2 | ALL 10M | CHUBB FIRE (PTY) LTD MIDRAND | X | X | X | X | X
Gear Wheel Resilient Bushes | ALL | GUMMI-METALL-TECHNIK GmbH | X | X | X | X | X
Gear Wheel Resilient Bushes | ALL | SILVERTOWN UK c/o E M ARNOT (PTY) LTD | X | X | X | X | X
Guard's Control Key Switch (RAD GK1) | ALL 10M | ABLOY | X | X | X | X
Guard's Control Key Switch (RAD GK1) | ALL 10M | RADEL | X | X | X | X | X

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Document Title: **GENERAL OVERHAUL AND UPGRADE CONTRACT SPECIFICATION**
APPENDIX B – Technical- and General Info.
## PRODUCT DESCRIPTION

<table>
<thead>
<tr>
<th>Description</th>
<th>Coach Type</th>
<th>Supplier</th>
<th>Western Cape</th>
<th>KwaZulu Natal</th>
<th>Tshwane</th>
<th>Wits</th>
<th>PE/EL</th>
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<tr>
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### General Overhaul and Upgrade Contract Specification

**Appendix B – Technical- and General Info.**

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Coach Type</th>
<th>Supplier</th>
<th>Western Cape</th>
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<th>Tshwane</th>
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**Document Title:** General Overhaul and Upgrade Contract Specification  
**Document Type:** Contract  
**Document Number:** 5M/SA/1.0/GOT
It is PRASA’s intention to standardise.
APPENDIX B8 – APPROVED PAINTS AND SUPPLIERS

CRITERIA FOR APPROVAL

1. Manufacturers need to have implemented a Quality Management system.
2. Materials to comply with the performance requirements of the relevant PRASA RAIL paint specification.
3. Paint system to have passed a field application test in a paint workshop.
4. Paint system to have an acceptable performance with regard to gloss retention and cleaning ability during a field trial up to one year.

A. APPROVED EXTENSION WATER BASED PAINT SYSTEM

1. PRIMERS

   1.1 Emulsion primer: PLASTIC PAINTS = SAT 248 and SAT 649
   1.2 Emulsion primer: CROUS CHEMICALS = FEYCO Alponit 2150

2. FILLERS

   2.1 Epoxy Filler: CROUS CHEMICALS = FEYCO Alpopox 3028
   2.2 Epoxy Filler: CROUS PAINTS = Etokat Aqua Filler

3. POLYURETHANE ENAMEL TOP COATS

   3.1 PLASCON PAINTS – Nuovern Aqua Golden Yellow (SABS B 49) and Dust Grey RAL 7037

   To be field before approval: CROUSE CHEMICALS = FEYCO Alpopur SP Emaillack Yellow and Grey

B. APPROVED EXTERIOR SOLVENT BASED MATERIALS:

1. PRIMERS:

   1.1 Epoxy Primers: PLASON = Chromate Primers SAT 356
   1.2 PLASON = Coast coat etch primers SNK2
   1.3 Emulsion Primer: COUS CHEMICALS = FEYCO Alponit 2150. (WATER BASED)
   1.4 KAPCI COATING: K880 Epoxy Primer, K881 Epoxy Hardener, K885 Epoxy Thinner
2. **EPOXY FILLERS:**
   - 2.1 CROUS CHEMICALS = FEYCO Alpopox 3028
   - 2.2 PLASCON Etokat aqua filler
   - 2.3 KAPCI COATING: K860 Body Putty, K861 Body Putty Hardener, K605 Degreaser

3. **POLYURETHANE ACRYLIC ENAMEL TOP COATS:**
   - 3.1 CROUS CHEMICALS = FEYA Alpocry Emaillack SP
   - 3.2 DULUX = Acrathane 595 Line
   - 3.3 PLASCON PAINTS = SAT 361 (Golden Yellow) and SAT 511 (Dust Grey)
   - 3.4 PLACON PAINTS = Plascon Acraline 2K
   - 3.5 KAPCI COATING: R110 Metro Rail Yellow, R120 Metro Rail Grey, R130 K652 Fast Hardener, K600 Thinner 2K.

C. **APPROVED INTERIOR PAINTS SYSTEM:**

1. **PRIMERS:**
   - 1.1 CROUS CHEMICALS = FEYCO Alponit 2150 waterboard phosphate primer.
   - 1.2 HSH = Etch and sealer
   - 1.3 **To be field-tested for approval:** CHEMRITE CAOTING = etch primer.

2. **TOP COATS:**
   - 2.1 CROUS CHEMICALS = FEYCO Alpopur SP waterbased polyurethane.
   - 2.2 DULUX = Generation 11 water based epoxy topcoat. (requires no priming)
   - 2.3 HSH = Interplan 1000 acrylic emulsion with hardener.
   - 2.4 PLASCON PAINTS = Nuvoven water based polyurethane. (Requires no priming)
   - 2.5 **To be field-tested for approval.** CHEMRITE COATING: Aquathane water based polyurethane.
## Appendix B9 – AVAILABLE TECHNOLOGIES

<table>
<thead>
<tr>
<th>Technology Description</th>
<th>Current Supplier</th>
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<tbody>
<tr>
<td>1 Single Handle Master Controller</td>
<td>Rollmech</td>
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<tr>
<td>2 5M2A and 10M Micro Processor</td>
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</tr>
<tr>
<td>3 10M Coach Controller</td>
<td>Imfuyu</td>
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<tr>
<td>4 Driver Indication Panel</td>
<td>Imfuyu</td>
<td></td>
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<tr>
<td>5 Door Warbler</td>
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<tr>
<td>6 Battery Charger</td>
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<td>7 Public Address System</td>
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<tr>
<td>8 Train number indicator</td>
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</table>
B10 PROFESSIONAL TECHNICAL STAFF REQUIREMENTS

The appointed company will be required to provide a Project team and experienced staff
- Project/Production Manager
- Managerial and supervisory personnel;
- Qualified technicians and artisans personnel to work on all systems of the PRASA rolling
  Stock as defined in the GO Specifications;
- Quality personnel.
- Electrical and Mechanical Engineer

Details of the minimum qualifications for the staff listed above are outlined below. The professional/qualification certificates submitted by the bidders should have been certified within three (3) months prior to the closing date.

PROJECT/PRODUCTION MANAGER
The desired minimum qualifications for the Project/Production Manger are as follows:
- Ten (10) years of experience in Production /Manufacturing or Maintenance environment.
- Five (5) of the experience should be in the Project Management environment in a similar projects disciplines.

MANAGERIAL AND SUPERVISORY PERSONNEL
The desired minimum qualifications for the Managerial and Supervisory staff are as follows:
- Qualified Artisan or Engineering Technician with
- Ten (10) years’ experience in a similar; application of their expertise. Ideally in a Production, Manufacturing or Maintenance environment.
- Five (3) of the ten (10) years should be in a supervisory position with proven track record of managing output and staff.

ARTISANS
The following specialist artisan grades will be covered in this section. The minimum desired minimum qualifications for these grades will be determined by their application and the critically of their work that they perform:
- Electrical Fitters: As per requirement but it is expected that the Tenderer will have the necessary abilities of an Electrical Fitter with the capability to do fault finding, In- service support, guarantee repairs, roadworthy certification etc. For these activities the following qualifications are required:
  o Level 3 Electrical fitter with a minimum of 8 years’ experience in Rolling Stock maintenance/production.
  o With 3 of the 8 years used as Faulty and/or in service support technician;
  o A very good understanding of 5M2A/10M power and control circuit.
- Electricians: As per requirement but it is expected that the contractor would be able to do wiring, terminate connections and testing of looms, both LT wiring and HT cabling.
  o Qualified electrician required to safely test HT circuits, continuity test and faultfinding on all wiring circuits.
  o Minimum of 3 year experience.
• **Fitters:** As per requirement but it is expected that the contractor will have the ability to fit and repair mechanical components like air- and vacuum pipe work, valves, pantograph, bogies, rotating machines etc.
  o Qualified fitter required to safely repair and test mechanical systems and components.
  o The necessary experience will be required to ensure quality of work depending on the criticality of the work.
  o Normal experience of min of 3 years
  o Bogie and rotating machines experience of 5 years.

• **Coach builders:** This grade of artisan is responsible for work on the coach body. This will include the flooring, insulation, end and sliding doors, windows, side panels and roofing. This will include external steel manufacturing and repair activities.
  o At least 1 person with 8 year experience with coach building or panel beating experience.
  o Not welding certification required

• **Trimmers:** This grade of artisan is normally responsible for work on the coach interior and related components like seating on Metro and Metro Plus coaches.
  o Access to a trimmer with the necessary experience is required.

• **Carriage and wagon examiner and repairer:** As per the safety requirement but it is expected that the contractor will have skill to inspect, fault find, fit, repair and overhaul mechanical components associated with the braking-, coupler systems, bogie overhaul and wheels etc.
  o Qualified examiner and repairer to safely repair, overhaul and test the above mechanical systems and components.
  o The necessary experience will be required to ensure quality of work depending on the criticality of the work.
  o Normal experience of min of 3 years
  o Certification and Issue of Road Worthy Certificate to be done by a 5 year experienced individual.

• **Welders:** Welding during coach refurbishment is not normally associated with qualified artisans, but it is required that the contractor have access to a Certified Welder for the preparation, welding and testing of welding on the undercarriage, bogie and coupling systems: The qualifications for this grade is:
  o Qualified welder and certified by a acknowledged certification body to do work on the above critical systems.
  o Minimum of 5 years’ experience in a manufacturing of other production environment.
  o Minimum Basic NDT qualification like dye penetrant method to assess the quality of weld
MECHANICAL AND ELECTRICAL DESIGN ENGINEER
It is expected that Contractors should have access to a qualified Mechanical and Electrical Design Engineer for critical repairs where the repairs require either design and/or safety validation with the following qualifications:

- BSc or B-Tech Degree in Mechanical or Electrical Engineering.
- ECSA registration as a Professional Engineer/Technologist.
- Ten (10) years post graduating experience.
- Five (5) of the ten (10) years should be in mechanical design experience including Construction Management.

QUALITY ASSURANCE
The desired minimum qualifications for the Quantity Manager are as follows:

- Must have at least be a qualified Artisan or Engineering Technician;
- Qualification in ISO/SABS 9000 quality systems
- 10 year experience as Artisan or Engineering technician within a production or maintenance environment.
- 3 years’ experience as supervisor;
- 3 years’ experience as a Quality Assurer or Quality Controller within a Engineering Environment.
This Section contains the following Information and is available electronically on the CD in directory Appendix C.

<table>
<thead>
<tr>
<th>Document Reference</th>
<th>Document Title</th>
<th>No. of Pages</th>
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<tr>
<td>Appendix C1</td>
<td>Rolling Stock General Overhaul Financial Guidelines for Compliance to the Public Finance Management Act (PFMA)</td>
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PROCESS FLOW AND DESCRIPTION

1.1. General Overhaul, Upgrade Process
1.2 Ad Hoc Repairs

2. RECORDS RETAINED

All completed job tickets and attachments (invoices, delivery notes, etc.) are required to be kept on file for reference for all General Overhauls, and Contracted Repair Works/Services.

The Contractor to provide the following documentation:

- Test Bench Reports as applicable
- Test and Commissioning Report covering all sub systems as applicable

This documentation shall be submitted in a Data Book for each vehicle and trainset and/or module as applicable.

3. ATTACHMENTS

None
ANNEXURE E – AD-HOC WORK

The ad-hoc work shall constitute those activities not normally associated with and where they are not part the General Overhaul and/or Upgrade refurbishment process.

Typically the ad-hoc works shall include, but shall not be limited to activities like:

- Wreck repair due to collisions and coach burn ups:
  
- Heavy repair of Rolling Stock including but not limited to, eg.
  - Intermediate overhauls
  - rewiring of Rolling Stock,
  - repaint,
  - asbestos removal,
  - bogie welds

- prototype the establishment/evaluation of repair and/or testing procedures

Should Contractors be required to perform any of the above, it shall be treated as additional work and shall be managed on per quote basis and therefore subject to PRASA approval before commencement of works. Where applicable industry standard rates, e.g. SEIFSA shall be applied. The assessment criteria for success and/or failure shall be set out in the specific request for quotation for the ad-hoc work requested.
ANNEXURE F – ADJUSTMENT CLAUSE

CONTRACT PRICE ADJUSTMENTS: ALL ROLLING STOCK

The contract price shall be subject to contract price adjustments on an annual basis as defined below.

The base date will be calculated at the end of March of the preceding year and shall be based on the indices published by the Steel and Engineering Industry Federation of South Africa (SEIFSA) in the calculation of its adjustment.

The adjustment shall be based on actual 12 months rolling published indices. (or the latest available indices at end March of every PRASA financial year end)

The Adjustment Clause constitutes the following cost elements:

\[
\text{Adjustment}(\%) = K_{\text{Labour}} + P_{\text{Commodities}} + P_{\text{Elect} & \text{Water}} + P_{\text{Paint}} + P_{3\text{CR12}} + P_{\text{Mech}} + P_{\text{Elect}} + K_{\text{Copper}} + T_{\text{Road-Freight}}
\]

Where:

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<tr>
<th>SEIFSA</th>
<th>Reference Table</th>
<th>Weighting</th>
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<td>( K_{\text{Labour}} ) = \text{Actual labour cost (All hourly paid employees)}</td>
<td>Table C-3</td>
<td>57%</td>
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<tr>
<td>( P_{\text{Commodities}} ) = \text{Production price index (All commodities for consumption in SA)}</td>
<td>Table U</td>
<td>17%</td>
</tr>
<tr>
<td>( P_{\text{Paint}} ) = \text{Paint}</td>
<td>Table M</td>
<td>1%</td>
</tr>
<tr>
<td>( P_{3\text{CR12}} ) = \text{Corrosion resisting steel 3CR12 (Cold rolled plate)}</td>
<td>Table Q-1(A)</td>
<td>2%</td>
</tr>
<tr>
<td>( P_{\text{Mech}} ) = \text{Statistics SA - production price index (Mechanical engineering materials)}</td>
<td>Table G</td>
<td>4%</td>
</tr>
<tr>
<td>( P_{\text{Elect}} ) = \text{Statistics SA - production price index (Electrical engineering materials)}</td>
<td>Table G</td>
<td>7%</td>
</tr>
<tr>
<td>( K_{\text{Copper}} ) = \text{Ruling price of certain electrical cable manufacturing materials (Copper)}</td>
<td>Table N</td>
<td>6%</td>
</tr>
<tr>
<td>( T_{\text{Road-Freight}} ) = \text{Road Freight Costs}</td>
<td>Table I-2</td>
<td>1%</td>
</tr>
</tbody>
</table>

Total: 100%