

TENDER DOCUMENT GOODS AND SERVICES		 CITY OF CAPE TOWN ISIXEKO SASEKAPA STAD KAAPSTAD
SUPPLY CHAIN MANAGEMENT		
SCM - 542	Approved by Branch Manager: February 2024	Version: 10

TENDER NO: 303G/2023/24

TENDER DESCRIPTION: SUPPLY AND DELIVERY OF 18M LOW FLOOR/LOW-ENTRY DIESEL POWERED BUSES FOR THE MYCITI METRO SOUTH EAST (MSE) ROLL-OUT

CONTRACT PERIOD: 36 MONTHS FROM THE COMMENCEMENT DATE OF THE CONTRACT

CLOSING DATE 28 August 2024

CLOSING TIME 10:00 am

TENDER BOX NUMBER 136

TENDER FEE R200

Non – refundable tender fee payable to the City of Cape Town (CCT) for a hard copy of the tender document. This fee is not applicable to website downloads of the tender document.

TENDERER	
NAME of Company/Close Corporation or Partnership / Joint Venture/ Consortium or Sole Proprietor /Individual (hereinafter the “Tenderer”)	
TRADING AS (if different from above)	
Registration number of Tenderer	
Physical address and chosen domicilium citandi et executandi of Tenderer	

NATURE OF TENDER OFFER (please indicate below)	
Main Offer (see clause 2.2.11.1)	
Alternative Offer (see clause 2.2.11.1)	

TENDER SERIAL NO.:
SIGNATURES OF CCT OFFICIALS AT TENDER OPENING
1
2
3

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THE TENDER

T.1 GENERAL TENDER INFORMATION

TENDER ADVERTISED	:	28 June 2024
SITE VISIT/CLARIFICATION MEETING	:	Time: 10:00 on Date: 19 July 2024 (Not compulsory, but strongly recommended)
VENUE FOR SITE VISIT/ CLARIFICATION MEETING	:	Auditorium Boardroom, 1 st Floor, Disaster Risk Management Centre c/o Frans Conradie & Hugo Street, Cape Town (Behind Goodwood Fire Station) Virtual meeting details: https://teams.microsoft.com/l/meetup-join/19%3ameeting_YmViNDE2ZDctZTVjNC00NDImlWJjINTQtY2UwZTcxZGJmMzM5%40thread.v2/0?context=%7b%22Tid%22%3a%2264e0d454-c210-4fcc-ba52-ba5914a0cd46%22%2c%22Oid%22%3a%2256e68eab-9582-4a0c-bc4a-16088c6dd90b%22%7d
TENDER BOX & ADDRESS	:	Tender Box as per front cover at the Tender & Quotation Boxes Office , 2 nd Floor (Concourse Level), Civic Centre, 12 Hertzog Boulevard, Cape Town. : The Tender Document (which includes the Form of Offer and Acceptance) completed and signed in all respects, plus any additional supporting documents required, must be submitted in a sealed envelope with the name and address of the tenderer, the endorsement "TENDER NO. 303G/2023/24: - TENDER DESCRIPTION: SUPPLY AND DELIVERY OF 18M LOW FLOOR/LOW-ENTRY DIESEL POWERED BUSES FOR THE MYCITI METRO SOUTH EAST (MSE) ROLL-OUT" , the tender box number, and the closing date indicated on the envelope. The sealed envelope must be inserted into the appropriate official tender box before closing time. If the tender offer is too large to fit into the abovementioned box or the box is full, please enquire at the public counter (Tender Distribution Office) for alternative instructions. It remains the tenderer's responsibility to ensure that the tender is placed in either the original box or as alternatively instructed.
CCT TENDER REPRESENTATIVE	:	Email: SCM.UrbanMobility1@capetown.gov.za

TENDERERS MUST NOTE THAT WHEREVER THIS DOCUMENT REFERS TO ANY PARTICULAR TRADE MARK, NAME, PATENT, DESIGN, TYPE, SPECIFIC ORIGIN OR PRODUCER, SUCH REFERENCE SHALL BE DEEMED TO BE ACCOMPANIED BY THE WORDS "OR EQUIVALENT"

T.2 CONDITIONS OF TENDER

2.1 General

2.1.1 Actions

2.1.1.1 The City of Cape Town (hereafter referred to as the “CCT”) and each tenderer submitting a tender offer (hereinafter referred to as the “tenderer” or the “supplier”) shall comply with item T.2 of this Tender Document Goods and Services (hereinafter referred to as these “Conditions of Tender”). The tenderer and the CCT shall collectively hereinafter be referred to as the “Parties” and individually a “Party”). In their dealings with each other, the Parties shall discharge their duties and obligations as set out in these Conditions of Tender, timeously and with integrity, and behave equitably, honestly and transparently, and shall comply with all legal obligations imposed on the Parties herein and in accordance with all applicable laws.

The Parties agree that this tender Tender Document Goods and Services (hereinafter referred to as the “Tender” / “Tender Document”), its evaluation and acceptance and any resulting contract shall also be subject to the CCT’s Supply Chain Management Policy (‘SCM Policy’) that was applicable on the date the bid was advertised and as amended from time to time. If the CCT adopts a new SCM Policy which contemplates that any clause therein would apply to the Contract emanating from this tender (hereinafter referred to as the “Contract”), such clause shall also be applicable to that Contract. Please refer to this document contained on the CCT’s website.

Abuse of the supply chain management system is not permitted and may result, inter alia, (1) in the tender being rejected; (2) cancellation of the contract; (3) restriction of the supplier, and/or (4) the exercise by the CCT of any other remedies available to it as provided for in the SCM Policy and/or the the Contract and/or this tender and/or any applicable laws .

2.1.1.2 The CCT, the tenderer and their agents and employees involved in the tender process shall avoid conflicts of interest and where a conflict of interest is perceived or known, declare any such conflict of interest, indicating the nature of such conflict. Tenderers shall declare any potential conflict of interest in their tender submissions. Employees, agents and advisors of the CCT shall declare any conflict of interest to the CCT at the start of any deliberations relating to the procurement process or as soon as they become aware of such conflict, and abstain from any decisions where such conflict exists or recuse themselves from the procurement process, as appropriate.

2.1.1.3 The CCT shall not seek, and a tenderer shall not submit a tender, without having a firm intention and capacity to proceed with the contract.

2.1.2 Interpretation

2.1.2.1 The additional requirements contained in Annexure F to the contract (hereinafter referred to as the “returnable documents” / “Returnable Schedules”) are part of these Conditions of Tender and are specifically hereby incorporated into these Conditions of Tender.

2.1.2.2 These Conditions of Tender and returnable Documents which are required for CCT’s tender evaluation purposes herein, shall form part of the Contract arising from the CCT’s corresponding invitation to tender.

2.1.3 Communication during tender process

Verbal or any other form of communication, from the CCT, its employees, agents or advisors during site visits/clarification meetings or at any other time prior to the award of the Contract, will not be regarded as binding on the CCT, unless communicated by the CCT in writing to suppliers / tenderers by its Director: Supply Chain Management or his nominee. Similarly, any communication of the tenderer / supplier that is not reduced to writing by the tenderer / supplier, its employees, agents or advisors, shall not be regarded as binding on the CCT, unless communicated to the CCT in writing by the suppliers / tenderers, or their duly authorised representatives.

2.1.4 The CCT's right to accept or reject any tender offer

2.1.4.1 The CCT may accept or reject any tender offer and may cancel the corresponding tender process or reject all tender offers at any time before the formation of a contract. The CCT may, prior to the award of the tender, cancel a tender if:

- (a) due to changed circumstances, there is no longer a need for the services, works or goods requested;
or
- (b) funds are no longer available to cover the total envisaged expenditure; or
- (c) no acceptable tenders are received;
- (d) there is a material irregularity in the tender process; or
- (e) the Parties are unable to negotiate market related pricing.

The CCT shall not accept or incur any liability to a tenderer for such cancellation or rejection, but will give written reasons for such action upon receiving a written request to do so.

2.1.5 Procurement procedures

2.1.5.1 General

Unless otherwise stated in the Conditions of Tender, a contract will be concluded with the tenderer who scores the highest number of tender adjudication points.

The CCT intends to appoint a single tenderer for the allocation of work. If insufficient responsive bids are received, the CCT reserves the right not to appoint a tenderer at all.

The contract period shall be for a period of **thirty six (36)** months from the commencement date of the contract.

2.1.5.2 Proposal procedure using the two stage-system

A two-stage system will not be followed.

2.1.5.2.1 Tenderers shall submit in the first stage only technical proposals. The CCT shall invite all responsive tenderers to submit tender offers in the second stage, following the issuing of applicable procurement documents.

2.1.5.2.2 The CCT shall evaluate tenders received during the second stage in terms of the method of evaluation stated in the Conditions of Tender, and award the contract in terms of these Conditions of Tender.

2.1.5.3 Nomination of Standby Bidder

"Standby Bidder" means a bidder, identified by the CCT at the time of awarding a bid that will be considered for award should the contract be terminated for any reason whatsoever. In the event that a contract is terminated during the execution thereof, the CCT may consider the award of the contract, or non-award, to the Standby Bidder in terms of the procedures included its SCM Policy, as amended from time to time.

2.1.6 Objections, complaints, queries and disputes/ Appeals in terms of Section 62 of the Systems Act/ Access to court

2.1.6.1 Disputes, objections, complaints and queries

In terms of Regulations 49 and 50 of the Local Government: Municipal Finance Management Act, 56 of 2003 Municipal Supply Chain Management Regulations (Board Notice 868 of 2005):

- a) Persons aggrieved by decisions or actions taken by the CCT in the implementation of its supply chain management system, may lodge within 14 days of the decision or action, a written objection or complaint or query or dispute against the decision or action.

2.1.6.2 Appeals

- a) In terms of Section 62 of the Local Government: Municipal Systems Act, 32 of 2000 a person whose

rights are affected by a decision taken by the CCT, may appeal against that decision by giving written notice of the appeal and reasons to the City Manager within 21 days of the date of the notification of the decision.

- b) An appeal must contain the following:
 - i. Must be in writing
 - ii. It must set out the reasons for the appeal
 - iii. It must state in which way the Appellant's rights were affected by the decision;
 - iv. It must state the remedy sought; and
 - v. It must be accompanied with a copy of the notification advising the person of the decision
- c) The relevant CCT appeal authority must consider the appeal and **may confirm, vary or revoke** the decision that has been appealed, but no such revocation of a decision may detract from any rights that may have accrued as a result of the decision.

2.1.6.3 Right to approach the courts and rights in terms of Promotion of Administrative Justice Act, 3 of 2000 and Promotion of Access to Information Act, 2 of 2000

The sub- clauses above do not influence any affected person's rights to approach the High Court at any time or its rights in terms of the Promotion of Administrative Justice Act (PAJA) and Promotion of Access to Information Act (PAIA).

- 2.1.6.4** All requests referring to sub clauses 2.1.6.1 and 2.1.6.2 must be submitted in writing to:
The City Manager - C/o the Manager: Legal Compliance Unit, Legal Services Department, Office of the City Manager
Via hand delivery at: 20th Floor, Tower Block, 12 Hertzog Boulevard, Cape Town 8001
Via post at: Private Bag X918, Cape Town, 8000
Via email at: MSA.Appeals@capetown.gov.za

- 2.1.6.5** All requests referring to clause 2.1.6.3 must be submitted in writing to:
The City Manager - C/o the Manager: Access to Information Unit, Legal Service Department, Office of the City Manager
Via hand delivery at: 20th Floor, Tower Block, 12 Hertzog Boulevard, Cape Town 8001
Via post at: Private Bag X918, Cape Town, 8000
Via email at: Access2Info.Act@capetown.gov.za

- 2.1.6.6 The minimum standards regarding accessing and 'processing' of any personal information belonging to another in terms of Protection of Personal Information Act, 2013 (POPIA).**
For purposes of this clause 2.1.6.6, the contract and these Conditions of Tender, the terms "data subject", "Personal Information" and "Processing" shall have the meaning as set out in section 1 of POPIA, and "Process" shall have the corresponding meaning.

The CCT, its employees, representatives and sub-contractors may, from time to time, Process the tenderer's and/or its employees', representatives' and/or sub-contractors' Personal Information, for purposes of, and/or relating to, the tender, the contract and these Conditions of Tender, for research purposes, and/or as otherwise may be envisaged in the CCT's Privacy Notice and/or in relation to the CCT's Supply Chain Management Policy or as may be otherwise permitted by law. This includes the Processing of the latter Personal Information by the CCT's due diligence assurance provider, professional advisors and the Appeal Authority as applicable. The CCT's justification for the processing of such aforesaid Personal Information is based on section 11(1)(b) of POPIA, i.e., in terms of which the CCT's Processing of the said Personal Information is necessary to carry out actions for the conclusion and/or performance of the contract, to which the applicable data subject (envisaged in this clause 2.1.6.6 above) is a party.

All requests relating to data protection must be submitted in writing to:
The City Manager - C/o the Information Officer, Office of the City Manager
Via hand delivery at: 20th Floor, Tower Block, 12 Hertzog Boulevard, Cape Town 8001
Via post at: Private Bag X9181, Cape Town, 8000
Via email at: Popia@capetown.gov.za.

2.1.6.7 Compliance to the CCTs Appeals Policy.

In terms of the CCT's Appeals Policy, a fixed upfront administration fee will be charged. In addition, a surcharge may be imposed for vexatious and frivolous or otherwise manifestly inappropriate tender related appeals.

The current approved administration fee is R300.00 and may be paid at any of the Municipal Offices or at the Civic Centre in Cape Town. Alternatively, via EFT into the CCT's NEDBANK Account: CITY

OF CAPE TOWN and using Reference number: 198158966. You are required to send proof of payment when lodging your appeal.

The current surcharge for vexatious and frivolous or otherwise manifestly inappropriate tender related appeals will be calculated as $\frac{1}{2}$ (Administrative cost of the tender appeal) + 0.25 % (Appellant's tender price).

Should the payment of the administration fee of R300.00 or the surcharge not be received, such fee or surcharge will be added as a Sundry Tariff to the bidder's municipal account.

In the event where the bidder does not have a Municipal account with the CCT, the fee or surcharge may be recovered in terms of the CCT's Credit Control and Debt Collection By-law, 2006 (as amended) and its Credit Control and Debt Collection Policy.

2.1.7 CCT Supplier Database Registration

Tenderers are required to be registered on the CCT Supplier Database as a service provider. Tenderers must register as such upon being requested to do so in writing and within the period contained in such a request, failing which no orders can be raised or payments processed from the resulting contract. In the case of Joint Venture partnerships this requirement will apply individually to each party of the Joint Venture.

Tenderers who wish to register on the CCT's Supplier Database may collect registration forms from the Supplier Management Unit located within the Supplier Management / Registration Office, 2nd Floor (Concourse Level), Civic Centre, 12 Hertzog Boulevard, Cape Town (Tel 021 400 9242/3/4/5). Registration forms and related information are also available on the CCT's website www.capetown.gov.za (follow the Supply Chain Management link to Supplier registration).

It is each tenderer's responsibility to keep all the information on the CCT Supplier Database updated.

2.1.8 National Treasury Web Based Central Supplier Database (CSD) Registration

Tenderers are required to be registered on the National Treasury Web Based Central Supplier Database (CSD) as a service provider. Tenderers must register as such upon being requested to do so in writing and within the period contained in such a request, failing which no orders can be raised or payments processed from the resulting contract. In the case of Joint Venture partnerships this requirement will apply individually to each party of the Joint Venture.

Tenderers who wish to register on the National Treasury Web Based Central Supplier Database (CSD) may do so via the web address <https://secure.csd.gov.za>.

It is each tenderer's responsibility to keep all the information on the National Treasury Web Based Central Supplier Database (CSD) updated.

2.2 Tenderer's obligations

2.2.1 Eligibility Criteria

2.2.1.1 Tenderers are obligated to submit a tender offer that complies in all aspects to the conditions as detailed in this tender document and the Conditions of Tender. An 'acceptable tender must "COMPLY IN ALL" aspects with the tender, Conditions of Tender, all Specifications (i.e., item C.5 below, hereinafter the "Specifications"), pricing instructions herein and the Contract including its conditions.

2.2.1.1.1 Submit a tender offer

Only those tender submissions from which it can be established, *inter alia* that a clear, irrevocable and unambiguous offer has been made to CCT, by whom the offer has been made and what the offer constitutes, will be declared responsive.

2.2.1.1.2 Compliance with requirements of CCT SCM Policy and procedures

Only those tenders that are compliant with the requirements below will be declared responsive:

- a) A completed **Details of Tenderer** to be provided (applicable schedule below to be completed);

- b) A completed **Certificate of Authority for Partnerships/ Joint Ventures/ Consortiums** to be provided authorising the tender to be made and the signatory to sign the tender on the partnership /joint venture/consortium's (applicable schedule below to be completed);
- c) A copy of the partnership / joint venture / consortium agreement to be provided, where applicable.
- d) A completed **Declaration of Interest – State Employees** to be provided and which does not indicate any non-compliance with the legal requirements relating to state employees (applicable schedule below to be completed);
- e) A completed **Declaration – Conflict of Interest and Declaration of Bidders' past Supply Chain Management Practices** to be provided and which does not indicate any conflict or past practises that renders the tender non-responsive based on the conditions contained thereon (applicable schedules below to be completed);
- f) A completed **Certificate of Independent Bid Determination** to be provided and which does not indicate any non-compliance with the requirements of the schedule (applicable schedule below to be completed);
- g) The tenderer (including any of its representatives, directors or members), has not been restricted in terms of abuse of the Supply Chain Management Policy,
- h) The tenderer's tax matters with SARS are in order, or the tenderer is a foreign supplier that is not required to be registered for tax compliance with SARS;
- i) The tenderer is not an advisor or consultant contracted with the CCT whose prior or current obligations creates any conflict of interest or unfair advantage;
- j) The tenderer is not a person, advisor, corporate entity or a director of such corporate entity, who is directly or indirectly involved or associated with the bid specification committee;
- k) A completed **Authorisation for the Deduction of Outstanding Amounts Owed to the CCT** to be provided and which does not indicate any details that renders the tender non-responsive based on the conditions contained thereon (applicable schedules below to be completed);
- l) The tenderer (including any of its representatives, directors or members), has not been found guilty of contravening the Competition Act 89 of 1998, as amended from time to time;
- m) The tenderer (including any of its representatives, directors or members), has not been found guilty on any other basis listed in the Supply Chain Management Policy.

2.2.1.1.3 Compulsory clarification meeting

Not Applicable

2.2.1.1.4 Minimum score for functionality

Not applicable

2.2.1.1.5 Provision of samples

Not Applicable

2.2.1.1.6 Legislative Registration Requirements

Tenderers are to complete Schedule F13A and confirm that they are registered as a Manufacturer, Builder or Importer of Vehicles in terms of the National Road Traffic Act Of 1996. Failure to complete and provide the information requested at tender submission, will result in the tenderer being declared non-responsive.

2.2.1.1.7 Tenderer's Compliance to Specification

Tenderers are to complete Schedule F13B and confirm submission of information for compliance to specifications. Failure to complete and provide the information requested at tender submission, will result in the tenderer being declared non-responsive.

2.2.1.1.8 Tenderer's Experience

Tenders are required to demonstrate that they have manufactured urban buses that are operated by at least two independent bus operating companies. Tenderers are to complete Schedule F13C with the contact details of companies who are currently operating these buses. Tenderer's are to provide reference letters of the below noted bus operating companies confirming the manufacture of urban buses. Failure to complete and provide the information requested at tender submission, will result in the tenderer being declared non-responsive.

2.2.2 Cost of tendering

The CCT will not be liable for any costs incurred in the preparation and submission of a tender offer, including the costs of any testing necessary to demonstrate that aspects of the offer complies with requirements.

2.2.3 Check documents

The documents issued by the CCT for the purpose of a tender offer are listed in the index of this tender document.

Before submission of any tender, the tenderer should check the number of pages, and if any are found to be missing or duplicated, or the figures or writing is indistinct, or if the Price Schedule contains any obvious errors, the tenderer must apply to the CCT at once to have the same rectified.

2.2.4 Confidentiality and copyright of documents

The tenderer shall treat as strictly confidential all matters arising in connection with the tender. Use and copy the documents issued by the CCT only for the purpose of preparing and submitting a tender offer in response to the invitation.

2.2.5 Reference documents

The tenderer shall obtain, as necessary for submitting a tender offer, copies of the latest versions of standards, specifications, Conditions of Contract and other publications, which are not attached but which are incorporated into the tender document(s) by reference.

2.2.6 Acknowledge and comply with notices

The tenderer shall acknowledge receipt of notices to the tender documents, which the CCT may issue, and shall fully comply with all instructions issued in the said notices, and if necessary, apply for an extension of the closing time stated on the front page of the tender document, in order to take the notices into account. Notwithstanding any requests for confirmation of receipt of the said notices issued, the tenderer shall be deemed to have received such notices if the CCT can show proof of transmission thereof via electronic mail, facsimile, or registered post or other lawful means.

2.2.7 Clarification meeting

The tenderer shall attend, where required, a clarification meeting at which tenderers may familiarise themselves with aspects of the proposed work, services or supply and pose questions. Details of the meeting(s) are stated in the General Tender Information (i.e., in item T.1 above).

Tenderers should be represented at the site visit/clarification meeting by a duly authorised person who is suitably qualified and experienced to comprehend the implications of the work involved.

2.2.8 Seek clarification

The tenderer shall request clarification of the tender documents, if necessary, by notifying the CCT at least one week before the closing time stated in the General Tender Information (i.e., in item T.1 above), where possible.

2.2.9 Pricing the tender offer

2.2.9.1 The tenderer shall comply with all pricing instructions as stated on the Price Schedule.

2.2.10 Alterations to documents

The tenderer shall not make any alterations or additions to the tender documents, except to comply with instructions issued by the CCT in writing, or necessary to correct errors made by the tenderer. All signatories to the tender offer shall initial all such alterations.

2.2.11 Alternative tender offers

2.2.11.1 Unless otherwise stated in the Conditions of Tender, the tenderers may submit alternative tender offers only if a main tender offer, strictly in accordance with all the requirements of the tender documents, is also submitted.

If a tenderer wishes to submit an alternative tender offer, he/she/it shall do so as a separate offer on a complete set of tender documents. The alternative tender offer shall be submitted in a separate sealed envelope clearly marked "Alternative Tender" in order to distinguish it from the main tender offer.

Only the alternative of the highest ranked acceptable main tender offer (that is, submitted by the same tenderer) will be considered, and if appropriate, recommended for award.

Alternative tender offers of any but the highest ranked main tender offer will not be considered.

An alternative tender offer to the highest ranked acceptable main tender offer that is priced higher than the main tender offer may be recommended for award, provided that the ranking of the alternative tender offer is higher than the ranking of the next ranked acceptable main tender offer.

The CCT will not be bound to consider alternative tenders and shall have sole discretion in this regard.

In the event that the alternative is accepted, the tenderer warrants that the alternative offer complies in all respects with the CCT's standards and requirements as set out in the tender document.

2.2.11.2 Acceptance of an alternative tender offer by the CCT may be based only on the criteria stated in the Conditions of Tender or applicable criteria otherwise acceptable to the CCT.

2.2.12 Submitting a tender offer

2.2.12.1 The tenderer is required to submit one tender offer only on the original tender documents as issued by the CCT, either as a single tendering entity or as a member in a joint venture to provide the whole of the works, services or supply identified in the Conditions of Contract and described in the Specifications. Only those tenders submitted on the tender documents as issued by the CCT together with all Tender Returnable Documents duly completed and signed will be declared responsive.

2.2.12.2 The tenderer shall return the entire tender document to the CCT after completing it in its entirety, either electronically (if they were issued in electronic format) or by writing legibly in non-erasable ink.

2.2.12.3 The tenderer shall sign the original tender offer where required in terms of the Conditions of Tender. The tender shall be signed by a person duly authorised by the tenderer to do so. Tenders submitted by joint ventures of two or more firms shall be accompanied by the document of formation / founding document of the joint venture or any other document signed by all Parties, in which is defined precisely the conditions under which the joint venture will function, its period of duration, the persons authorised to represent and obligate it, the participation of the several firms forming the joint venture, and any other information necessary to permit a full appraisal of its functioning. Signatories for tenderers proposing to contract as joint ventures shall state which of the signatories is the lead partner.

2.2.12.4 Where a two-envelope system is required in terms of the Conditions of Tender, place and seal the returnable documents listed in the Conditions of Tender in an envelope marked "financial proposal" and place the remaining returnable documents in an envelope marked "technical proposal". Each envelope shall state on the outside the CCT's address and identification details stated in the General Tender Information (i.e., item T.1 above), as well as the tenderer's name and contact address.

2.2.12.5 The tenderer shall seal the original tender offer and copy packages together in an outer package that states on the outside only the CCT's address and identification details as stated in the General Tender

Information. . If it is not possible to submit the original tender and the required copies (see 2.2.12.3) in a single envelope, then the tenderer must seal the original and each copy of the tender offer as separate packages marking the packages as "ORIGINAL" and "COPY" in addition to the aforementioned tender submission details.

2.2.12.6 The CCT shall not assume any responsibility for the misplacement or premature opening of the tender offer if the outer package is not sealed and marked as stated.

2.2.12.7 Tender offers submitted by facsimile or e-mail will be rejected by the CCT, unless stated otherwise in the Conditions of Tender.

2.2.12.8 By signing the offer part of the Form of Offer (**Section 5, Part A hereto**) the tenderer warrants and agrees that all information provided in the tender submission is true and correct.

2.2.12.9 Tenderers shall properly deposit its bid in the designated tender box (as detailed on the front page of this tender document) on or before the closing date and before the closing time, in the relevant tender box at the Tender & Quotation Boxes Office situated on the 2nd floor, Concourse Level, Civic Centre, 12 Hertzog Boulevard, Cape Town. If the tender submission is too large to fit in the allocated box, please enquire at the public counter for assistance.

2.2.12.10 The tenderer must record and reference all information submitted contained in other documents for example cover letters, brochures, catalogues, etc. in the Returnable Schedule titled **List of Other Documents Attached by Tenderer**.

2.2.13 Information and data to be completed in all respects

Tender offers, which do not provide all the data or information requested completely and in the form required, may be regarded by the CCT as non-responsive.

2.2.14 Closing time

2.2.14.1 The tenderer shall ensure that the CCT receives the tender offer, together with all applicable documents specified herein, at the address specified in the General Tender Information herein prior to the closing time stated on the front page of the tender document.

2.2.14.2 If the CCT extends the closing time stated on the front page of the tender document for any reason, the requirements of these Conditions of Tender apply equally to the extended deadline.

2.2.14.3 The CCT shall not consider tenders that are received after the closing date and time for such a tender (late tenders).

2.2.15 Tender offer validity and withdrawal of tenders

2.2.15.1 The tenderer shall warrant that the tender offer(s) remains valid, irrevocable and open for acceptance by the CCT at any time for a period of 120 days after the closing date stated on the front page of the tender document.

2.2.15.2 Notwithstanding the period stated in clause 2.2.15.1 above, bids shall remain valid for acceptance for a period of twelve (12) months after the expiry of the original validity period, unless the CCT is notified in writing of anything to the contrary by the bidder. The validity of bids may be further extended by a period of not more than six months subject to mutual agreement by the parties, administrative processes and upon approval by the City Manager, unless the required extension is as a result of an appeal process or court ruling.

In circumstances where the validity period of a tender has expired, and the tender has not been awarded, the tender process is considered "completed", despite there being no decision (award or cancellation) made. This anomaly does not fall under any of the listed grounds of cancellation and should be treated as a "non award". A "non award" is supported as a recommendation to the CCT's Bid Adjudication Committee ("BAC") for noting.

2.2.15.3 A tenderer may request in writing, after the closing date, that its tender offer be withdrawn. Such

withdrawal will be permitted or refused at the sole discretion of the CCT after consideration of the reasons for the withdrawal, which shall be fully set out by the tenderer in such written request for withdrawal. Should the tender offer be withdrawn in contravention hereof, the tenderer agrees that:

- a) it shall be liable to the CCT for any additional expense incurred or losses suffered by the CCT in having either to accept another tender or, if new tenders have to be invited, the additional expenses incurred or losses suffered by the invitation of new tenders and the subsequent acceptance of any other tender;
- b) the CCT shall also have the right to recover such additional expenses or losses by set-off against monies which may be due or become due to the tenderer under this or any other tender or contract or against any guarantee or deposit that may have been furnished by the tenderer or on its behalf for the due fulfilment of this or any other tender or contract. Pending the ascertainment of the amount of such additional expenses or losses, the CCT shall be entitled to retain such monies, guarantee or deposit as security for any such expenses or loss, without prejudice to the CCT's other rights and/or remedies available to it in accordance with any applicable laws.

2.2.16 Clarification of tender offer, or additional information, after submission

Tenderer's shall promptly provide clarification of its tender offer, or additional information, in response to a written request to do so from the CCT during the evaluation of tender offers within the time period stated in such request. No change in the competitive position of tenderers or substance of the tender offer is sought, offered, or permitted.

Note: This clause does not preclude the negotiation of the final terms of the contract with a preferred tenderer following a competitive selection process, should the CCT elect to do so.

Failure, or refusal, to provide such clarification or additional information within the time for submission stated in the CCT's written request may render the tender non-responsive.

2.2.17 Provide other material

2.2.17.1 Tenderer's shall promptly provide, upon request by the CCT, any other material that has a bearing on the tender offer, the tenderer's commercial position (including joint venture agreements), preferencing arrangements, or samples of materials, considered necessary by the CCT for the purpose of the evaluation of the tender. Should the tenderer not provide the material, or a satisfactory reason as to why it cannot be provided, by the time for submission stated in the CCT's request, the CCT may regard the tender offer as non-responsive.

2.2.17.2 The tenderer shall provide, on written request by the CCT, where the transaction value inclusive of VAT **exceeds R 10 million**:

- a) audited annual financial statement for the past 3 years, or for the period since establishment if established during the past 3 years, if required by law to prepare annual financial statements for auditing;
- b) a certificate signed by the tenderer certifying that the tenderer has no undisputed commitments for municipal services towards a municipality or other service provider in respect of which payment is overdue for more than 30 days;
- c) particulars of any contracts awarded to the tenderer by an organ of state during the past five years, including particulars of any material non-compliance or dispute concerning the execution of such contract;
- d) a statement indicating whether any portion of the goods or services are expected to be sourced from outside the Republic, and, if so, what portion and whether any portion of payment from the municipality or municipal entity is expected to be transferred out of the Republic.

Each entity to a Consortium/Joint Venture bid shall submit separate certificates/statements in the above regard.

2.2.17.3 Tenderers shall be required to undertake to fully cooperate with the CCT's external service provider appointed to perform a due diligence review and risk assessment upon receipt of such written instruction from the CCT.

2.2.18 Samples, Inspections, tests and analysis

Tenderers shall provide access during working hours to premises for inspections, tests and analysis as provided for in the Conditions of Tender or Specifications.

If the Specifications requires the tenderer to provide samples, these shall be provided strictly in accordance with the instructions set out in the Specification.

If such samples are not submitted as required in the bid documents or within any further time stipulated by the CCT in writing, then the bid concerned may be declared non-responsive.

The samples provided by all successful bidders will be retained by the CCT for the duration of any subsequent contract. Bidders are to note that samples are requested for testing purposes therefore samples submitted to the CCT may not in all instances be returned in the same state of supply and in other instances may not be returned at all. Unsuccessful bidders will be advised by the Project Manager or dedicated CCT Official to collect their samples, save in the aforementioned instances where the samples would not be returned.

2.2.19 Certificates

The tenderer must provide the CCT with all certificates as stated below:

2.2.19.1. Preference Points for Specific Goals

In order to qualify for preference points for HDI and/or Specific Goals, it is the responsibility of the tenderer to submit documentary proof (Company registration certification, Central Supplier Database report, BBBEE certificate, Proof of Disability, Financial Statements, commissioned sworn affidavits, etc.) in support of tenderer claims for such preference for that specific goal.

Tenderers are further referred to the content of the Preference Schedule for the full terms and conditions applicable to the awarding of preference points.

2.2.19.2 Evidence of tax compliance

Tenderers shall be registered with the South African Revenue Service (SARS) and their tax affairs must be in order and they must be tax compliant subject to the requirements of clause 2.2.1.1.2.h. In this regard, it is the responsibility of the Tenderer to submit evidence in the form of a valid Tax Compliance Status PIN issued by SARS to the CCT at the Supplier Management Unit located within the Supplier Management / Registration Office, 2nd Floor (Concourse Level), Civic Centre, 12 Hertzog Boulevard, Cape Town (Tel 021 400 9242/3/4/5), or included with this tender. The tenderer must record its Tax Compliance Status PIN number on the **Details of Tenderer** pages of the tender submission.

Each party to a Consortium/Joint Venture shall submit a separate Tax Compliance Status Pin.

Before making an award the CCT must verify the bidder's tax compliance status. Where the recommended bidder is not tax compliant, the bidder should be notified of the non-compliant status and be requested to submit to the CCT, within 7 working days, written proof from SARS that they have made arrangement to meet their outstanding tax obligations. The proof of tax compliance submitted by the bidder must be verified by the CCT via CSD or e-Filing. The CCT should reject a bid submitted by the bidder if such bidder fails to provide proof of tax compliance within the timeframe stated herein.

Only foreign suppliers who have answered "NO" to all the questions contained in the Questionnaire to Bidding Foreign Suppliers section on the **Details of Tenderer** pages of the tender submission, are not required to register for a tax compliance status with SARS.

2.2.20 Compliance with Occupational Health and Safety Act, 85 of 1993

Tenderers are to note the requirements of the Occupational Health and Safety Act, 85 of 1993. The Tenderer shall be deemed to have read and fully understood the requirements of the above Act and Regulations and to have allowed for all costs in compliance therewith.

In this regard the Tenderer shall submit **upon written request to do so by the CCT**, a Health and Safety Plan

in sufficient detail to demonstrate the necessary competencies and resources to deliver the goods or services all in accordance with the Act, Regulations and Health and Safety Specification.

2.2.21 Claims arising from submission of tender

By responding to the tender herein, the tenderer warrants that it has:

- a) Inspected the Specifications and read and fully understood the Conditions of Contract.
- b) Read and fully understood the whole text of the Specifications and Price Schedule and thoroughly acquainted himself with the nature of the goods or services proposed and generally of all matters which may influence the Contract.
- c) visited the site(s) where delivery of the proposed goods will take place, carefully examined existing conditions, the means of access to the site(s), the conditions under which the delivery is to be made, and acquainted himself with any limitations or restrictions that may be imposed by the Municipal or other Authorities in regard to access and transport of materials, plant and equipment to and from the site(s) and made the necessary provisions for any additional costs involved thereby.
- d) requested the CCT to clarify the actual requirements of anything in the Specifications and Price Schedule, the exact meaning or interpretation of which is not clearly intelligible to the Tenderer.
- e) Received any notices to the tender documents which have been issued in accordance with the CCT's Supply Chain Management Policy.

The CCT will therefore not be liable for the payment of any extra costs or claims arising from the submission of the tender.

2.3 The CCT's undertakings

2.3.1 Respond to requests from the tenderer

2.3.1.1 Unless otherwise stated in the Conditions of Tender, the CCT shall respond to a request for clarification received up to one week (where possible) before the tender closing time stated on the front page of the tender document.

2.3.1.2 The CCT's duly authorised representative for the purpose of this tender is stated on the General Tender Information page above.

2.3.2 Issue Notices

If necessary, the CCT may issue addenda in writing that may amend or amplify the tender documents to each tenderer during the period from the date the tender documents are available until one week before the tender closing time stated in the Tender Data. The CCT reserves its rights to issue addenda less than one week before the tender closing time in exceptional circumstances. If, as a result a tenderer applies for an extension to the closing time stated on the front page of the tender document, the CCT may grant such extension and, shall then notify all tenderers who drew documents.

Notwithstanding any requests for confirmation of receipt of notices issued, the tenderer shall be deemed to have received such notices if the CCT can show proof of transmission thereof via electronic mail, facsimile or registered post.

2.3.3 Opening of tender submissions

2.3.3.1 Unless the two-envelope system is to be followed, CCT shall open tender submissions in the presence of tenderers' agents who choose to attend at the time and place stated in the Conditions of Tender.

Tenders will be opened immediately after the closing time for receipt of tenders as stated on the front page of the tender document, or as stated in any Notice extending the closing date and at the closing venue as stated in the General Tender Information.

2.3.3.2 Announce at the meeting held immediately after the opening of tender submissions, at the closing venue as stated in the General Tender Information, the name of each tenderer whose tender offer is opened and, where possible, the prices indicated.

2.3.3.3 Make available a record of the details announced at the tender opening meeting on the CCT's website (<http://www.capetown.gov.za/en/SupplyChainManagement/Pages/default.aspx>.)

2.3.4 Two-envelope system

2.3.4.1 Where stated in the Conditions of Tender that a two-envelope system is to be followed, the CCT shall open only the technical proposal of tenders in the presence of tenderers' agents who choose to attend at the time and place stated in the Conditions of Tender and announce the name of each tenderer whose technical proposal is opened.

2.3.4.2 The CCT shall evaluate the quality of the technical proposals offered by tenderers, then advise tenderers who have submitted responsive technical proposals of the time and place when the financial proposals will be opened. The CCT shall open only the financial proposals of tenderers, who have submitted responsive technical proposals in accordance with the requirements as stated in the Conditions of Tender, and announce the total price and any preference claimed. Return unopened financial proposals to tenderers whose technical proposals were non responsive.

2.3.5 Non-disclosure

The CCT shall not disclose to tenderers, or to any other person not officially concerned with such processes, information relating to the evaluation and comparison of tender offers and recommendations for the award of a contract, until after the award of the contract to the successful tenderer.

2.3.6 Grounds for rejection and disqualification

The CCT shall determine whether there has been any effort by a tenderer to influence the processing of tender offers and instantly disqualify a tenderer (and his tender offer) if it is established that he engaged in corrupt or fraudulent practices.

2.3.7 Test for responsiveness

2.3.7.1 Appoint a Bid Evaluation Committee and determine after opening whether each tender offer properly received:

- a) complies with the requirements of these Conditions of Tender,
- b) has been properly and fully completed and signed, and
- c) is responsive to the other requirements of the tender documents.

2.3.7.2 A responsive tender is one that conforms to all the terms, conditions, and specifications of the tender documents without material deviation or qualification. A material deviation or qualification is one which, in the CCT's opinion, would:

- a) Detrimentially affect the scope, quality, or performance of the goods, services or supply identified in the Specifications,
- b) Significantly change the CCT's or the tenderer's risks and responsibilities under the contract,
- or
- c) affect the competitive position of other tenderers presenting responsive tenders, if it were to be rectified.

Reject a non-responsive tender offer, and not allow it to be subsequently made responsive by correction or withdrawal of any material deviation or qualification.

The CCT reserves the right to accept a tender offer which does not, in the CCT's opinion, materially and/or substantially deviate from the terms, conditions, and specifications of the tender documents.

2.3.8 Arithmetical errors, omissions and discrepancies

2.3.8.1 Check the responsive tenders for:

- a) The gross misplacement of the decimal point in any unit rate;
- b) Omissions made in completing the Price Schedule; or
- c) Arithmetic errors in:
 - i) line item totals resulting from the product of a unit rate and a quantity in the Price Schedule; or
 - ii) The summation of the prices; or
 - iii) Calculation of individual rates.

2.3.8.2 The CCT must correct the arithmetical errors in the following manner:

- a) Where there is a discrepancy between the amounts in words and amounts in figures, the amount in words shall govern.
- b) If pricing schedules apply and there is an error in the line item total resulting from the product of the unit rate and the quantity, the line item total shall govern and the rate shall be corrected. Where there is an obviously gross misplacement of the decimal point in the unit rate, the line item total as tendered shall govern, and the unit rate shall be corrected.
- c) Where there is an error in the total of the prices either as a result of other corrections required by this checking process or in the tenderer's addition of prices, the total of the prices shall govern and the tenderer will be asked to revise selected item prices (and their rates if Price Schedules apply) to achieve the tendered total of the prices.

Consider the rejection of a tender offer if the tenderer does not correct or accept the correction of the arithmetical error in the manner described above.

2.3.8.3 In the event of tendered rates or lump sums being declared by the CCT to be unacceptable to it because they are not priced, either excessively low or high, or not in proper balance with other rates or lump sums, the tenderer may be required to produce evidence and advance arguments in support of the tendered rates or lump sums objected to. If, after submission of such evidence and any further evidence requested, the CCT is still not satisfied with the tendered rates or lump sums objected to, it may request the tenderer to amend these rates and lump sums along the lines indicated by it.

The tenderer will then have the option to alter and/or amend the rates and lump sums objected to and such other related amounts as are agreed on by the CCT, but this shall be done without altering the tender offer in accordance with this clause.

Should the tenderer fail to amend his tender in a manner acceptable to and within the time stated by the CCT, the CCT may declare the tender as non-responsive.

2.3.9 Clarification of a tender offer

The CCT may, after the closing date, request additional information or clarification from tenderers, in writing on any matter affecting the evaluation of the tender offer or that could give rise to ambiguity in a contract arising from the tender offer, which written request and related response shall not change or affect their competitive position or the substance of their offer. Such request may only be made in writing by the Director: Supply Chain Management using any means as appropriate.

2.3.10 Evaluation of tender offers

2.3.10.1 General

2.3.10.1.1 The CCT may reduce each responsive tender offer to a comparative price and evaluate them using the tender evaluation methods and associated evaluation criteria and weightings that are specified in the Conditions of Tender.

2.3.10.1.2 For evaluation purposes only, the effects of the relevant contract price adjustment methods will be considered in the determination of comparative prices as follows:

- a) If the selected method is based on bidders supplying rates or percentages for outer years, comparative prices would be determined over the entire contract period based on such rates or percentages.
- b) If the selected method is based on a formula, indices, coefficients, etc. that is the same for all bidders during the contract period, comparative prices would be the prices as tendered for year

- one.
- c) If the selected method is based on a formula, indices, coefficients, etc. that varies between bidders, comparative prices would be determined over the entire contract period based on published indices relevant during the 12 months prior to the closing date of tenders.
 - d) If the selected method includes an imported content requiring rate of exchange variation, comparative prices would be determined based on the exchange rates tendered for the prices as tendered for year one. The rand equivalent of the applicable currency 14 days prior to the closing date of tender will be used (the CCT will check all quoted rates against those supplied by its own bank).
 - e) If the selected method is based on suppliers' price lists, comparative prices would be the prices as tendered for year one.
 - f) If the selected method is based on suppliers' price lists and / or rate of exchange, comparative prices would be determined as tendered for year one whilst taking into account the tendered percentage subject to rate of exchange (see sub clause (d) for details on the calculation of the rate of exchange).

2.3.10.1.3 Where the scoring of functionality forms part of a bid process, each member of the Bid Evaluation Committee must individually score functionality. The individual scores must then be interrogated and calibrated if required where there are significant discrepancies. The individual scores must then be added together and averaged to determine the final score.

2.3.10.2 Decimal places

Score financial offers, preferences and functionality, as relevant, to two decimal places.

2.3.10.3 Scoring of tenders (price and preference)

2.3.10.3.1 Points for price will be allocated in accordance with the formula set out in this clause based on the price per item / rates as set out in the Section C.4 **Price Schedule**:

- Based on the sum of the prices/rates in relation to the estimated quantities.

2.3.10.3.2 Points for preference will be allocated in accordance with the provisions of **Preference Schedule** and the table in this clause.

2.3.10.3.3 The terms and conditions of **Preference Schedule** as it relates to preference shall apply in all respects to the tender evaluation process and any subsequent contract.

2.3.10.3.4 Applicable formula:

The 90/10 price/preference points system will be applied to the evaluation of responsive tenders above a Rand value of R50'000'000 (all applicable taxes included), whereby the order(s) will be placed with the tenderer(s) scoring the highest total number of adjudication points.

Price shall be scored as follows:

$$P_s = 90 \times \left(1 - \frac{(P_t - P_{min})}{P_{min}} \right)$$

Where: P_s is the number of points scored for price;
 P_t is the price of the tender under consideration;
 P_{min} is the price of the lowest responsive tender.

Preference points shall be based on the Specific Goal as per below:

Table B2: Awards above R50 mil (VAT Inclusive)

#	Specific goals allocated points	Preference Points (90/10) <i>Above R50 mil</i>	Evidence	Additional Guidance
	<i>Persons, or categories of persons, historically disadvantaged- (HDI) by unfair discrimination on the basis of</i>			

1	Gender are women (ownership)* >75% - 100% women ownership: 3 points >50% - 75% women ownership: 2 points >25% - 50% women ownership: 1 point >0% - 25% women ownership: 0.5 point 0% women ownership = 0 points	3	- Company Registration Certification - Central Supplier Database report	- Issued by the Companies and Intellectual Property Commission - Report name: CSD Registration report
2	Race are black persons (ownership)* >75% - 100% black ownership: 3 points >50% - 75% black ownership: 2 points >25% - 50% black ownership: 1 point >0% - 25% black ownership: 0.5 point 0% black ownership = 0 points	3	- B-BBEE certificate; - Company Registration Certification - Central Supplier Database report	- South African National Accreditation System approved certificate or commissioned sworn affidavit - Issued by the Companies and Intellectual Property Commission - Report name: CSD Registration report
3	Disability are disabled persons (ownership)* WHO disability guideline >2% ownership: 1 points >0% - 2% ownership: 0.5 point 0% ownership = 0 point	1	- Proof of disability - Company Registration Certification	- Medical certificate/ South African Revenue Services disability registration - Issued by the Companies and Intellectual Property Commission
Reconstruction and Development Programme (RDP) as published in Government Gazette				
4	Promotion of Micro and Small Enterprises Micro with a turnover up to R20million and Small with a turnover up to R80 million as per National Small Enterprise Act, 1996 (Act No.102 of 1996) SME partnership, sub-contracting, joint venture or consortiums	3	- B-BBEE status level of contributor; - South African owned enterprises; - Financial Statement to determine annual turnover	- Specifically in line with the respective sector codes which the company operates, - South African National Accreditation System approved certificate or commissioned sworn affidavit - Certificate of incorporation or commissioned sworn affidavit - Latest financial statements (1 Year)
	Total points	10		

*Ownership: main tendering entity

2.3.10.5 Risk Analysis

Notwithstanding compliance with regard to any requirements of the tender, the CCT will perform a risk analysis in respect of the following:

- reasonableness of the financial offer
- reasonableness of unit rates and prices
- the tenderer's ability to fulfil its obligations in terms of the tender document, that is, that the tenderer can demonstrate that he/she possesses the necessary professional and technical qualifications, professional and technical competence, financial resources, equipment and other physical facilities, managerial capability, reliability, capacity, experience, reputation, personnel to perform the contract, etc.; the CCT reserves the right to consider a tenderer's existing contracts with the CCT in this regard
- any other matter relating to the submitted bid, the tendering entity, matters of compliance, verification of submitted information and documents, etc.

The conclusions drawn from this risk analysis will be used by the CCT in determining the acceptability of the tender offer.

No tenderer will be recommended for an award unless the tenderer has demonstrated to the satisfaction of the CCT that he/she has the resources and skills required.

2.3.11 Negotiations with preferred tenderers

The CCT may negotiate the final terms of a contract with tenderers identified through a competitive tendering process as preferred tenderers provided that such negotiation:

- a) Does not allow any preferred tenderer a second or unfair opportunity;
- b) Is not to the detriment of any other tenderer; and
- c) Does not lead to a higher price than the tender as submitted.

If negotiations fail to result in acceptable contract terms, the City Manager (or his delegated authority) may terminate the negotiations and cancel the tender, or invite the next ranked tenderer for negotiations. The original preferred tenderer should be informed of the reasons for termination of the negotiations. If the decision is to invite the next highest ranked tenderer for negotiations, the failed earlier negotiations may not be reopened by the CCT.

Minutes of any such negotiations shall be kept for record purposes.

The provisions of this clause will be equally applicable to any invitation to negotiate with any other tenderers.

In terms of the CCT's SCM Policy, tenders must be cancelled in the event that negotiations fail to achieve a market related price with any of the three highest scoring tenderers.

2.3.12 Acceptance of tender offer

Notwithstanding any other provisions contained in the tender document, the CCT reserves the right to:

2.3.12.1 Accept a tender offer(s) which does not, in the CCT's opinion, materially and/or substantially deviate from the terms, conditions, and specifications of the tender document.

2.3.12.2 Accept the whole tender or part of a tender or any item or part of any item or items from multiple manufacturers, or to accept more than one tender (in the event of a number of items being offered), and the CCT is not obliged to accept the lowest or any tender.

2.3.12.3 Accept the tender offer(s), if in the opinion of the CCT, it does not present any material risk and only if the tenderer(s):

- a) is not under restrictions, has any principals who are under restrictions, or is not currently a supplier to whom notice has been served for abuse of the supply chain management system, preventing participation in the CCT's procurement,
- b) can, as necessary and in relation to the proposed contract, demonstrate that he or she possesses the professional and technical qualifications, professional and technical competence, financial resources, equipment and other physical facilities, managerial capability, reliability, experience and reputation, expertise and the personnel, to perform the contract,
- c) has the legal capacity to enter into the contract,
- d) is not insolvent, in receivership, under Business Rescue as provided for in chapter 6 of the Companies Act, 2008, bankrupt or being wound up, has his affairs administered by a court or a judicial officer, has suspended his business activities, or is subject to legal proceedings in respect of any of the foregoing, complies with the legal requirements, if any, stated in the tender data, and
- e) is able, in the opinion of the CCT, to perform the contract free of conflicts of interest.

If an award cannot be made in terms of anything contained herein, the CCT reserves the right to consider the next ranked tenderer(s).

2.3.12.4 The CCT reserves the right not to make an award, or revoke an award already made, where the implementation of the contract may result in reputational risk or harm to the CCT as a result of (inter alia):

- a) reports of poor governance or unethical behaviour, or both;
- b) association with known notorious individuals and family of notorious individuals;
- c) poor performance issues, known to the CCT;
- d) negative media reports, including negative social media reports;
- e) adverse assurance (e.g. due diligence) report outcomes; and
- f) circumstances where the relevant vendor has employed, or is directed by, anyone who was previously employed in the service of the state (as defined in clause 1.53 of the SCM Policy), where the person is or was negatively implicated in any SCM irregularity.

2.3.12.5 The CCT reserves the right to nominate an Standby bidder at the time when an award is made and in the event that a contract is terminated during the execution thereof, the CCT may consider the award of the contract, or non-award, to the Standby Bidder in terms of the procedures included its SCM Policy.

2.3.13 Prepare contract documents

2.3.13.1 If necessary, revise documents that shall form part of the contract and that were issued by the CCT as part of the tender documents to take account of:

- a) Notices issued during the tender period,
- b) Inclusion of some of the returnable documents, and
- c) Other revisions agreed between the CCT and the successful tenderer.

2.3.13.2 Complete the schedule of deviations attached to the form of offer and acceptance, if any.

2.3.14 Notice to successful and unsuccessful tenderers

2.3.14.1 Before accepting the tender of the successful tenderer the CCT shall notify the successful tenderer in writing of the decision of the CCT's Bid Adjudication Committee to award the tender to the successful tenderer. No rights shall accrue to the successful tenderer in terms of this notice

2.3.14.2 The CCT shall, at the same time as notifying the successful tenderer of the Bid Adjudication Committee's decision to award the tender to the successful tenderer, also give written notice to the other tenderers informing them that they have been unsuccessful.

2.3.15 Provide written reasons for actions taken

Provide upon request written reasons to tenderers for any action that is taken in applying these Conditions of Tender, but withhold information which is not in the public interest to be divulged, which is considered to prejudice the legitimate commercial interests of tenderers or might prejudice fair competition between tenderers.

TENDER DOCUMENT GOODS AND SERVICES		 CITY OF CAPE TOWN ISIXEKO SASEKAPA STAD KAAPSTAD	
SUPPLY CHAIN MANAGEMENT			
SCM - 542	Approved by Branch Manager: February 2024	Version: 10	Page 21 of 80

TENDER NO: 303G/2023/24

TENDER DESCRIPTION: SUPPLY AND DELIVERY OF 18M LOW FLOOR/LOW-ENTRY DIESEL POWERED BUSES FOR THE MYCITI METRO SOUTH EAST (MSE) ROLL-OUT

CONTRACT PERIOD: 36 MONTHS FROM THE COMMENCEMENT DATE OF THE CONTRACT

THE CONTRACT

THE CITY OF CAPE TOWN	
A metropolitan municipality, established in terms of the Local Government: Municipal Structures Act, 117 of 1998 read with the Province of the Western Cape: Provincial Gazette 5588 dated 22 September 2000, as amended ("the Purchaser") herein represented by	
AUTHORISED REPRESENTATIVE	

AND

SUPPLIER	
NAME of Company/Close Corporation or Partnership / Joint Venture/ Consortium or Sole Proprietor /Individual (The "Supplier" / "tenderer")	
TRADING AS (if different from above)	
REGISTRATION NUMBER	
PHYSICAL ADDRESS / CHOSEN DOMICILIUM CITANI ET EXECTUANDI OF THE SUPPLIER	
AUTHORISED REPRESENTATIVE	
CAPACITY OF AUTHORISED REPRESENTATIVE	

(HEREINAFTER COLLECTIVELY REFERRED TO AS "THE PARTIES" AND INDIVIDUALLY A "PARTY")

NATURE OF TENDER OFFER (please indicate below)	
Main Offer (see clause 2.2.11.1)	
Alternative Offer (see clause 2.2.11.1)	

C.1 DETAILS OF TENDERER/SUPPLIER

1.1 Type of Entity (Please tick one box)

☐ Individual / Sole Proprietor ☐ Partnership or Joint Venture or Consortium	☐ Close Corporation ☐ Company ☐ Trust ☐ Other:
--	---

1.2 Required Details (Please provide applicable details in full):

Name of Company / Close Corporation or Partnership / Joint Venture / Consortium or Individual /Sole Proprietor	
Trading as (if different from above)	
Company / Close Corporation registration number (if applicable)	
Postal address	Postal Code _____
Physical address (Chosen Domicilium Citandi Et Executandi)	Postal Code _____
Contact details of the person duly authorised to represent the tenderer	Name: Mr/Ms _____ (Name & Surname) Telephone : (____) _____ Fax : (____) _____ Cellular Telephone: _____ E-mail address: _____
Income tax number	
VAT registration number	
SARS Tax Compliance Status PIN	
CCT Supplier Database Registration Number (See Conditions of Tender)	
National Treasury Central Supplier Database registration number (See Conditions of Tender)	
Is tenderer the accredited representative in South Africa for the Goods / Services / Works offered?	☐ Yes ☐ No If yes, enclose proof
Is tenderer a foreign based supplier for the Goods / Services / Works offered?	☐ Yes ☐ No If yes, answer the Questionnaire to Bidding Foreign Suppliers (below)
Questionnaire to Bidding Foreign Suppliers	a) Is the tenderer a resident of the Republic of South Africa or an entity registered in South Africa? ☐ Yes ☐ No
	b) Does the tenderer have a permanent establishment in the Republic of South Africa? ☐ Yes ☐ No
	c) Does the tenderer have any source of income in the Republic of South Africa? ☐ Yes ☐ No
	d) Is the tenderer liable in the Republic of South Africa for any form of taxation? ☐ Yes ☐ No
Other Required registration numbers	

C.2 FORM OF OFFER AND ACCEPTANCE

TENDER 303G/2023/24 SUPPLY AND DELIVERY OF 18M LOW FLOOR/LOW-ENTRY DIESEL POWERED BUSES FOR THE MYCITI METRO SOUTH EAST (MSE) ROLL- OUT

C.2.1 Offer (To Be Completed by the Tenderer as Part of Tender Submission)

The tenderer, identified in the offer signature table below,

HEREBY AGREES THAT by signing the *Form of Offer and Acceptance*, the tenderer:

1. confirms that it has examined the documents listed in the Index (including Schedules and Annexures) and has accepted all the Conditions of Tender;
2. confirms that it has received and incorporated any and all notices issued to tenderers issued by the CCT;
3. confirms that it has satisfied itself as to the correctness and validity of the tender offer; that the price(s) and rate(s) offered cover all the goods and/or services specified in the tender documents; that the price(s) and rate(s) cover all its obligations and accepts that any mistakes regarding price(s), rate(s) and calculations will be at its own risk;
4. offers to supply all or any of the goods and/or render all or any of the services described in the tender document to the CCT in accordance with the:
 - 4.1 terms and conditions stipulated in this tender document;
 - 4.2 specifications stipulated in this tender document; and
 - 4.3 at the prices as set out in the **Price Schedule**.
5. accepts full responsibility for the proper execution and fulfilment of all obligations and conditions devolving on it in terms of the Contract.

SIGNED AT _____ (PLACE) ON THE _____ (DAY) OF _____ (MONTH AND YEAR)

For and on behalf of the Supplier
(Duly Authorised)
Name and Surname:

Witness 1 Signature
Name and Surname:

Witness 2 Signature
Name and Surname:

INITIALS OF CCT OFFICIALS		
1	2	3

FORM OF OFFER AND ACCEPTANCE (continued)

TENDER 303G/2023/24 SUPPLY AND DELIVERY OF 18M LOW FLOOR/LOW-ENTRY DIESEL POWERED BUSES FOR THE MYCITI METRO SOUTH EAST (MSE) ROLL- OUT

C.2.2 Acceptance (To Be Completed by the CCT)

By signing this part of this *Form of Offer and Acceptance*, the CCT accepts the tenderer's (if awarded the Supplier's) offer. In consideration thereof, the CCT shall pay the Supplier the amount due in accordance with the conditions of contract. Acceptance of the Supplier's offer shall form an agreement between the CCT and the Supplier upon the terms and conditions contained in this document.

The terms of the agreement are contained in the Contract (as defined) including drawings and documents or parts thereof, which may be incorporated by reference.

Deviations from and amendments to the documents listed in the tender data and any addenda thereto as listed in the *Tender Returnable Documents* as well as any changes to the terms of the offer agreed by the tenderer and the CCT during this process of offer and acceptance, are contained in the *Schedule of Deviations* attached to and forming part of this *Form of Offer and Acceptance*. No amendments to or deviations from said documents are valid unless contained in the *Schedule of Deviations*.

The Supplier shall within 2 (two) weeks after receiving a complete, copy of the Contract, including the *Schedule of Deviations* (if any), contact the CCT to arrange the delivery of any securities, bonds, guarantees, proof of insurance and any other documents to be provided in terms the *Special Conditions of Contract*. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation / breach of the agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the Commencement Date, being the date upon which the Supplier confirms receipt from the CCT of 1 (one) complete, signed copy of the Contract, including amendments or deviations contained in the *Schedule of Deviations* (if any).

For and on behalf of the City of Cape Town
(Duly Authorised)
Name and Surname:

Witness 1 Signature
Name and Surname:

Witness 2 Signature
Name and Surname:

FORM OF OFFER AND ACCEPTANCE (continued)

TENDER 303G/2023/24 SUPPLY AND DELIVERY OF 18M LOW FLOOR/LOW-ENTRY DIESEL POWERED BUSES FOR THE MYCITI METRO SOUTH EAST (MSE) ROLL- OUT

C.2.3 Schedule of Deviations (To be Completed by the CCT upon Acceptance)

Notes:

1. The extent of deviations from the tender documents issued by the CCT before the tender closing date, is limited to those permitted in terms of the conditions of tender.
2. A tenderer's covering letter shall not be included in the final Contract document. Should any matter in such letter, which constitutes a deviation as aforesaid, become the subject of agreements reached during the process of offer and acceptance, the outcome of such agreement shall be recorded here.
3. Any other matter arising from the process of offer and acceptance either as a confirmation, clarification or change to the tender documents and which it is agreed by the Parties to become an obligation of the Contract, shall be recorded here.
4. Any change or addition to the tender documents arising from the above agreements and recorded here, shall form part of the Contract.

1 Subject
Details

2 Subject
Details

3 Subject
Details

4 Subject
Details

By the duly authorised representatives signing this agreement, the CCT and the tenderer agree to and accept the foregoing schedule of deviations as the only deviations from and amendments to this tender document and addenda thereto as listed in the *Tender Returnable Documents*, as well as any confirmation, clarification or changes to the terms of the offer agreed by the tenderer and the CCT during this process of offer and acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the tender documents and the Commencement Date, shall have any meaning or effect between the Parties arising from the agreement.

FORM OF OFFER AND ACCEPTANCE (continued)

**TENDER 303G/2023/24
SUPPLY AND DELIVERY OF 18M LOW FLOOR/LOW-ENTRY DIESEL
POWERED BUSES FOR THE MYCITI METRO SOUTH EAST (MSE) ROLL-
OUT**

C.2.4 Confirmation of Receipt (To be Completed by Supplier upon Acceptance)

The Supplier identified in the offer part of the Contract hereby confirms receipt from the CCT of 1 (one) complete, signed copy of the Contract, including the *Schedule of Deviations* (if any) on:

The..... (Day)

Of..... (Month)

20..... (year)

At..... (Place)

For the Supplier: Signature(s)

Name(s)

Capacity

Signature and name of witness:

Signature

Name

ONLY TO BE
COMPLETED AT
ACCEPTANCE STAGE

C.3 OCCUPATIONAL HEALTH AND SAFETY AGREEMENT

**AGREEMENT MADE AND ENTERED INTO BETWEEN THE CCT (HEREINAFTER CALLED THE "CCT")
AND**

.....,
(Supplier/Mandatory/Company/CC Name)

**IN TERMS OF SECTION 37(2) OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, 85 OF 1993 AS
AMENDED.**

I,, representing

....., as an employer
in its own right in its own right, do hereby undertake to ensure, as far as is reasonably practicable, that all work
will be performed, and all equipment, machinery or plant used in such a manner as to comply with the
provisions of the Occupational Health and Safety Act (hereafter "OHSA") and the Regulations promulgated
thereunder.

I furthermore confirm that I am/we are registered with the Compensation Commissioner and that all registration
and assessment monies due to the Compensation Commissioner have been fully paid or that I/We are insured
with an approved licensed compensation insurer.

C.O.I.D. ACT Registration Number:

OR Compensation Insurer: Policy No.:

I undertake to appoint, where required, suitable competent persons, in writing, in terms of the requirements of
OHSA and the Regulations and to charge him/them with the duty of ensuring that the provisions of OHSA and
Regulations as well as the Council's Special Conditions of Contract, Way Leave, Lock-Out and Work Permit
Procedures are adhered to as far as reasonably practicable.

I further undertake to ensure that any subcontractors employed by me will enter into an occupational health
and safety agreement separately, and that such subcontractors comply with the conditions set.

I hereby declare that I have read and understand the Occupational Health and Safety Specifications contained
in this tender and undertake to comply therewith at all times.

I hereby also undertake to comply with the Occupational Health and Safety Specification and Plan submitted
and approved in terms thereof.

Signed at on the day of 20

Witness

Mandatory

Signed at on the day of 20

Witness

for and on behalf of
CCT

C.4 PRICE SCHEDULE

Bid specifications may not make any reference to any particular trade mark, name, patent, design, type, specific origin or producer, unless there is no other sufficiently precise or intelligible way of describing the characteristics of the work, in which case such reference must be accompanied by the words "or equivalent".

TENDERERS MUST NOTE THAT WHEREVER THIS DOCUMENT REFERS TO ANY PARTICULAR TRADE MARK, NAME, PATENT, DESIGN, TYPE, SPECIFIC ORIGIN OR PRODUCER, SUCH REFERENCE SHALL BE DEEMED TO BE ACCOMPANIED BY THE WORDS 'OR EQUIVALENT'

Item No.	Description	C.5 SOW Ref	Unit of measure	Rate per unit (excl VAT)	Rate per unit (incl VAT)
1	PROVISION OF REGISTERED AND LICENCED BUSES, STANDARD WARRANTY AND EQUIPMENT				
1.1	Provide 18-meter low-floor/low entry bus to Euro VI emission standards				
1.1.1	Supply of registered and licenced standard bus	2	No.		
1.1.2	Provision of Standard Warranty	9	No		
1.1.3	Provision of installed vehicle telematics unit	8.7.2	No		
1.1.4	Licence fee / subscription for one year for full functionality suite.	8.7.2	No		
1.1.5	Supply of spare wheel (1 x tyre and rim) for the bus type	10.4	No		
2	INTELLIGENT TRANSPORT SYSTEMS INSTALLATIONS				
2.1	Attendance to Automatic Fare System (AFS) installations	8.8	No.		
2.2	Attendance to Advanced Public Transport Management Systems (APTMS) installations	8.8	No.		
2.3	Attendance to Bus Door And Platform Screen Door (BUS-PSD) installations	8.8	No.		
3.1	TOOLS AND EQUIPMENT: DIAGNOSTIC EQUIPMENT				
3.1	Provision of Diagnostic Equipment inclusive of hardware, software, connectors and documentation	10.4	No.		
3.2	Provision of licence/ subscription for period of one year.	10.4	No.		
4	TOOLS AND EQUIPMENT: SUPPLY OF TOOLS FOR RECOVERY / ON-ROAD WHEEL CHANGE				
	Provision of towing equipment for recovery of buses i.e. tow-bar and associated equipment				
4.1	Towing equipment applicable for low-floor / low entry buses	10.4	No.		
4.2	Trolley jack	10.4	No.		
4.3	Wheel Chocks (set = two chocks)	10.4	No. of sets		
4	ON-GOING TECHNICAL SUPPORT: TRAINING				
4.1	Provide training session: Driver - Train-the-Trainer inclusive of training materials	10.2	No.		

4.2	Provide training session: maintenance staff inclusive of training materials	10.2	No.		
4.3	Provide training session: Operations Staff inclusive of training materials	10.2	No.		
4	Provisional sum				
4.1	Allowance for any non specified ad-hoc works related to technological advancements at the time of manufacturing		Provisional sum	R15,000,000.00	

Pricing Instructions:

- 5.1 State the rates and prices in Rand unless instructed otherwise in the Conditions of Tender.
- 5.2 Include in the rates, prices, and the tendered total of the prices (if any) all duties, taxes (except Value Added Tax (VAT), and other levies payable by the successful tenderer, such duties, taxes and levies being those applicable 14 days before the closing time stated in the General Tender Information.
- 5.3 All prices tendered must include all expenses, disbursements and costs (e.g. transport, accommodation etc.) that may be required for the execution of the tenderer's obligations in terms of the Contract, and shall cover the cost of all general risks, liabilities and obligations set forth or implied in the Contract as well as overhead charges and profit (in the event that the tender is successful). All prices tendered will be final and binding.
- 5.4 All prices shall be tendered in accordance with the units specified in this schedule.
- 5.5 Where a value is given in the Quantity column, a Rate and Price (the product of the Quantity and Rate) is required to be inserted in the relevant columns.
- 5.6 The successful tenderer is required to perform all tasks listed against each item. The tenderer must therefore tender prices/rates on all items as per the section in the Price Schedule. **An item against which no rate is/are entered, or if anything other than a rate or a nil rate (for example, a zero, a dash or the word "included" or abbreviations thereof) is entered against an item, it will also be regarded as a nil rate having been entered against that item, i.e. that there is no charge for that item. The Tenderer may be requested to clarify nil rates, or items regarded as having nil rates; and the CCT may also perform a risk analysis with regard to the reasonableness of such rates.**
- 5.7 Provide fixed rates and prices for the duration of the contract that are not subject to adjustment except as otherwise provided for in clause 17 of the Conditions of Contract and as amplified in the Special Conditions of Contract.
- 5.8 Provisional sum in line with the City's SCM Policy 2023, Clause 184 and 185, respectively.

INITIALS OF CCT OFFICIALS		
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C.5 SPECIFICATION(S)

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SCOPE OF WORK

For the

**SUPPLY AND DELIVERY OF 18M LOW
FLOOR/LOW-ENTRY DIESEL POWERED BUSES
FOR THE MYCITI METRO SOUTH EAST (MSE)
ROLL-OUT**

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1 INTRODUCTION

1.1 SCOPE OF WORK

The **Scope of Work** sets out the requirements for the manufacture and supply low emission diesel powered buses and the supply of ancillary goods and/or services the Purchaser intends to procure.

The Scope of Work must be read in conjunction with the following detailed design and technical guidelines TS1 and TS2 that are constituent parts of the Purchaser's requirements for buses, ancillary goods and services.

- a. TS1: Functional and Technical Design Guidelines
- b. TS2: Design and Installation Guidelines for On-Board Intelligent Transport Systems (ITS) Equipment

1.2 Functional and Technical Design Guidelines

The detailed technical and design guidelines may identify alternative configurations or installation options. The required configuration or option will be set out in this Scope of Work. Where no alternative or option is explicitly identified, the default requirement shall apply.

Notwithstanding the provision of the detailed technical guidelines, drawings, or other data by the Purchaser, the Supplier shall have the responsibility of supplying the standard bus complete and ready for service notwithstanding any omissions or errors in the drawings and guideline technical specifications and or other data provided.

1.3 Background

Public transport is a key mechanism for achieving the City of Cape Town's transport vision of providing a sustainable transport system that moves all its people and goods effectively, efficiently and safely.

The City of Cape Town (City) is in the process of implementing Phase 2A of its MyCiTi Integrated transport System. This phase will deliver bus services mainly to the Metro-southeast, linking Khayelitsha and Mitchells Plain to Wynberg and Claremont. It will also continue the MyCiTi N2 Express services, in as far as this is required.

In an expansion phase of its existing integrated rapid transport (IRT) system the City of Cape Town's Urban Mobility Department (the Purchaser) wishes to procure a fleet of 18m low floor or low-entry low emission buses and ancillary equipment and services.

The buses to be procured in terms of this contract will service areas including Khayelitsha, Mitchells Plain, Philippi, Crossroads, Nyanga, Gugulethu, Manenberg, Hanover Park, Lansdowne, Ottery, Wynberg and Claremont. A "high quality of service" to be provided which will include.

- a. Modern attractive buses indicative of a quality MyCiTi brand
- b. Dedicated busways on trunk routes for fast movement along congested corridors and convenient direct routes in mixed traffic.
- c. Enclosed trunk stations on trunk routes with pre-boarding fare collection and verification to allow large numbers of passengers to board and alight quickly.
- d. Level boarding and high-quality fittings providing convenient access to persons with disabilities and offering a comfortable service to all.
- e. Modern information and communications technology, which allows vehicle movement to be continually monitored and provide real-time passenger information needs.

The vehicles will be operated and maintained by Vehicle Operating Companies (VOCs) who are to be contracted to the City of Cape Town. The VOCs will operate from depots and staging areas in Khayelitsha, Mitchells Plain and Wetton.

2 PROJECT REQUIREMENTS: SUMMARY

The Purchaser **requires the procurement of heavy-duty low-emission passenger buses** and additional goods and services that are required to maintain the buses in a high quality and high level of operational service.

A brief description of the requirements is provided below with a more detailed description of the requirements set out in the remainder of this document and attachments.

2.1 Buses

A minimum no. of 50 x 18m low-entry or low-floor low emissions buses are to be procured.

The buses shall conform to the requirements of a Rapid Transport Bus as defined in the South African National Traffic Regulations (National Road traffic Act, 93 of 1996) and the compulsory specifications required in terms of the National Regulator for Compulsory Specifications Act (Act No. 5 of 2008) inclusive of the requirements of standard specification SANS 20107 "Uniform provisions concerning the approval of category M2 or M3 vehicles with regard to their general construction."

The buses are to be registered prior to delivery to the City. Registration details will be provided by the City's project manager / representative.

The type, nominal lengths, basic configuration and number of vehicles required are set out in Table 1.

Table 1: Bus type Rate Per Bus

No.	Description	Nominal Length	Type (Floor height)	Passenger doors	
				LHS	RHS
	Rapid transport TRUNK service bus	18m	low floor or low-entry	1	3

The buses are required to satisfy the range, capacity, general design objectives and other requirements set out in the Scope of Work as well as TS1: Functional and Technical Design Guidelines and TS2: Design and Installation Guidelines for On-Board Intelligent Transport Systems (ITS) Equipment as may be applicable.

2.2 Intelligent Transport systems (ITS) Installations

All buses to be fitted out with a suite of ITS equipment which will be installed either by the Supplier or by the Purchaser's ITS equipment providers. A separate pricing item for managing and assisting the Purchaser's ITS equipment providers with the installations (referred as "Attendance") is provided for in the Pricing Schedule. Equipment installed by the Supplier shall be included in the pricing of the **bus**.

2.3 Warranty

The Supplier's standard warranty shall apply, subject to this being for a minimum of one (1) year or 80 000km travelled distance and subject to the specific conditions set out in Clause 15 of Special Conditions of Contract.

An **Extended Warranty** for an increased period or increased distance travelled over and above the Standard Warranty may be required by a third party / Vehicle Operating Company (VOC) nominated by the Purchaser. (A separate item for the extended warranty shall be priced for benchmarking purposes and will not be compensated through this contract if elected by the third party.)

2.4 On-Going Technical Support, Training and Maintenance

The availability of on-going technical support (after-sales support) is an essential component of the services that the Supplier is to provide to the Purchaser and third parties contracted to the Purchaser. This support includes

inter alia the availability of competent technical staff, a local spare parts distribution centre, induction and other training. provision of manuals, tools and equipment and may include preventive maintenance and repair services as an on-going post (this) contract requirement.

The requirement to provide tools, equipment and ancillary services is detailed in the sections below.

3 BUS DELIVERY AND ACCEPTANCE

3.1 Bus Delivery

It is the Purchaser's intention to commence bus services in May 2027 with the introduction of a minimum of 50 buses.

Deliveries shall commence from 01 January 2027 with final delivery of the 50th bus before 31 March 2027. Should further buses be procured, all buses shall be delivered as agreed between the parties. No buses shall be accepted after the termination date of this contract.

The Purchaser would therefore seek to take delivery of the buses to meet the intended commencement of the services provided there is sufficient time to complete the required training programmes before the end of February 2027.

Buses shall be delivered to the following location within the Metropolitan area of Cape Town but not limited the noted location.

- a. Khayelitsha depot #1

On delivery all buses will be subject to acceptance testing and the Supplier shall be entitled to submit an invoice for each bus on acceptance.

3.2 Delivery Programme

The Supplier is required to confirm the ability to schedule the delivery the required buses with the last bus being delivered before the respective date set out above.

The provisional manufacturing and delivery programme should include (where applicable):

- a. the design phase.
- b. the component manufacturing stages,
- c. chassis and component shipping period
- d. local assembly phase
- e. prototype completion and homologation (if applicable),
- f. delivery of the first production bus and subsequent buses.
- g. final bus delivery date (or dates per respective group).
- h. availability of buses for driver training

The programme shall include at least three month for testing and final acceptance of a vehicle following its delivery.

The programme shall indicate appropriate periods for training on the bus types being delivered i.e. train the trainer

programme.

The programme shall also indicate appropriate times for the Purchaser's in-production inspection, availability of buses for the fitment of specialised ITS equipment by others (e.g., APTMS, AFC and PSD equipment) and final inspection and acceptance time frames.

Penalties in accordance with the Special Conditions of Contract will be applied in respect of late delivery of vehicles unless an extension of time has been awarded as per the Conditions of Contract permit.

Key risk factors that may impact on this programme should be highlighted.

The programme will be finalized during the final tender acceptance process. The final delivery dates for buses shall remain as set out in the section above unless the Supplier and Purchaser mutually agree to alternative delivery dates, necessitated due to the occurrence of unforeseen circumstances. With reference to the final agreed programme, penalties in respect of late delivery of vehicles may apply unless an extension of time has been awarded in terms of the Conditions of Contract.

3.3 Timing of bus operator/driver training (Train the trainer.)

It is the purchaser's objective to introduce the buses into service on completion of the necessary training which is to be provided to the Purchaser's vehicle operating companies (VOCs). The Purchaser and the Supplier shall agree the training times which shall commence after delivery of the first bus(es).

4 VEHICLE OPERATIONS, MANAGEMENT AND ENVIRONMENT

The operational management, environmental and operational requirements under which the buses are to operate are set out in the following section.

It is the intention that the buses will continue to operate in the Cape Town metropolitan area for the duration of their service life.

4.1 Vehicle Operating Companies and assignment of functions

The Purchaser shall contract third party vehicle operating companies (VOCs) to operate the vehicles on its behalf. The Supplier's contractual obligation, in terms of this contract will remain with the Purchaser.

The VOC's will be assigned under a separate contract, the daily operations and the management of the servicing / maintenance of the buses on behalf of the Purchaser.

By entering this procurement Contract, the Supplier agrees that the assignment of these functions to the VOC's by the Purchaser shall not prejudice the Purchaser's warranty, or other rights conferred in terms of this Contract.

4.2 Vehicle Operating Range and Emission Standards

The buses' fuel tanks shall have sufficient capacity to allow for an operational range of 300km based on a standard urban bus rapid transport duty cycle.

The buses shall be classified as a low emission bus with emissions limited to Euro VI emission standards.

4.3 Climatic conditions

Cape Town has an ocean Mediterranean climate, with mild, moderately wet winters and dry, warm summers.

The winters, from the beginning of June to the end of August are typified by large cold fronts originating from the Atlantic Ocean for limited periods with significant precipitation and strong north-westerly winds. Coastal fog and mist are not uncommon. Winter months in the city average a maximum of 18oC and minimum of 8.5oC.

The summers, from early December to March, are warm and dry with an average maximum of 26oC and minimum

of 16oC. The region can experience hot “Berg Winds” which originate from the interior during February or early March. In late spring and early summer, a strong wind from the south-east may periodically blow for an extended period.

Cape Town's average amount of sunshine per year is +/- 3,100 hrs. Total annual rainfall in the city averages 515 mm.

Buses must be capable of meeting their operational requirements under GVM in ambient temperatures of:

- a. Monthly averages: Highs of 22.5°C to 26.1°C and lows 10.2°C and 17.7°C
- b. Worst-case conditions: 0°C to 35 °C

4.4 Topographic conditions

The buses will predominantly operate across the Cape Flats between Wynberg and Claremont to Mitchells Plein and Khayelitsha where the topography is generally flat. Grades are generally less than 2%-3% with the steeper sections confined mainly to bridge approaches.

5 OPERATING DUTY PROFILES

It is the Purchaser's intention to assign groups of buses with similar operating profiles to a particular Block.

Buses assigned to the same Block are to be designed to the same performance standards i.e. identical buses.

Based on preliminary scheduling of the bus fleet all buses to be procured (in this contract) are to be assigned to a single BLOCK. Details of the planned duty profiles are given in the following BLOCK table.

Block or profile name: BLOCK 1 Specification		
Average route speed (nominal)	22,2	km/h
Average route speed (worst case)	18,0 to 36,7	km/h
Average distance between stops	0,7	km
Maximum required trip duration	104,3	minutes
Average required trip duration	90,5	minutes
Distance from depot to start of route	10	km
Longest distance from depot	21	km
Average km per bus per day	214,5	kms
Longest km per day for a bus	230	km

Further information pertaining to the routes and the location of depots and staging areas is provided in **ANNEXURE E**.

The Supplier shall be required to provide the Purchaser with the the details of propulsion system specifications and performance of the buses being offered .

6 PROCUREMENT OF BUSES: GENERAL REQUIREMENTS

The buses shall diesel powered buses that conform to the requirements of Category M3 / Class 1 vehicles as set out in the National Road Traffic Act (93 of 1996) and the Compulsory Specification for Motor Vehicles of Categories M2 and M3.

All buses shall satisfy the requirements set out in the following sections of the Scope of Work as well as the functional and design objectives set out in the functional and technical design guidelines TS1 and TS2.

6.1 Supplier to be Registered As A Manufacturer, Imported, Builder (MIB)

The Supplier must be registered and provide documentary proof of registration as Manufacturer, Importer, Builder (MIB) in terms of the Road Traffic Act of 1996.

Where the Supplier is a Joint Venture, the party responsible for homologating the bus (if necessary) and registration shall be the party registered as a Manufacturer, Imported and Builder.

6.2 Compliance with Regulations and Specifications

The buses being procured under this contract shall satisfy the requirements for “rapid transport trunk buses” as set out in the National Road Traffic Regulations, 2000 (National Road Traffic Act, Act 93 of 1996) and requirements for Category M3 / Class I vehicles, as set in the Compulsory Specification for Motor Vehicles of Categories M2 and M3 (National Regulator for Compulsory Specifications Act, Act 5 of 2008).

The requirements of the Scope of Work as set out in the sections and tables below shall apply, as shall the requirements of the Detailed Technical Guideline subject to the requirements set out elsewhere in the specifications. The criteria set out in the Scope of Work are obligatory unless stated otherwise.

The suite of accompanying Functional and Technical Design Guidelines and applicable South African National Standards (SANS) provide the Supplier with the requirements and guidance needed to meet the purchaser's procurement objectives.

In the event of any conflict between the requirements of the Scope of Work and the Functional and Technical Design Guidelines, the requirements of the Scope of Work shall prevail. Technical requirements that exceed the legal requirements are not considered to conflict and shall apply unless the legal requirement is a restrictive lawful requirement.

6.3 Survival

Following the nominal expiration or discharge of the Contract obligations, the following shall survive, and the Purchaser may obtain any remedy under law or Contract that survives the manufacturing, warranty and final payment periods:

- a. Corrosion protection and fatigue life
- b. Component design life
- c. Availability of on-going support and spare parts

6.4 Technological advancements and design changes

The Supplier shall keep the Purchaser informed of technological advancements, which the Purchaser may take advantage of during the contract period.

If the Supplier identifies a change during the manufacturing process that would materially improve the design, safety and/or performance of the bus, this change must be discussed and agreed to by the Purchaser. The reversed will apply in the event whereby the Purchaser requires technological advances & design changes.

Any such changes must be approved by the Purchaser in accordance with the Conditions of Contract.

6.5 Trademark, name, patent, design, type, specific origin, or producer.

Supplier must note that wherever these specification documents refer to any trademark, name, patent, design, type, specific origin or producer, such reference shall be deemed to be accompanied by the words 'or equivalent'.

6.6 Local Production and Content

6.7 “Local production and content thresholds as previously required in terms of the Preferential Procurement Regulations, 2022, are not applicable. Local parts requirement for buses

In the absence of local content requirement, all tyres, seating, seating materials, floor covering, windscreens and side windows shall be readily available from local /national suppliers.

6.8 National Industrial Participation Program

Where the imported value of the goods being supplied exceed, the minimum threshold set out by the National Department of Trade and Industry (DTI) the Supplier must comply with the requirements of the National Industrial Participation (NIP) Program. The requirements for the NIP program as required by the DTI, including documentation requirements are set out in the contract documentation.

The NIP programme is mandatory on all government and parastatal purchases or lease contracts (goods and services) with an imported content equal to or exceeding US\$10 million. Further information is available on the Department of Trade and Industries web site: www.thedti.gov.za/industrial_development/nipp.jsp

6.9 ISO: 9001 Accreditation - Quality Management Systems (or equivalent)

Suppliers and / or their manufacturing partners should be registered with the SABS as being certified in respect of the ISO: 9001 Quality Management Systems or with a national or international recognized standards authority with equivalent accreditation.

Manufacturers who are not registered with an accredited national or international standards body and are not certified in respect of implementing and maintaining a Quality Management System, may be considered if they have an established quality assurance and management system that is comparable to that of a recognized standards authority and are able to provide evidence of such.

6.10 Design elements and body shape.

The weights and dimensions of buses shall comply with the requirements of the National Road Traffic Act (93 of 1996) and the Compulsory Specification for Motor Vehicles of Categories M2 and M3.

The bus body and frame shall be **constructed of inherently corrosion resistant material**. Galvanized steel will not be permitted. In general post-treated corrosion protected steel will not be permitted except for the chassis structure and other members where material properties, such as ductility, dictate the use of these materials.

The body shape of the bus shall have stylized front ends and a body design with aerodynamic lines that ensures maximum energy efficiency by reducing wind resistance and evokes a modern appearance. The use of moulded materials such as glass reinforced polymer/ plastic (GRP) for the front and rear end of the bus is acceptable.

All buses of the same type must be similar in design and manufacture and there shall not be any substantive design or material changes that would differentiate one bus from another bus of the same type. Buses that do not meet these criteria may not be accepted.

6.11 Service Life

It is expected that the bus's operational life shall exceed 15 years or 1,2 million kilometres (chassis and bus body) subject to requisite maintenance and refurbishment programmes.

6.12 Vehicle performance and power load

Startability and gradeability requirements set out in the technical guideline shall apply. The loss of power to the bus shall not cause the driver to lose control of the bus or to lose steering or braking. The bus shall be able to be safely brought to a controlled stop. (Refer also to detailed technical guidelines).

6.13 Axillary power requirements

The buses shall have the facility to power the ITS equipment during operations and to enable the downloading of data from these systems at specific locations / depots after the shutdown of the bus. (Refer also to detailed technical guidelines).

This power requirement may be provided by an auxiliary battery system which is recharged during normal operations of the bus or of an alternative power source of the Supplier's design.

The auxiliary power system is to be managed so that the normal functioning of the bus will not be compromised. This will include the monitoring and shutdown of the auxiliary power supply to the ITS equipment after downloads have been completed or if abnormal functions are detected.

The axillary system shall display pertinent status information in the driver's cabin.

6.14 Bus operations at Stops and Station Docking

The buses shall be designed and manufactured to operate on the left-hand side of a two-way road or in a dedicated busway.

The buses shall be capable of picking up passengers at open kerb side bus stops on the left-hand-side of the road and at "closed" bus stations on the right-hand-side of a bus lane.

The buses shall be capable of aligning at bus stations and bus stops so that accessibility aids (boarding bridges or ramps) can be deployed allowing easy access for those with physical disabilities.

The dimensions of the bus shall, notwithstanding the nominal lengths, be subject to the functional requirements of station docking being met. This will include the correct alignment of bus doors at station doors and the ability for the independent arrival of a bus at an adjacent station pod. This will occur where buses are docked at pods either side of the pod at which the arriving bus docks or departs. The swept path for the front and rear overhangs in relation to the station structure are critical criteria. A station pod is that part of the station infrastructure adjacent to which a bus will dock (stop) allowing for the bus doors and station doors to aligning. A station may contain multiple pods)

Door dimensions and spacing on the right-hand-side of the bus is critical and must conform to the required spacing set out in the technical specifications.

The left-hand side passenger door shall be located forward of the front axle and adjacent to the driver's cabin. Fare validation equipment to be installed in the LHS door portal. This is required so that passenger ticket validation can be observed by the driver.

6.15 Doors and boarding bridges / ramps

Door spacing on right-hand side of the bus to conform to the South African Road Traffic Act Regulations. Left-hand side (LHS) passenger door to be forward of the front axle and adjacent to the driver's cabin.

All passenger doors shall be two-leaf swing doors that are preferably flush fitting with the exterior of the bus.

The boarding/ramps bridges shall be fitted at all passenger door openings shall be of the automatic extruding cassette type ramps.

Door and ramp actuator noise shall be muffled and not exceed 3dBA above the noise limits set in the specifications and shall comprise of a chime or melodic motive and not be a strident siren or buzzer.

The audible signal should be clearly audible to anyone within two meters and must be clearly distinguishable from

those used for pedestrian crossings.

Door and ramp / step opening and closing sequences should not exceed a total of 3 seconds from the initiation to the completion of the opening or closing cycle.

6.16 Passengers and wheelchair accessibility

The buses shall be designed to cater for the widest possible spectrum of passengers, including children, adults, the elderly, and people with disabilities.

A wheelchair user must be able to enter the bus via the left-hand side door, access the wheelchair bay, and exit via the right-hand side door and vice versa.

6.17 Passenger Capacity

The minimum passenger seating capacity shall be that given in the table below but where practical the seating opportunities shall be maximized.

Buses shall be homologated with the total number of passengers being the number of seated passengers plus the number of standees at the maximum permitted standing density subject to available free floor space and permitted maximum loading.

6.18 Drivers Cabin

The driver's cabin shall be enclosed. Refer to the technical document TS1 for details.

6.19 Ventilation

The bus shall be fitted with a **forced ventilation system** for which spare parts are readily available. The system must be capable of expelling water from the system without any leaking into the passenger cabin during periods of high intensity rainfall.

Air conditioning is not required.

6.20 Fire Suppression System

Not required.

6.21 Bus Livery

Bus exteriors shall be painted to the graphic design provided by the Purchaser. An example of the general form of the Purchaser's "MyCiTi" livery and colour reference is given below, and further details are provided in the Functional and Technical Design Guidelines. The example of the external painting should be utilised to price this aspect of the bus fabrication only. The final design shall be confirmed during the design and manufacturing stage.



Figure 1: Proposed “MyCiTi” livery for typical 18 m rigid bus.

Prior to the painting of the buses the Supplier shall provide the Purchaser for approval, samples of the body panel material painted in the livery colours.

6.22 Internal notices and signs

Various notices (decals) and maps are to be displayed internally. The Figure 2 below is an illustration of the general number and location of the notices and maps that will be required to be placed within the passenger cabin. The Supplier shall agree the provision of system maps and the placement of notices with the purchaser during the design and prototype build stage.

The cost of the supply and placement of notices, signs and maps in the passenger cabin of the buses shall be included in the price of the Standard Bus.

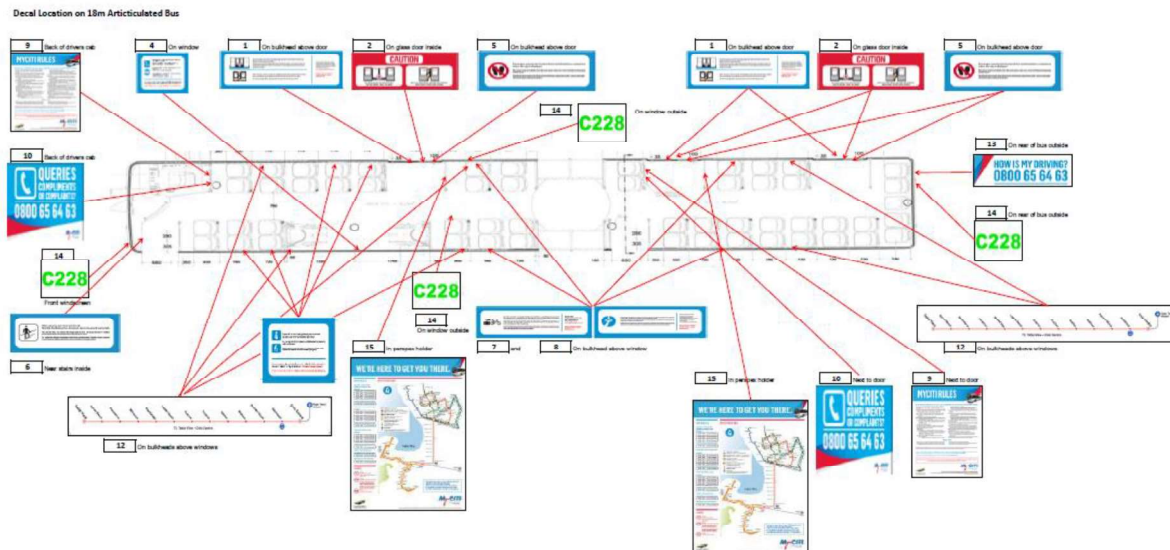


Figure 2: Internal location of notices within the bus passenger cabin.

7 PROCUREMENT OF BUSES: DIMENSIONAL AND OTHER QUANTITATIVE CRITERIA

For each bus type the dimensional and other quantitative criteria set out in the Tables below shall be satisfied. Further the bus types shall satisfy the overall design objectives and functional requirements and set out in the technical guideline TS1.

7.1 18m low-floor / low-entry articulated bus

The 18m low-floor / low-entry buses shall satisfy the dimensional and other quantitative criteria set out in the following Tables. Buses shall satisfy functional requirements and design objectives set out in the TS1 and TS2.

Table 2: Dimensional and other quantitative criteria for 18m low-floor / low-entry articulated bus

Item	Nominal	Minimum	Maximum
Vehicle length	18m		
Distance from ground surface level to the lower edge of the wing mirrors		1800mm	
Outside edge of wing mirror to the outside edge of body			250mm
Vehicle height (Road to highest point)			3.5m
Floor height above road surface during operation	340 mm		
Floor height above road surface at right side bus stations (RHS Doors.)	340 mm	320 mm	360mm
Floor height, at step, above road surface at left side bus stops (LHS Doors). (*kneeled)		To be in accordance with the SANS10370 regulation or applicable SANS regulation.	
Passenger area ceiling height (low-floor area)		2200mm	
Doors and Boarding Ramps			
Two-leaf swing passenger doors – Left side		1	2
Two-leaf swing passenger doors – Right side		3	3
Free door width on any passenger door (excluding emergency doors)		1100mm	
Doorway height	1900 mm	1850mm	
Boarding Ramp length Right (measured from RHS near side tyre wall)	350mm	350mm	440mm
Boarding Ramp length Left (measured from LHS near side tyre wall)	350mm	Refer to SANS10370 regulation or applicable SANS regulation.	

Item	Nominal	Minimum	Maximum
Boarding Ramp deployment time (from initiation to full deployment)	2,5 sec		
Boarding Ramp slope	1:12	Refer to SANS10370 regulation or applicable SANS regulation.	
Passengers and Seating			
Number of passenger seats (2 x 2 seating configuration) including preferential seats but excluding flip downs and driver seat.	46	40	Maximum permissible for the design bus.
Number of preferential seats		6	
Number of wheelchairs		1	
Length of wheelchair		To be in accordance with the SANS10370 regulations or applicable SANS regulation.	
Flip down seats in wheelchairs bay per bay		2	
Seat Pitch (excluding preferential seats)		730mm	
Seat width		420mm	
Standing Passenger Design Density (To be designed for maximum of available free-floor area subject to load restrictions)		4.5 pax / m2	6.25 pax / m2
Total passengers			To be maximized
Auxiliary power			
Auxiliary Electrical power supply	1KWhr, 24VDC		

Table 3: Propulsion system and Performance

PERFORMANCE	
Speed and gradeability	Requirement
Top Speed on straight level road at GVM (minimum)	75km/hr
Performance on gradient under full load conditions	Bus shall be able to pull away fully loaded on an 8% uphill gradient. 40 km/hr on 4% upgrade (Minimum)
Acceleration	Initial acceleration rates of between 0,7 m/s ² and 1,0 m/s ² are acceptable. Acceleration to be limited to safe operational acceleration rates.

Propulsion Unit (s)	Requirements
Internal combustion engine	EURO VI emission standards

8 INSTALLATION OF INTELLIGENT TRANSPORT SYSTEMS (ITS)

8.1 ITS Equipment Specifications

The requirements for the installation of the ITS equipment is set out in *TS2: Design and Installation Guidelines for On-Board Intelligent Transport Systems (ITS) Equipment*.

ITS equipment is to be installed by both the Supplier, and the Purchaser's ITS equipment providers.

The technical description of the ITS equipment is based on equipment currently installed on the MyCiTi bus fleet. However, alternative equipment may become available should the services of another ITS service provider (or providers) be contracted by the Purchaser. This equipment will be similar to that described in technical guideline and have the same functionality and serviceability of the equipment being replaced.

The Purchaser will timeously provide the Supplier with all the necessary information to allow the Supplier to contract with the Purchaser's ITS service providers if different from the current ITS service providers listed in the specifications.

8.2 Provision of ITS Equipment

The bus shall be fitted, pre-delivery, with a suite of electronic intelligent transport systems (ITS) and other equipment which have been grouped as follows.

- a. Bus Supplier to provide and install equipment as part of the standard bus.
- b. The Purchaser's ITS equipment provider's installations.

The bus Supplier shall remain responsible for coordinating and managing the installation process of all ITS equipment whether supplied by the Supplier's domestic subcontractors, the Purchaser's ITS equipment providers or other 3rd parties. Where practical the installation of the equipment should take place during the bus assembly process. The Supplier shall however not be responsible for the poor performance of the Purchaser's ITS equipment providers, nor for the correct functioning of their installed equipment.

8.3 Requirements ITS and Associated Equipment Installations

The responsibility for installation, commissioning, and maintenance of the ITS equipment is set out in technical guideline *TS2: Design and Installation Guidelines for On-Board Intelligent Transport Systems (TS) Equipment*.

Should there be a conflict between the requirements of this Scope of Work and TS2 then the requirements of the Scope of Work shall prevail.

8.4 Fitting of equipment

The Supplier shall liaise with the ITS equipment providers regarding all aspects of their equipment installations including data interface requirements, communication and power cabling requirements, equipment placement locations, mounting and IP requirements in secure equipment enclosures etc.

The Supplier and the Purchaser's ITS equipment providers shall be responsible for the fitting of their respective equipment to fixed mounting points and /or into equipment enclosures which are both to be provided by the Supplier as an integral component of the bus.

Provision shall be made by the Supplier for data communication and power supply connections from the bus systems to the respective ITS enclosures. Each ITS system / enclosure shall have its own fuse box on the power supply.

The by domestic subcontractor's as well the Purchaser's ITS equipment providers shall provide their own secondary fuse box in the equipment enclosures and provide any cabling that is required between their respective equipment components.

Where any installation of any fixture is to be mounted to the exterior of the bus (i.e., antenna) the Supplier shall undertake the installation of this equipment or supervise the installation thereof but shall remain responsible for any leaks and or damage to the bus body that may occur resulting from these installations.

The fitting of this equipment shall take place in Cape Town.

8.5 Separate and secure equipment enclosures

Separate and secure equipment enclosures are to be provided for.

- a. Advanced Public Transport Systems (APTMS) equipment.
- b. Automated Fare Collection systems (AFC).
- c. Vehicle telematics unit.
- d. Wi-Fi equipment installations (possible after-sales installation.)

Note that more than one enclosure may be required for certain equipment suites. The requirements are to be confirmed with the Purchaser and the Purchaser's ITS equipment providers.

The Supplier shall provide and install the necessary power cabling from the bus systems (i.e. auxiliary power source or alternative) to the ITS equipment enclosures and other placement locations.

The Supplier shall liaise with ITS equipment providers regarding the data requirements and cabling between the bus information systems and the ITS equipment bays and other ITS mounting point locations. To facilitate the bus assemble process the Supplier shall be responsible for providing and installing the power and data communication cabling as well as fuses and connectors at each terminal block within the enclosures and at all other ITS mounting points, where required.

The equipment bays shall be built to the appropriate IP standard for the equipment being installed. Particular attention must be given to the equipment's operating temperature regime, high ambient temperatures, insulation and the need to ventilate and cool the equipment. Equipment bays shall be capable of maintaining temperatures within the equipment operating parameters.

The cost of providing the equipment bays, cable trunking, mounting points, data interface connections and power supply etc. shall be for the Supplier and shall be included in the price of the standard Bus.

The cost of liaison with the APTMS and AFS equipment suppliers to ensure the proper design and installation of the ITS equipment and the management of the installation process is reimbursable. Provision is made for a separate priced item, referred to as ATTENDANCE in the Pricing Schedule.

8.6 Positioning of CCTV installations

The Supplier shall prepare for the installations for the CCTV cameras and PoE switches by confirming their placement location with the APTMS supplier and the Purchaser. The Supplier shall prepare the CCTV mounting points and ensure correct fitting into the bus ceiling and/or bulkheads to ensure a professional fit.

8.7 ITS Equipment to be installed by the Supplier.

8.7.1 ITS equipment included in the price of the standard bus.

The following items shall be installed on each bus by the Supplier and shall be considered inclusive in the price of the standard bus. No separate payment for the supply and installation will be made.

- a. External variable messaging displays

- b. Internal variable messaging displays
- c. Electronic Destination Display (EDD) Controller
- d. Audio system – saloon speakers and driver speakers
- e. Stop request system.
- f. Driver panic alarm
- g. Auxiliary power supply
- h. Vehicle monitoring system interface i.e. Bus-FMS non propriety data interface and connector access

8.7.2 ITS equipment to be installed by Supplier as a Priced Item.

The following items shall be installed on each bus by the Supplier and shall be reimbursed as a separate payment item.

- a. Vehicle telematics unit
- b. The Supplier shall he install telematics unit on the buses which shall be capable of monitoring bus performance, driver behaviour and state of the vehicle/fault codes.

The Pricing Schedule shall make provision for the pricing for the supply and installation of the unit and an annual user subscription fee for access to the telematics system.

Where there is a tiered pricing structure for the various functions i.e., bus performance, driver behaviour and state of the vehicle e.g., faults, the Purchaser is requested to provide this information at time of tender submission.

8.8 Equipment to be installed by the Purchaser's ITS equipment providers.

The equipment that is to be provided by the Purchaser's ITS equipment providers and installed on the buses is listed in the sections below. Details of the typical (current) equipment installed on the MyCiTi fleet is provided in TS2: *Design and Installation Guidelines for On-Board Intelligent Transport Systems (TS) Equipment*.

The ITS equipment providers that are listed below are the City of Cape Town's current contractors for the supply and maintenance of their respective equipment. These ITS equipment providers may change before the commencement or during the Supplier's contract period. The Purchaser shall advise the Suppliers of any changes to the ITS equipment providers as soon as possible.

The Purchaser's APTMS equipment providers shall be responsible for the installation, testing and commissioning of their equipment. Copies of all testing and acceptance documentation will be provided to the bus Supplier who shall forward these to the Purchaser together with other test and acceptance documentation at time of bus delivery.

The Supplier shall warrant the installation of the equipment mounting supports, the power supply and data cabling to the respective terminal blocks at the point where the ITS equipment providers interface with the bus systems. The Supplier shall not be responsible for warranting the design nor the correct functioning of the ITS Purchaser's ITS equipment provider's supplied components or ongoing maintenance thereof.

The Purchaser or the Purchaser's agent may also undertake independent testing of the equipment, and this may be undertaken at the assembly / manufacturing plant and/or during on-road bus testing.

8.8.1 Advanced Public Transport Management Systems (APTMS)

The APTMS equipment to be installed in the bus shall be provided and installed by the Purchasers' APTMS equipment provider.

The equipment to be provided and the current equipment provider's contact details are tabulated below.

APTMS EQUIPMENT TO BE PROVIDED	CONTACT DETAILS OF THE PURCHASER'S APTMS EQUIPMENT PROVIDER (Current MyCiTi Provider)	
- Vehicle Logic Unit (VLU) - Automated Vehicle Location (AVL) - Communications unit (GPRS, Wireless LAN modem, Multiband antenna) - Driver Microphone - Driver Data Terminal (DDT) - Network Video Recorder (NVR) - Driver Display (VGA) - CCTV Displays - CCTV Cameras, POE switches. - All ethernet and VGA and antenna cables, including APTMS and EDD integration. - APTMS Intra unit power connections.	Company name	Traffic Management Technologies Services and Supplies (Pty) Ltd (TMT)
	Contact person and details	Philette De Jager Cell: 082 855 5567 philette@office.tmtservices.co.za
	Physical Address	Ground Floor Building D Platteklouf Park, Blouelie Crescent, Platteklouf, Cape Town, 7446

8.8.2 Automated Fare Collection Systems (AFC)

The AFC equipment to be installed in the bus shall be provided and installed by the Purchasers' AFC equipment provider who shall be contracted to undertake the work by the Supplier. The equipment to be provided and Purchasers' AFC equipment provider's contact details are tabulated below.

AFC EQUIPMENT TO BE PROVIDED	CONTACT DETAILS OF THE PURCHASER'S AFC EQUIPMENT PROVIDER (Current MyCiTi Provider)	
- Fare Validator Units (FVU) - AFC Bus Computer (Fare processing unit(s)) - A separate AFC Multi-service (GPS/3G/Wi-Fi) antenna for the fare system not connected to the VLU. (Note: The VLU and fare system have independent communications at the depots) - All ethernet cabling, antenna cabling, and AFC – APTMS interface. - AFC Intra unit power connections	Company name	Information Communication Technology Solutions Works (ICT-works)
	Contact person and details	Daria Park Cell – 082 906 0725daria@ict-works.co.za
	Physical Address	1st Floor, Pier Place 31 Heerengracht Street Foreshore, 8000 Cape Town

8.8.3 Bus and Station Door Control System (Bus-Platform Screen Door) installation

The Bus and Station Door Control equipment consist of components that are to be installed at the stations and on buses to enable the synchronizing the opening and closing of station platform screen doors with those of a bus, when activated by the bus driver.

The Supplier will be required to make provision of the installation of a RFI Remote Activation Device (RAD) in each bus which shall be provided by the ITS equipment provider who shall be contracted by the Purchaser. to install associated equipment at the MyCiti bus stations. No equipment shall be installed on the stations by the Supplier.

The Supplier shall be responsible for the installation and integration of the RAD with the bus door and ramp systems on the bus.

The equipment to be provided and ITS equipment providers contact details are tabulated below.

Bus-PSD EQUIPMENT TO BE PROVIDED	CONTACT DETAILS OF THE PURCHASER'S BUS-PSD EQUIPMENT PROVIDER (Contract to be awarded)	
Installation of door controller or RAD in driver cabin (Remote Activation Device)	Company name	Bus-SPD Service Provider. (To be advised)
	Contact person and details	
	Physical Address	

8.9 Management of the Purchaser's ITS equipment providers by the Supplier

The Supplier shall be responsible for the overall project management of all the ITS equipment installations. This shall include management of the installation design, physical installation and acceptance testing. The Supplier may request the Purchaser's assistance where liaison with ITS equipment providers is required.

The Supplier shall, where practical, arrange to have the APTMS, AFC and Bus-PSD equipment installed at a Cape Town facility where integration with other components of these systems can be tested. In-production testing of this equipment shall not preclude any pre-acceptance static and on-road testing of this equipment on each bus.

Further, the Supplier shall assist all ITS equipment providers with the installation of their respective equipment. This shall include inter alia the placement of equipment, provision of mounting rails, support brackets, trunking and power and data cabling etc. as set out elsewhere in the specifications.

8.10 Payment for assistance with the Purchaser's ITS Installations

An allowance for ATTENDANCE shall be provided in the Pricing Schedule to reimburse the Supplier for the associated coordination and management of the Purchaser's ITS equipment installations. This shall cover the necessary costs associated with liaising with equipment providers, project managing the installations and the testing of the installed equipment.

The cost of all other associated work, including installation of any data communications cabling, looms power cabling, connectors, enclosures etc. as set out in the SOW and guideline documents shall be included in the overall unit price for the Standard Bus.

Should one or more of the Purchaser's ITS equipment providers default, provision has been made for the Supplier to deliver the bus without the equipment installed. Refer to item 13 INVOICING AND PAYMENT.

8.11 Payment of the Purchaser's ITS Equipment Providers

The Purchaser (City of Cape Town) shall be responsible for the direct payment of the APTMS, AFC and Bus-PSD equipment providers who may invoice the Purchaser for this equipment once the installations have been completed, tested and commissioned.

The payment of the Purchaser's ITS equipment providers shall be conditional on provision to the Purchaser, all requisite documentation which shall include the serial numbers of the installed equipment and confirmation by the Supplier that the installation is complete. The testing of the equipment will be undertaken by the Purchaser's and /or the Purchaser's representatives.

8.12 Warranty and Maintenance of equipment by ITS equipment providers

The Purchaser's ITS equipment providers shall be responsible for warranting and maintaining their installed equipment.

8.13 ITS Equipment Documentation

Installation records and acceptance testing results to be provided.

- a. The Supplier shall provide a complete list of the ITS equipment installed on each bus by the Supplier and the Purchaser's ITS equipment providers. Where available equipment serial numbers shall be provided.
- b. Copies of all operating and technical documentation shall be provided. Documentation on the warranty conditions shall similarly be provided together with a schedule of the warranty period which shall commence no earlier than the commencement date of the basic warranty for the Standard Bus.
- c. Copies of all quality assurance and acceptance tests for the installed equipment, together with equipment serial numbers (where available) of equipment installed on each bus must be provided together with the acceptance and hand-over documentation required for each bus.

9 PROVISION BUS WARRANTY

9.1 Warranty Requirements

The warranty requirements in this document are in addition to any statutory requirements imposed on the Supplier. Consistent with this requirement, the Supplier warrants and guarantees to the Purchaser each bus and specific subsystems and components thereof as set out below and in the Scope of Work.

The warranty is based on regular operation of the bus under the operating conditions prevailing in the Purchaser's locale.

The Supplier shall not be responsible for any warranty pertaining to equipment installed by the Purchaser's independent third-party (ITS) equipment providers nor for any work undertaken by such providers.

Provision is made for both a Standard Warranty as part of the Standard Bus and an optional Extended Warranty to be priced for benchmarking purposes and not to be compensated through the contract. This option may be elected by the Purchaser's vehicle operating companies (VOCs).

9.2 Date of the Commencement

Kindly refer to Clause 15 of Special Conditions of Contract for the applicable standard warranty.

9.3 Standard Warranty

Kindly refer to Clause 15 of Special Conditions of Contract for the applicable standard warranty.

The Supplier's **Warranty conditions** shall include a comprehensive statement of the warranty terms and I disclaimers within the warranty.

Where the **Supplier's warranty exceeds the minimum requirements** of the standard warranty then the Supplier's warranty shall prevail. Similarly where the warranties provided by the Supplier's subcontractors, equipment and material providers exceed the minimum requirements of the standard warranty then these warranties shall prevail.

9.4 Extended Warranty (Optional item)

In the context of this contract an Extended Warranty is one that that encompasses the same conditions as the "Standard Warranty" but extends the warranty period(s) and, or distance(s) travelled.

The Purchaser may require an extended warranty subject to its agreement with its vehicle operating companies and as such the Supplier is requested to provide a price for an Extended Warranty. The pricing shall be for the amount that is over-and -above that of the Standard Warranty. **This is an optional item that may not be included in the Scope of Work but** shall be used for benchmarking purposes.

The Extended Warranty shall satisfy the Supplier's standard "bumper to bumper" bus warranty that shall warrant the bus to be free from Defects and Related Defects subject to the warranty being valid for minimum period of three (3) year or 240 000 kilometres, whichever comes first.

The Extended Warranty to be priced for benchmarking purposes and will not to be compensated through the contract. This option may be elected by the Purchasers vehicle operating companies (VOCs).

9.5 Serial Numbers

Upon delivery of each bus, the Supplier shall provide, in an electronic format agreed with the Purchaser, a complete electronic list of serialized units installed on each bus to facilitate warranty tracking.

The Supplier shall provide updated serial numbers resulting from warranty claims. The format of the list shall be approved by the Purchaser prior to delivery of the first production bus.

9.6 Extension of Supplier Warranty

If, during the warranty period, repairs or modifications on any bus are made necessary by defective design, materials or workmanship but are not completed due to lack of material or inability to provide the proper repair for thirty (30) calendar days, the applicable warranty period shall be extended by the number of days equal to the total delay period.

9.7 Voiding of Warranty

The warranty shall not apply to the failure of any part or component of the bus that directly results from misuse, negligence, accident or repairs not conducted in accordance with the Supplier-provided maintenance manuals and with workmanship performed by adequately trained personnel in accordance with recognized standards of the industry. The warranty also shall be void if the Purchaser, the Purchaser's assignee or vehicle operator (VOC), fails to conduct normal inspections and scheduled preventive maintenance procedures as recommended in the Supplier's maintenance manuals and if that omission caused the part or component failure. The Purchaser shall maintain documentation verifying service activities in conformance with the Supplier's maintenance manuals.

9.8 Exceptions and additions to warranty

The warranty shall not apply to the following items:

- a. scheduled maintenance items
- b. normal wear & tear items
- c. items furnished by the Purchaser.

Should the Purchaser require the use of a specific product and has rejected the Supplier's request for an alternate

product, then the standard Supplier warranty for that product shall be the only warranty provided to the Purchaser. This product will not be eligible under "Fleet Defects" below.

9.9 Pass-Through Warranty

The Supplier shall be solely responsible for the administration of the warranty as specified. Warranty administration by others does not eliminate the warranty liability and responsibility of the Supplier.

9.10 Superior Warranty

The Supplier shall pass on to the Purchaser any warranty offered by a component supplier that is superior to that required herein. The Supplier shall provide a list to the Purchaser noting the conditions and limitations of the Superior Warranty not later than the start of production.

9.11 Fleet defects.

9.11.1 Occurrence and Remedy

A Fleet Defect is defined, for this contract, as cumulative failures of twenty (20) percent of the same components in the same or similar application where such items are covered by warranty. A Fleet Defect shall apply only to the base warranty period in sections entitled "Standard bus," "Propulsion System" and "Major Subsystems" as well as the following "Minor Subsystem" elements viz; the door systems and the Boarding bridge / ramp systems.

When a Fleet Defect is declared, the remaining warranty on that item/component stops. The warranty period does not restart until the Fleet Defect is corrected. For Fleet Defects, each option order shall be treated as a separate bus fleet. In addition, should there be a change in a major component within either the base order or an option order, the buses containing the new major component shall become a separate bus fleet for the purposes of Fleet Defects.

The Supplier shall correct a Fleet Defect under the warranty provisions defined in "Repair Procedures." After correcting the Defect, the Purchaser and the Supplier shall mutually agree to, and the Supplier shall promptly undertake and complete a work program reasonably designed to prevent the occurrence of the same Defect in all other buses and spare parts purchased under this Contract. Where the specific Defect can be solely attributed to identifiable part(s), the work program shall include redesign and/or replacement of only the defectively designed and/or manufactured part(s). In all other cases, the work program shall include inspection and/or correction of all the buses in the fleet via a mutually agreed-to arrangement. The Supplier shall update, as necessary, technical support information (parts, service and operator's manuals) due to changes resulting from warranty repairs. The Purchaser may immediately declare a Defect in design resulting in a safety hazard to be a Fleet Defect. The Supplier shall be responsible to furnish, install and replace all defective units.

9.11.2 Exceptions to Fleet Defect Provisions

The Fleet Defect warranty provisions shall not apply to Purchaser-supplied items, or installations undertaken by the Purchaser's equipment providers and tyres.

10 PROVISION OF ON-GOING TECHNICAL SUPPORT & TRAINING

The availability of on-going technical support (after-sales support) is an essential component of the service that the Supplier is to provide to the Purchaser.

10.1 On-going technical support: Availability of technical representatives

The Supplier shall, at its own expense, have one or more competent technical service representatives available on request, to assist the Purchaser and/or the Vehicle Operators with aspects relating to the deployment and operation of the electric buses. This will include but is not limited to the following:

- a. The solution of engineering or design problems that may arise within the scope of the specifications.
- b. Providing basic induction training on delivery of the buses for operational and frontline maintenance staff.

- c. Advice on any operational issues that may arise during the initial bus deployment phase.
- d. Warranty management.
- e. As part of providing on-going technical support, provide when requested by the Purchaser and at no cost information relating to the maintenance life-cycle costs of the vehicles to enable the Purchaser to refine in more detail a preventative maintenance programme for the fleet.

10.2 Training in operations, maintenance, and safety

The Supplier shall provide specific training which shall be more comprehensive than the basic induction/product training provided when the initial buses are delivered and shall cover best practices for personnel training and development.

The Supplier shall coordinate training with the Purchaser, shall coordinate with the respective vehicle operating companies (VOCs) and others whose will be required to attend training. The Purchaser's staff may also be required to attend training sessions.

It is anticipated that training will be provided to groups of between 10 to 15 persons per session.

Training venues shall be provided by the Purchaser. Sessions may be held at different venues with the City of Cape Town.

The Supplier shall submit a summary of their intended training programme(s) to the Purchaser, prior to the commencement of training. This shall include a brief description of the following.

- a. Subject covered (brief description)
- b. training hours
- c. training aids and materials
- d. training outcomes (brief description)

The Supplier shall provide the Purchaser with copies of all training documentation, preferably in electronic format.

The Supplier shall be reimbursed for each training session provided at the rates tendered in the Pricing Schedule subject to approval of the training programme.

The cost of all training material shall be inclusive of handouts shall be inclusive in the tendered rate. Where handouts and or manuals are provided by the Supplier an allowance for up to 20 copies shall be made.

The Supplier shall provide training to the Purchaser and the Purchaser's representatives (vehicle operating companies / VOCs) which will include training for the following.

10.2.1 Driver training (train-the-trainer)

The Supplier will be required to give driving instructions to the Vehicle Operator's driver training instructors who are qualified bus drivers. It is envisaged that this training will include a classroom session and practical on-road driving instructions. The instruction shall cover all bus types that are being procured under this contract.

Training shall as a minimum cover the following.

- a. Overview of the bus and performance characteristics
- b. Normal bus operations.
- c. The effective use of on-board instrumentation and controls i.e. driver's console and fault codes
- d. Training on the efficient operation of the buses.

- e. Safety and emergency procedure training.
- f. Customer (passenger) relations.

The Supplier shall on the conclusion of the training the competency of trainees to provide training to other drivers on the topics covered during their training sessions and advise if further and recurrent training would be necessary.

The Purchaser will provide the venue for the classroom session(s) and the on-road instructions shall be given using the buses supplied under the contract.

10.2.2 Maintenance staff

The Supplier shall provide the necessary on-site instructions and training that will properly prepare the technical staff of the Purchaser's Vehicle Operator to carry out the daily maintenance of the vehicles procured under this contract.

The training shall be in accordance with recognized industry standards and as recommended in the Supplier's maintenance manuals. The training shall typically cover:

- a. Overview of the bus design, its propulsion and other on-board systems and vehicle performance characteristics.
- b. Overview of Supplier-provided maintenance manuals and other maintenance/service documentation. (Bus body and chassis and ITS auxiliary power systems.)
- c. Daily inspections and topping up of fluids.
- d. Conducting normal / regular safety inspections
- e. How to work with the onboard diagnostic systems and/or plug in diagnostic equipment for fault finding and required remedial actions.
- f. Referral of the trouble shooting and servicing of propulsion system components to specialist / OEM technicians
- g. Scheduling of preventive maintenance
- h. Recording and maintain documentation for verifying service activities.
- i. Maintenance while under warranty.
- j. Towing and towing equipment
- k. Vehicle cleaning and washing

The training will take place at a Vehicle Operator's depot in Cape Town or at a Purchaser's facility and the buses supplied under the contract will be used for instruction purposes.

10.3 Provision of operator and workshop manuals

The Supplier shall make available to the Purchaser, manuals that comprehensively cover the operation and daily servicing and maintenance activities for the standard bus. These documents shall preferably and where applicable, be made available in a suitable electronic format (pdf) to enable the Purchaser to distribute copies to the VOC's. The electronics copies shall be provided free of charge.

Collectively these may include but not limited to which are to be provided electronically (cost inclusive in standard bus.)

- a. Operators' manual.

- b. Train-the-trainer (Drivers)
- c. Service Manual for daily maintenance inspection (PMI) and safety inspections requirements.

Where hardcopy documentation is required for trainees the Supplier shall provide the required number of copies and distribute them amongst the delegates. The cost of these hard copy documents shall be included in the price for training submitted by the Supplier.

The following documents are to be provided in the quantities given in the Pricing Schedules.

- a. Diagnostic procedures & fault tracing manuals. (The cost of the manuals is to be included in the pricing of the diagnostic equipment.)
- b. Maintenance Manual: Standard workshop manual. This is a reimbursable item to be priced in the Pricing Schedule.
- c. Parts manuals This is a reimbursable item to be priced in the Pricing Schedule.

Where Supplier's proprietary manuals differ in some content to that described above the manuals that best cover the subject matter shall be provided. In the case of reimbursable manuals, where the content of a required manual is included in another manual, no price shall be submitted in the Pricing Schedule and the item shall be annotated to indicate such.

Pricing options for reimbursable manuals shall be provided options for both a fixed unit price and an annual subscription, as may be applicable. Supplier shall price either item or both if applicable. Additional information regarding any licencing may be requested by the Purchaser.

Reimbursable items will be listed in the Pricing Schedule together with the quantities required. Where optional quantities are provided additional copies, or no copies may be required.

10.4 The provision of specialist tools, test, and other equipment

The Supplier shall provide the following tools required for maintenance and inspection. A "basic tool kit" shall be provided with each bus. The quantities of other equipment required will be given in the Pricing Schedules.

- a. Basic tool kit: To be furnished with each bus and shall include emergency triangles, high visibility driver vest, ramp emergency manual stowage device etc. all items typically carried on the bus. (Price to be included in the price of the standard Bus.)
- b. Spare tyres (tyre and rim).
- c. Wheel chocks.
- d. Including tyre lever bar.
- e. Trolley Jacks: A set shall be sufficient to facilitate vehicle recovery / on-road wheel changes.
- f. Towing Equipment
- g. Diagnostic equipment: Depot based, or portable diagnostic equipment used to trace and diagnose faults etc. including manual and if applicable, one-year user subscription/licence fee. (Refer to the Pricing Schedules for quantities required.)

11 PROVISION OF SPARE PARTS AND MAINTENANCE

11.1 Supplier's Spare Parts Distribution and Service Centre

The Supplier shall provide and maintain at its own expense and before the delivery of the final bus to the Purchaser a spare parts procurement and distribution system sufficient to support equipment maintenance without delays

and a service organization with skills, experience and equipment sufficient to perform all warranty work and on-site work:

The local parts distribution centre shall be located within the Cape Town region for the supply of standard maintenance and other quick moving parts which may be supported by a national parts distribution centre located in South Africa.

Prior to the signing of the Contract with the Purchaser the Supplier shall state the representatives responsible for assisting the Purchaser as well as the local location of their Spare Parts Distribution and Service Centres.

11.2 General Parts Guarantee

The availability of spare parts will become a contractual obligation to be met in the performance of this contract. As such, the Supplier shall guarantee to provide when requested and within the stated periods of time, the spare parts, software and equipment necessary to maintain and repair buses supplied under this contract. If the Supplier fails to deliver any or all the goods within the period(s) specified, the Supplier may without prejudice to the Purchaser's other remedies under law, be subject in terms of the Supplier's contract to a claim for damages.

11.3 Parts availability and delivery times

The Spare Parts Distribution Centre shall furnish parts and components for the repair and maintenance of the buses to be supplied. The Supplier shall, on request, state its policy on transportation charges for parts other than those covered by warranty.

Parts for the standard bus (chassis and body) shall be available as follows:

- a. All parts required for servicing (regular preventative maintenance) and other quick moving parts shall be available in Cape Town ex-stock for delivery or collection within 4 working hours of orders being placed during normal working hours.
- b. Other parts shall be available for delivery or collection in Cape Town within 36 working hours of orders being placed during normal working hours. This shall exclude major / high value replacement parts where there is limited demand for these parts or replacement requirements can be predicted with some certainty.
- c. Where parts are not available for collection or delivery due to excessive unusual demand, the required part shall be made available at the local distribution centre within 14 working days following the day on which the order was placed (unless a longer period is agreed with the Purchaser). In such cases, the Supplier shall be requested to provide evidence proving that the part or parts ordered is more than normal demand on stock levels maintained by the Supplier.

11.4 Parts catalogue and ordering of spare parts.

The Supplier is required to provide, if requested and in electronic format, the current version of the parts catalogues for the standard bus (chassis and body) access to the Supplier's online parts ordering system. (Priced item)

11.5 Supplier's Servicing and Maintenance Requirements

11.5.1 Running-in inspections and the rectification of defects

The Purchaser will present each procured vehicle to the Supplier at odometer readings within the nominal ranges of 1000km to 2000km, unless an alternative range is agreed to between the Purchaser and the Supplier.

The Supplier shall inspect the complete bus and return it to the Vehicle Operator on the same day with a list of any defects that require to be made good. This will include any issues identified by the Purchaser or the Purchasers' Vehicle Operating Companies.

The Supplier, Purchaser and Vehicle Operator will arrange a programme for the Supplier to make good the listed defects at its own expense.

11.5.2 On-going maintenance information

The long-term on-going maintenance management of the buses will be the responsibility of the Purchaser's Vehicle Operating Companies (VOCs).

For the Purchaser to effectively monitor the on-going maintenance of the buses by its contracted VOCs the Purchaser requires the following information.

- a. Provide requirements for daily visual inspections of the vehicles. The conducting of these inspections will remain the responsibility of the Purchaser and/or the Purchaser's VOCs.
- b. Service interval information.
- c. a summary schedule of the standard OEM and body builder's maintenance intervals and service types (e.g. minor, major, A, B, C etc) for the buses. (Only a summary of the interval and type of service is required.)
- d. the services requirements shall apply to the standard bus inclusive of chassis and bus body. The service intervals shall primarily be kilometre-based intervals. Where distance-based intervals are not appropriate time-based intervals shall be provided.
- e. Preventative maintenance / service details
- f. Details of the service intervals and service content / requirements e.g. replacement parts, consumables etc. (To be included with the provision of the maintenance manuals.)
- g. Service down-time.
- h. Downtime for servicing and maintenance has a cost that the Purchaser wishes to minimise. Suppliers are to provide, on request (post contract award) realistic estimates of the downtime required for the servicing of vehicles at each of the standard service intervals.
- i. Provide on the request of the Purchaser, a written comprehensive 52-week and long-term rehab/replacement maintenance plan encompassing the bus chassis, motors, bodies etc. for its entire useful life. This is to be provided post the award of the contract.

11.6 Fleet Maintenance Plan

The Purchaser will require of the VOC that all **maintenance work be undertaken by an accredited maintenance provider, approved by the Purchaser**. The Supplier may however be required to provide preventative maintenance services and repair works for an initial period; however **this task is not included in the Scope of Work**.

However the Purchaser does require the basic conditions and cost of the Supplier providing a comprehensive Fleet Maintenance Plan (FMP) for the vehicles which shall be used for benchmarking purposes.

The Supplier shall provide a copy of their standard maintenance contract providing sufficient information to enable the Purchaser to evaluate the Supplier's proposal. This should include what is included and excluded as well as any specific conditions that may be applicable.

11.6.1 The scope of the Fleet Management Plan (FMP)

- a. The FMP shall provide for all regular OEM servicing and maintenance requirements covered in the Supplier's standard maintenance contracts.
- b. The FMP shall provide for a period of three (3) years and shall be priced per vehicle per service.
- c. The responsibility for daily vehicle checks and ensuring all fluids and oils are at the correct operating levels will remain the responsibility of the Vehicle Operator.

- d. Vehicles shall be maintained at an established Vehicle Maintenance Facility (or “workshop”) provided by the Supplier at a location within the metropolitan area of Cape Town.
- e. Maintenance work is performed timeously and without delay and in accordance with the Operator’s requirements to ensure maximum bus availability during peak periods. i.e. work is to be completed within the time periods given in the OEM standard times.
- f. All parts used by the Supplier to maintain and repair the vehicles shall be original OEM or equivalent parts. The use of lower quality generic parts will not be accepted.

11.7 Additional work outside the scope of the Fleet Maintenance Plan

The Supplier will not be precluded from undertaking vehicle maintenance and repair work on behalf of a Vehicle Operator. Such work will fall outside the scope of this contract. The following provisions shall apply:

- a. The Supplier shall enter into a separate agreement with the Vehicle Operator and the Vehicle Operator shall remain responsible for acceptance, approval and payment for the work.
- b. The Purchaser will in no way be party to such agreement nor be liable for any claim for payment or other loss due to defective workmanships notwithstanding the requirements set out below:
- c. The Purchaser may inspect the quality of the work and approve or reject such.
- d. The Supplier shall record all work done including part replacement in the vehicle Maintenance and Repairs Record Database and note that the work was done on behalf of a Vehicle Operator.

12 DESIGN REVIEW, INSPECTIONS AND ACCEPTANCE

12.1 In-production Inspections

As part of the detail design development and manufacturing processes the Purchaser and/or the Purchaser’s representative(s) reserves the right to visit the manufacturer’s facilities and conduct detailed in-production inspections of the vehicles at any stage during the manufacturing process.

The Purchaser and Supplier shall liaise on an inspection protocol which shall be in force throughout the Contract. This protocol shall not preclude the Purchaser from undertaking ad-hoc inspections at any point during the manufacturing and assembly of the vehicles.

Where the final assembly of the buses is not being undertaken in the greater Cape Town region, the Purchaser or the Purchaser’s representatives may inspect the first production (or prototype bus) in during its assembly as well as undertake further inspections of the buses in production when the full manufacture and assembly of the buses proceed.

Where more than one bus type is being assembled (i.e. final assembly stage) then an initial and a final assembly inspection may be required for each bus type. Inspection visits for bus types may coincide.

Similarly, where major components are not being manufactured or assembled locally (i.e. not in the greater Cape Town region) the or the Purchaser or the Purchaser’s representative(s), may inspect the products or components before they are shipped to a local facility for final assembly.

Where inspections outside the Cape Town region are required, the Purchaser shall be responsible for travel arrangements. The Supplier shall be required to assist in respect of itineraries, access to facilities, inspection of proposed materials and manufacturing processes.

Where in-production inspections are being undertaken in the greater Cape Town area the Purchaser’s staff shall make the necessary arrangements for inspections.

Any pre-assembly and in-production inspections shall in no way, obviate the need for final vehicle acceptance testing.

12.2 Approval process

Various stages of the contract will require authorised approval by the Purchaser, prior to commencement of the next stage and handover of the vehicles as tendered. The details of the acceptance process and necessary acceptance forms will be finalised after the award of the contract.

Notwithstanding the Purchaser's approval of the design and prototype / first production bus it remains incumbent on the Supplier to have the bus model homologated. The Purchaser will not take delivery nor accept any bus that has not been registered on the e-NATIS system.

It is recognised that various design and manufacturing process may run concurrently and a phased approval process to allow progress through the design, manufacture and assembly processes will be accepted. In general, the approval stages will include, but may not be limited to:

12.2.1 Stage 1: Approval of Concept Design

Approval of concept vehicle design(s) as per specifications. On completion of the concept design for the vehicles the Supplier shall contact the Purchaser's representative for this contract to approve the concept designs. The concept design stage will essentially include the design information submitted at tender stage and the award of the contract will generally imply approval of the concept design. The Purchaser's representative may however require some additional information, but this will normally be addressed in the next stage.

12.2.2 Stage 2: Detail Design and Prototype Approval

The Supplier shall contact the Purchaser's representative to approve the detail design and prototype vehicle. This may be a staged process as the design and development progresses. The first production vehicle may constitute the prototype bus.

Provision must be made for the Purchaser's representative to test drive the prototype vehicle, on terrain like that on which the vehicles shall operate.

12.2.3 Stage 3: Full Production Authorization

The Supplier shall make available to the Purchaser the prototype bus (or the first production bus, as may be applicable) for examination and approval prior to full production rollout bus. The Supplier may proceed with the initiating the full production process without the final approval of the prototype / first production bus at risk. Should any changes to the bus design be identified during the Purchaser's testing or homologation process these changes will be for the Suppliers account. The Purchaser will however work with the Supplier to assist with expediting the manufacturing process.

12.2.4 Stage 4: Vehicle Delivery, Acceptance, and Invoicing

The Supplier shall notify the Purchaser one week before delivery of the vehicles.

Vehicles are to be delivered as directed by the Purchaser to a specified location within the metropolitan area of Cape Town. Vehicles may be delivered over a series of tranches.

Vehicles will only be considered complete if all aspects of the specifications have been met, the vehicles type has been homologated by the relevant authorities and each vehicle displays a licence plate, indicating registration within the Western Cape.

A bus will only be accepted if complete, has successfully passed final inspections and has been approved by the Purchaser's representative.

12.3 Acceptance Documentation

12.3.1 Acceptance Certificate

The Purchaser will issue an Acceptance Certificate to the Supplier upon delivery of each bus subject to the following.

- a. the successful testing by the Purchaser of the Standard bus and the ITS installations
- b. the receipt of all acceptance documentation, including the vehicle registration certificate

The Supplier shall at the time of delivery provide the Purchaser with an itemised priced schedule for the Standard bus and installed other components as well as any price adjustments that may be applicable. This priced schedule should be detailed and appended to the invoice for the bus.

12.3.2 Partial Acceptance Certificate

The Purchaser may in exceptional circumstances issue a Partial Acceptance Certificate for the delivery of a bus if Purchaser's ITS installations cannot be completed due to reasons outside the Supplier's control, and it is unlikely that the outstanding ITS installation will not be completed within 30 days of the bus being ready for acceptance testing. In such cases the Supplier shall have completed all other work and is able to present the Standard bus for acceptance testing.

The Partial Acceptance Certificate Standard bus shall be as per the specification and payment shall be made for the Standard bus and other 3rd party or optional equipment that has been installed and for which a separate payment item has been provided in the pricing schedule.

In such a case both the Supplier and the Purchaser shall endeavour to ensure that the ITS installation is completed during the contract period.

12.3.3 Prototype / first production bus documentation.

The following documentation must be supplied with the first bus (prototype bus or 1st production bus) of each bus type being provided prior to the testing by the

- a. A copy of the homologation certificate for the vehicle type.
- b. Service manuals for the Standard bus i.e., chassis and body.
- c. Standard warranties for the Standard bus i.e., chassis and body
- d. Details of all third-party equipment including service and maintenance manuals, as well as warranty documentation for all non-OEM components installed on the Standard bus by the
- e. Acceptance Documentation to be submitted with each bus.
- f. All test and acceptance documentation applicable to that bus
- g. All vehicle operating manuals /driver manuals
- h. Registration papers and vehicle license
- i. Microdot information
- j. Warranty documentation for the Standard bus including third party equipment installations procured by the Supplier and nominated by the Purchaser.
- k. Schedule listing all other items handed over with the bus i.e., basic tool kit, keys, spare wheel, etc.

13 INVOICING AND PAYMENT

13.1 Payment for the Complete bus on issuing an Acceptance Certificate

- a. On receipt of an Acceptance Certificate the Supplier may submit an invoice to the Purchaser for the Complete bus i.e. Standard bus plus warranty, basic tools and keys, all the 3rd part / subcontractor / nominated subcontractor ITS installations etc.

- b. The invoice shall be itemised as per the items scheduled in the pricing schedules. Where payment items are subject to price adjustments, the price adjustment per item shall be listed separately and not added to the unit price of the item.
- c. The details of each vehicle's registration number, chassis and engine number shall be inventoried and handed to the Purchaser with each vehicle.
- d. Each vehicle shall be delivered with a complete tank of fuel and its accompanying equipment and tools.

13.2 Payment for the Standard bus on issuing a Partial Acceptance Certificate

- a. On receipt of a Partial Acceptance Certificate Standard bus the Supplier may submit an invoice to the Purchaser for the Standard bus where ITS and other installations by 3rd part / nominated subcontractors have not been completed or are unlikely to be completed within 30 days of the Supplier completing the assembly and testing of the standard bus; provided that such a delay is not attributed to the Supplier and the Supplier can demonstrate that all reasonable actions to complete the bus installations have been effected.
- b. The invoice shall be itemised as per the items scheduled in the pricing schedules. Where payment items are subject to price adjustments, the price adjustment per item shall be listed separately and not added to the unit price of the item.
- c. The details of each vehicle's registration number, chassis and engine number shall be inventoried and handed to the Purchaser with each vehicle.

13.3 Payment for ancillary services and equipment

- a. Payment for these items shall be made on receipt of an invoice for the services and /or equipment that has been provided by the Supplier and accepted by the Purchaser. Payment conditions for these services and/or equipment will be in accordance with the conditions of contract unless specifically set out differently in the pricing Schedule or specifications.

14 PROJECT MANAGEMENT AND REPORTS

14.1 Appointment of Supplier's Contract and Project Manager

The Supplier shall nominate as their representative a Contract Manager, who shall be responsible for overseeing the contract performance and a Project Manager who will represent the Supplier during the bus assembly, testing and hand over procedures. The Contract Manager and Project Manager may be the same person.

The Purchaser's representative, for the purposes of any communication between the Purchaser and Supplier is person set out in the contract documentation.

All contract and project related communication shall be between the Supplier and Purchaser shall be between their respective representatives.

It is required that the Supplier's Project Manager will inter alia:

- a. attend the project management meetings in Cape Town.
- b. Provide monthly progress/production reports.
- c. manage the relationships between all the Supplier's domestic subcontractors, the nominated subcontractors and other third-party equipment suppliers.
- d. manage the vehicle testing and hand over procedures,
- e. manage all post vehicle delivery ("after sale") activities i.e., induction training maintenance, warranty.

The Supplier may substitute either the Contract or Project Manager at any time subject to notifying the Purchaser of such in writing.

14.2 Project meetings

The Suppliers project manager shall attend monthly progress meeting with the Purchasers representative where the Project Manager shall present updated project programme and status report. Meeting may be held a more or less frequent interval subject to mutual agreement between the parties and provided that written monthly program updates and project status reports are provided the Supplier shall be responsible for minuting all meetings to be submitted to the Purchaser on a monthly basis.

The dates of these meetings to be discussed and scheduled for the entire duration until the end of the contract.

14.3 Reports and documentation to be submitted.

The Supplier shall, for the duration of the contract, provide the Purchaser with the following returns and reports:

- a. Monthly bus production program and status reports.

The monthly production program shall cover the complete production phase from the start of the project to the delivery of the final bus. Major bus manufacturing stages shall be scheduled i.e. chassis, body structure, painting etc. as well as other key milestones such as design and prototype approvals. The monthly progress shall be measured against this program. Any key issues affecting progress shall be reported, together with proposed mitigation actions if required as well as any likely consequences thereof.

- b. Any other documentation required for forms for contract administration.

15 TRADE NAMES OR PROPRIETARY PRODUCTS

Supplier must note that wherever this document refers to any particular trademark, name, patent, design, type, specific origin or producer, such reference shall be deemed to be accompanied by the words 'or equivalent'.

16 EMPLOYMENT OF SECURITY PERSONNEL

Not Applicable.

17 FORMS OR CONTRACT ADMINISTRATION

Not Applicable.

MYCITI RAPID TRANSPORT
LOW FLOOR OR LOW ENTRY DIESEL POWERED BUSES

Part 1

**TS1: Functional and Technical Design Guidelines for
MyCiti Buses**

TS1: FUNCTIONAL AND TECHNICAL DESIGN GUIDELINES

1. INTRODUCTION

This technical document sets out the functional and technical guidelines for the design of the MyCiti diesel powered (Euro VI) public transport buses.

This document must be read in conjunction with the following.

- a. Scope of Work for the Supply and Delivery of diesel powered (Euro VI) Buses
- b. TS1: Functional and Technical Design Guidelines for MyCiti Buses (this document)
- c. TS2: Design And Installation Guideline for On-Board Intelligent Transport Systems (ITS) Equipment

The buses to be provided by the Supplier must:

- a. Comply with all statutory requirements.
- b. Comply to the requirements set out in the Scope of Work.
- c. Satisfy the functional and technical design guidelines set in this document.

1.1 Scope of Work

The Scope of Work (or Project Specification) will specify the bus topologies, the installation of ancillary equipment, and quantities being procured as well as the services to be provided by the Supplier. The "*Functional and Technical Design Guidelines for MyCiti Buses (TS1)*" which are a constituent part of the overall Scope of Work provide the functional and technical requirements and design objectives for the buses being procured.

1.2 Applicability of the Functional and Technical Design Guidelines

The "*Functional and Technical Design Guidelines for MyCiti Buses*" (TS1) covers the general requirements for a range of buses and has been prepared as a set of general standards and guidelines describing the basic requirements for the City of Cape Town's MyCiti bus fleet.

The technical requirements and guidelines have been based on model bus designs and the Purchaser recognises that with the on-going evolution in bus design and the range of models becoming available, buses being offered by Suppliers may not meet the specific dimensional requirements set out in Technical Specifications.

Where the Supplier offers a bus that cannot meet the specific dimensional, functional or design requirements set out in this document, the buses will not be excluded from consideration provided that all the following conditions are satisfied.

The requirements of the Scope of Work and all statutory requirements are met.

- a. The functional requirements of the Bus Rapid Transport system are satisfied, which include inter alia operating speeds, station docking requirements, wheelchair accessibility, passenger capacity, ITS integration, emission standards or e-powertrain and energy storage system performance etc.
- b. The basic design objectives, aesthetics and overall provisions as set out for MyCiti buses in the document are met.

In such cases the Supplier may be requested to provide supporting information that motivates the deviation and/or validates that the proposed vehicle satisfies the Purchaser's functional requirements and overall design objectives.

1.3 Referenced Publications

Documents referenced within this guideline shall be considered part of the procurement requirements. The edition

indicated for each referenced document shall be the current edition, as of the date of issuing the tender. Any inconsistency in compliance with the functional and technical requirements and referenced documents shall be resolved by giving precedence in the following order.

1.4 National regulations and compulsory specifications

- c. The Scope of Work
- d. Referenced standards (SANS, ISO etc.)
- e. Technical content of this guideline specification.

2. SCOPE OF FUNCTIONAL AND TECHNICAL DESIGN GUIDELINES

2.1 MyCiti Bus types

This document defines the MyCiti requirements for low-floor or low-entry heavy-duty low emission diesel-powered buses to be used for bus rapid transport (BRT) services, suburban express services and general services on urban arterial streets.

The bus topology covered includes 18 m articulated buses of the low-floor or low-entry types.

The type of bus or buses to be procured by the Purchaser will be explicitly stated in the Scope of Work and only those requirements that relate to the type of bus(es) being procured will be applicable.

2.2 Optional items and design alternatives

The guideline provides for various bus configurations including the installation of optional and ancillary equipment depending on the buses' intended service requirements. Where an option is elected, this will be stated in the Scope of Work. Where no alternative or option is explicitly identified, the default requirement shall apply.

The type and quantity of buses being procured as well as the specific configuration in terms of options or alternative and will be set out in the Scope of Work.

2.3 Definitions

AFC or AFS: Automatic Fare Collection System

Alternative: An alternative specification condition to the default bus configuration. The Purchaser may define alternatives to the default configuration to satisfy local operating requirements. Alternatives for the default configuration will be clearly identified.

Ambient Temperature: The temperature of the surrounding air. For testing purposes, ambient temperature must be between 16°C (50°F) and 38°C (100°F).

Analogue Signals: A continuously variable signal that is solely dependent upon magnitude to express information content. (NOTE: Analogue signals are used to represent the state of variable devices such as rheostats, potentiometers, temperature probes, etc.)

APTMS: Advanced Public Transport Management System

Battery Compartment: Compartment for Low-voltage energy storage, i.e. 12/24 VDC batteries.

Braking Resistor: Device that converts electrical energy into heat, typically used as a retarder to supplement or replace the regenerative braking.

BRT: Bus Rapid Transport

Category M2 motor vehicle¹: motor vehicle that is used for the carriage of passengers, that has at least four wheels, that has seating accommodation for more than eight passengers in addition to the driver of the vehicle, and that has a maximum mass not exceeding 5 t

Category M3 motor vehicle: motor vehicle that is used for the carriage of passengers, that has at least four wheels, that has seating accommodation for more than eight passengers in addition to the driver of the vehicle, and that has a maximum mass exceeding 5t.

Class I vehicle: (urban bus excluding a minibus): Category M2 or M3 vehicle that is designed and equipped for urban and suburban transport, and that has, in addition to seating, provision and space for standing passengers, so arranged as to allow for passenger movement associated with frequent stops.

Class II vehicle: (inter-urban bus excluding a minibus): Category M2 or M3 vehicle that is designed and equipped for inter-urban transport, and that has no spaces specifically intended for standing passengers; however, over short distances, it can provide for standing passengers in the passageway only.

Closed station: a bus station or stop which is a restricted access structure through which boarding and / or alighting passengers pass through before entering or leaving the BRT system and where ticket verification occurs.

Complete bus: means the Standard bus as supplied by the OEM consisting of the assembled bus chassis and body including all equipment fitted by the Supplier, the Supplier's domestic (own) subcontractors, all optional items specified in the Scope of Work as well as all equipment installed by other 3rd parties including the Purchaser's nominated subcontractors as required in terms of the contract. **(Refer also to Standard Bus)**

Compulsory Specifications: refers to the Compulsory Specification for Motor Vehicles of Category M2/3 issued in terms of the National Regulator for Compulsory Specifications Act (Act 5 Of 2008).

Kerb Weight: Weight of vehicle, including maximum fuel, oil and coolant; and all equipment required for operation and required by this Specification, but without passengers or driver.

Design life: the period during which an item is expected by its designers to work within its specified parameters; length of time between placement into service of a single item and that item's onset of wear out.

Design Operating Profile: The operational requirements under standard operating conditions that the bus must be able to achieve.

Discrete Signal: A signal that can take only pre-defined values, usually of a binary 0 or 1 nature, where 0 is battery ground potential and 1 is a defined battery positive potential.

Domestic subcontractor: means is any subcontractor who contracts with the main contractor (the Supplier) to supply or fix any materials or goods or execute work forming part of the main contract.

Fire Resistant: Materials that have a flame spread index less than 150 as measured in a radiant panel flame test per ASTM-E 162-90.

Fireproof: Materials that will not burn or melt at temperatures less than 1000°C.

Free Floor Space: Floor area available to standees, excluding the area under seats, area occupied by feet of seated passengers, the vestibule area forward of the standee line, and any floor space indicated by manufacturer as non-standee areas, such as the floor space "swept" by passenger doors during operation. A floor area of 0.3m in front of each seat shall be allocated for the feet of each seated passenger protruding into the standee area.

GAMR (Gross Axle Mass Rated): The maximum total weight as determined by the axle manufacturer, at which the axle can be safely and reliably operated for its intended purpose.

Gross Load: 63 kg for the driver plus 68kg for every designed passenger seating position plus for each 0,125 m2 of free floor space for Class I vehicle or 0.150 m2 of free floor space for a Class II vehicle. (Refer to Compulsory

¹ National Regulator for Compulsory Specifications Act (Act 5 Of 2008): Compulsory Specification Motor Vehicles of Category M2/3

Specification for Motor Vehicles of Categories M2 and M3)

GVM (Gross Vehicle Mass): The maximum mass in kilograms of such vehicle and its load as specified by the manufacturer thereof at which the vehicle can be safely and reliably operated for its intended purpose or, in the absence of such specification, as determined by the registering authority.

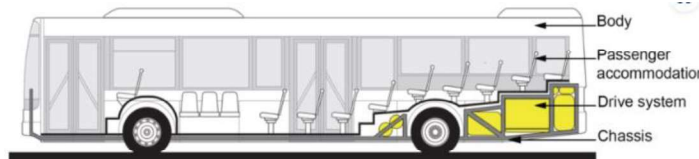
Inverter: A module that converts DC to and from AC.

ITS: Intelligent Transport Systems

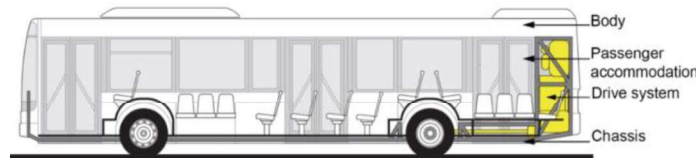
Leakage: Release of contents through a Defect or a crack.

Line: All tubes, flexible and hard, that carry fluids.

Low-Entry Bus: A bus that, between at least the front door and rear or mid door, has a floor sufficiently low and level so as to remove the need for steps in the aisle between the doors and in the vicinity of these doors with the exception of the floor area which may be raised beyond the rear-most door. In the case of an articulated bus with a third door in the in the trailer section, the rear section may be raised and access to and from the bus via the rear-most shall be via a stair well.



Low-Floor Bus: A bus that has no steps between all doors and has a floor sufficiently low and level to remove the need for steps in the aisle between the doors.



Low Voltage (LV): 50V or less (AC and DC).

Nominated subcontractor: A subcontractor that is selected by the client (the Purchaser) to carry out an element of works.

RAL: An international standard for colours (German Reichsausschuß für Lieferbedingungen und Gütesicherung)

Retarder: Device used to augment or replace some of the functions of primary friction based braking systems of the bus.

Road Transport Act Regulations: refers to the National Road Traffic Act Regulations promulgated in terms of South African National Road Traffic Act, Act No. 93 of 1996,

Purchaser: The purchaser is the COCT or the organisation procuring the buses.

Serial Data Signals: A current loop-based representation of ASCII or alphanumeric data used for transferring information between devices by transmitting a sequence of individual bits in a prearranged order of significance. (An example is the communication that takes place between two or more electronic components with the ability to process and store information.)

Service life: means the period of use in service.

Special Tools: Tools and diagnostic equipment not normally stocked by an operator that are unique to the

make/model of bus being supplied.

Specification: A particular or detailed statement, account or listing of the various elements, materials, dimensions, etc. involved in the manufacturing and construction of a product or of its functional requirements.

Standard: A firm guideline from a consensus group e.g. South African National Standards (SANS)

Standard bus: means the bus as supplied by the OEM consisting of the assembled bus chassis and body including all equipment fitted by the Supplier, the Suppliers domestic (own) subcontractors, all optional items to be fitted by the Supplier or the Supplier's domestic subcontractors as specified in the Project Specification. The standard bus excludes the Purchaser's own or 3rd party equipment installations and/or nominated subcontractor installations. (Refer also to Complete Bus)

Standee Line: A line marked across the bus aisle to designate the forward area that passengers may not occupy when the bus is moving.

Stress Loops: The "pigtails" commonly used to absorb flexing in piping.

Structure: The basic body, including floor deck material and installation, load-bearing external panels, structural components, axle mounting provisions and suspension beams and attachment points.

Supplier: A registered motor vehicle manufacturer, builder or importer who has been contracted by the Purchaser to supply buses. Synonymies with Tenderer where a potential Supplier is bidding for a supplier contract. [Note: Where there is reference to "supplier" (without the capitalised "s") this refers to the term in a general sense.]

Supplier Contract: The formal contract entered between the Supplier and the Purchaser inclusive of any deviations or alterations thereto agreed at time of contract acceptance and in respect of the any modifications, changes or option selections made in terms thereof.

Wheelchair: A mobility aid belonging to any class of three- or four-wheeled devices, usable indoors, designed for and used by individuals with mobility impairments, whether operated manually or powered. A "common wheelchair" is such a device that does not exceed 760mm in width and 1220mm in length measured 50mm above the ground and does not weigh more than 270 kg when occupied. Accommodation provided for passengers using wheelchairs must comply with the relevant sections of SANS 10370:2008 or latest edition thereof.

3. GENERAL REQUIREMENTS

3.1 Bus Classification and Type

The buses described in this document include Bus Rapid Transport (BRT) buses, defined in the National Road Traffic Regulations (Act 93 of 1996) as a "rapid transport bus or rapid transport articulated bus" and include the following subcategories.

- a. "rapid transport trunk bus or rapid transport trunk articulated bus "
- b. "rapid transport complementary bus or rapid transport complementary articulated bus "
- c. "rapid transport feeder bus or midi-bus"

The buses **shall generally be classified as Category M3 Class I vehicle:** That is "*an urban bus that is used for the carriage of passengers, that has at least four wheels, that has seating accommodation for more than eight passengers in addition to the driver of the vehicle, and that has a maximum mass exceeding 5t.*" [National Regulator for Compulsory Specifications Act (Act 5 Of 2008): Compulsory Specification Motor Vehicles of Category M2/3]

3.2 Legal Requirements and Compulsory Standards

All vehicles being supplied shall comply with National, Provincial and Local Legislation and Regulations, relevant Compulsory Standards issued by the South African National Standards (SANS) and other standards referenced in the specifications or elsewhere in the tender and/or contract documentation.

As specialists, Suppliers are deemed to be fully familiarized with the legal requirements of public transport vehicles of the types proposed, in South Africa. There shall be emphasis on matters of safety and compliance to the requirements of the National Road Traffic Act, Act 93 of 1996 including all its Regulations and amendments thereto.

In the event of any conflict between the requirements of the specifications (Scope of Work, functional and technical guidelines) and any applicable legal requirement, the legal requirement shall prevail. Technical requirements that exceed the legal requirements are not considered to conflict.

Should a Supplier identify any conflict between the Scope of Work and the legal requirements, the Supplier shall bring the issue to the attention of the Purchaser at least 7 days prior to the closing of the tender, so that the Purchaser can alert all those who are tendering.

If modifications to the vehicles are found to be necessary once a contract has been awarded, because of any change in regulatory requirements that were in place at the time of tender closing, then the Supplier will be required to effect those changes at no cost to the Purchaser.

Notwithstanding compliance with these specifications a manufacturer or supplier of a new bus model or a bus produced with a major change in components or configuration and subject to homologation by the National Regulator for Compulsory Specifications (NRCS) as a new model or a derivative, shall provide a copy of the final test report and homologation certificate to the Purchaser as well as a copy of the vehicle registration and license prior to the Purchasers' final acceptance of the first vehicle.

3.3 Vehicle Manufacturer, Importer or Builder (MIB) Registration

Buses will only be procured from Suppliers who are registered as a motor vehicle manufacturer, builder or importer who have registered with the appropriate provincial department of transport and who has been contracted by the Purchaser to supply the buses. (Refer to the Conditions of Tender.)

3.4 National Industrial Participation (NIP) Program

Where the imported value of the goods being supplied exceed the minimum threshold the Supplier shall be required to comply with the requirements of the National Industrial Participation (NIP) Program. The requirements for the NIP, as required by the National Department of Trade and Industry (DTI) will be found on their website.

3.5 Design for public transport.

Components used in the vehicle shall be of heavy-duty design and proven in public transport service.

The buses shall accommodate the widest possible spectrum of passengers, including children, adults, the elderly and persons with disabilities and shall have a minimum expected service life of 15 year or 1,250,000 kilometres. The buses are to be outfitted with a range of Intelligent Transport systems (ITS) to facilitate inter alia, information displays, vehicle tracking and automatic fare collection.

The Supplier shall ensure that the application and installation of major bus subcomponents and systems are compliant with all such subcomponent vendors' requirements and recommendations and suitable for installation on public transport vehicles used in BRT and commuter bus services.

The aesthetics of the vehicles will play a significant role in transforming the public's perceptions of public transport services. The Purchaser therefore requires a body design that evokes a modern appearance with preferably sleek and aerodynamic curve lines.

3.6 Weight

It shall be a design goal to construct each bus as light in weight as possible without degradation of safety, appearance, comfort, traction or performance.

The mandatory selection of an appropriate inherently corrosion resistant material, as opposed to a galvanized steel, in the construction of the bus body can result in a significant TARE weight (mass) saving. (The use of inherently corrosion resistant material is a compulsory requirement.)

Buses at gross vehicle mass (GVM) shall not exceed permissible axle mass limits, the tyre factor limits, brake test criteria or structural design criteria.

Axle mass limits are set out in the South African Road Traffic Act Regulations.

3.7 Capacity

The vehicle shall be designed to carry the maximum passenger load which shall not exceed the permissible bus GVM nor the permissible axle loading under these maximum load conditions.

3.8 Design Life

The minimum design life of the bus in public transport service shall be at least twelve (12) years or 1 million kilometres and shall be capable of operating at least 80,000 kilometres per year, including the 12th year. However it is expected that properly maintained the buses will have a service life of more than 15 year or 1,2 million kilometres.

3.9 Maintenance and Inspection

The bus manufacturer shall consider the routine problems of maintaining the vehicle. All bus components and systems, both mechanical and electrical, which will require periodic physical work or inspection processes, shall be installed so that a minimum of time is consumed in gaining access to the critical repair areas. It shall not be necessary to disassemble portions of the structure and/or equipment such as seats and flooring under seats to gain access to these areas. Each bus shall be designed to facilitate the disassembly, reassembly, servicing or maintenance, using tools and equipment that are normally available as standard commercial items.

Test ports or connectors, as required, shall be provided for commonly checked functions on the bus, such as hydraulic, pneumatic, cooling, temperature, voltage, current and state of charge (SoC).

Where separate lockable equipment enclosure shall be provided for the Intelligent Transport Systems (ITS) equipment such as the APTMS and AFC installations. These enclosures are to be independently accessible by a specific keyholder. Keys for equipment bays housing a particular suite of equipment may be universal across the fleet. However a single key shall not provide access to each of the different equipment suites (i.e. APTMS, AFS, CCTV equipment) installed on each bus.

Requirements for the use of unique specialized tools will be minimized. The body and structure of the bus shall be designed for ease of maintenance and repair.

The Supplier shall provide in a list of all special tools, including diagnostic equipment and pricing for the maintenance and procurement of the special tools.

Tools such as compartment door key, emergency triangles, Drivers' reflective safety bib and Boarding ramp emergency stowage tool (if applicable) etc. shall not be included in the special tools list and shall be furnished for each bus as part of the Standard Bus.

3.10 Preventative and scheduled maintenance

Scheduled maintenance tasks shall be in accordance with the manufacturer's recommended preventive maintenance schedule.

The overall preventative schedule for buses shall be based upon a minimum standard distance travelled interval and/or multiples thereof (e.g. 10000km).

3.11 Towing

The method of attaching the towing device shall not require the removal or disconnection of front suspension or steering components.

3.12 Interchangeability

Unless otherwise agreed, all units and components procured under this Contract, whether provided by part

suppliers or manufactured by the Supplier, shall be duplicate in design, manufacture, assembly and installation to ensure interchangeability among buses in each order group in this procurement. This interchangeability shall extend to the individual components as well as to their respective locations in the buses. These bus components shall include, but are not limited to, passenger window hardware, interior trim, lamps, lamp lenses and seat assemblies. Components with non-identical functions shall not be, or appear to be, interchangeable.

Any one component or unit used in the construction of these buses shall be an exact duplicate in design, manufacture and assembly for each bus in each order group in this Contract. The Supplier shall identify and secure approval for any changes in components or unit construction provided within a Contract.

If the Supplier is unable to comply with the interchangeability requirement, the Supplier must notify the Purchaser and obtain the Purchaser's prior written approval.

Purchaser shall review proposed product changes on a case-by-case basis and shall have the right to require extended warranties at no cost to the Purchaser to ensure that product changes perform as least as well as the originally supplied products.

3.13 Operating Environment

The bus shall set to achieve normal operation in ambient temperature ranges of -0°C to 35 °C, at relative humidity between 5 % and 100 %. Degradation of performance due to atmospheric conditions shall be minimized at temperatures below -5°C, above 40°C. Generally buses will operate in the Cape Town environment at altitudes below 300m above MSL in a corrosive coastal Mediterranean climate.

3.14 Noise

In the event of any conflict between the requirements set out below and any applicable legal requirement or compulsory specification, the legal requirement or compulsory specification shall prevail.

3.15 Interior Noise

The combination of inner and outer panels and any material used between them shall provide sufficient sound insulation so that a sound source with a level of 80 dB(A) measured at the outside skin of the bus shall have a sound level of 65 dB(A) or less at any point inside the bus. These conditions shall prevail with all openings, including doors and windows, closed and with the engine and accessories switched off.

- a. Except for noise emission originating from audible warning devices, bus-generated noise level experienced by a passenger at any seat or standing location in the bus shall not exceed 72 dB(A).
- b. The driver area shall not experience a noise level of more than 70 dB(A).
- c. The vehicle-generated exterior noise at station idle shall not exceed 65 dB(A).

An exception shall be made for the turntable area of an articulated bus, which shall be considered a separate environment.

3.16 Exterior Noise

Except for noise emission that originates from audible warning devices, any noise emitted by a vehicle, when determined in accordance with SANS 0205:1986. The measurement of noise emitted by motor vehicles in motion shall not exceed that published by Government Notice No. 936 of 16 May 1986, or later.

3.17 Noise standards

The test methods and standards applied shall be those set out in the relevant South African National Standards (SANS) documentation.

Notwithstanding the noise standards specified in this clause, all door and boarding ramp/bridge actuation equipment shall generate a low noise level when operated and further the equipment shall be effectively insulated, if necessary to prevent excessive actuation noise entering the vehicle interior when operated.

3.18 Safety standards

The vehicle must comply with all regulatory safety standards for public transport vehicles.

3.19 Fire Safety

The bus shall be designed and manufactured in accordance with all regulatory fire safety standards and provisions as set out for public transport vehicles operating in South Africa.

Provisions shall include the use of fire-retardant/low-smoke materials, fire detection systems, bulkheads and facilitation of passenger evacuation where applicable. The underside of the under-frame, flooring and step wells, wheel housings and all exposed under-floor surfaces shall be treated with a fire-retardant coating.

3.20 A fire-suppression system

DEFAULT A fire suppression system is not required.

ALTERNATIVE A fire suppression system for the propulsion system shall be installed.

3.21 Respect for the Environment

In the design and manufacture of the bus, the Supplier shall make every effort to reduce the amount of potentially hazardous waste. The Supplier shall use, whenever possible and allowed by the specifications, recycled materials in the manufacture of the bus.

3.22 Emission standards

- a. Diesel powered buses.

Emission standards shall be EURO VI compliant. Vehicles shall also conform to the air-pollution control standards of the South African Department of Environmental Affairs and Tourism (DEAT) and all other local air-pollution requirements as established for the year of vehicle manufacture.

4. OVERALL DIMENSIONS

4.1 Physical Size

With exceptions such as exterior mirrors, marker and signal lights, bumpers, fender skirts, washers, wipers, cameras, object detection systems and rub rails, the bus shall at static conditions and design weight satisfy the overall dimensions listed below and measured as shown in Figure 3: Exterior Bus Dimensions.

Notwithstanding the nominal dimensions given below the physical dimensions of the vehicles and allowable tolerances regulatory requirements shall take precedence.

Whilst there are other considerations, the dimensions where specified are linked to the ability of the vehicle to operate in the closed station environment and satisfy the passenger carrying capacity.

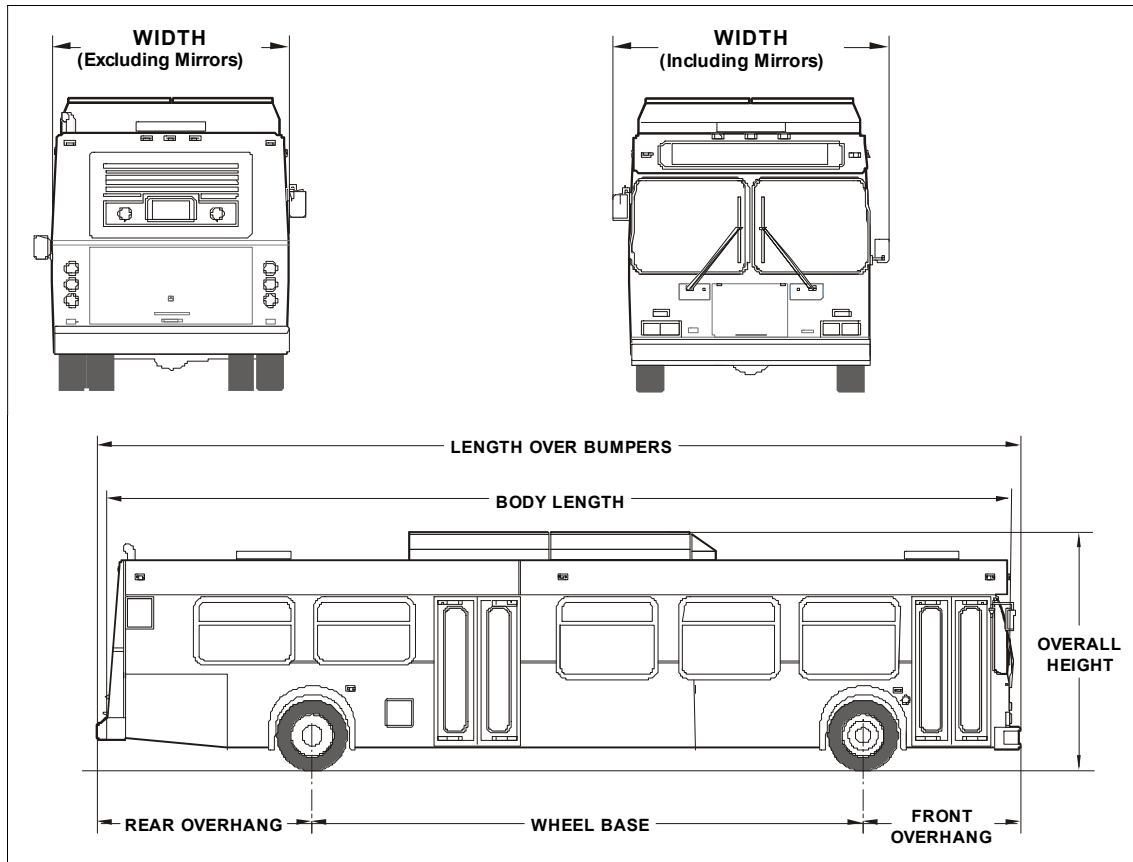


Figure 3: Exterior Bus Dimensions

4.2 Bus Lengths

Buses are defined by their nominal length. Bus length is determined as the measurement from bumper to bumper.

Buses of the following nominal lengths, which generally fall within the given limits are covered in this guideline document.

- a. 12- meter bus: 11.9m to 13.7m
- b. 18-meter (articulated) bus: 18m +

Where a bus length falls outside the given limits the Supplier shall bring this to the attention of the Purchaser and subject to the vehicle dimensions being fit for purpose, with respect to turning and station docking requirements and other criteria being satisfied the Purchaser may accept the bus proposal.

4.3 Bus Widths

The following bus widths shall apply. Bus maximum width is determined as the measurement excluding side mirrors.

- a. Body width shall be 2500mm for bus with GVM < 12 tons.
- b. Body width shall be 2600mm for bus with GVM >12 tons.

4.4 Maximum Overall Height < 3,5m

The maximum overall height of a single-deck, low-floor or low-entry bus shall not exceed 3.5m. This maximum height dimension shall apply to all rigid, roof-mounted items such as air conditioners, exhaust systems, covers, fixed aerals, etc.)

4.5 Under-body Clearance and Curb Clearances

The bus shall be designed to maintain break-over and ground clearance under all normal operating conditions regardless of load up to the gross vehicle weight (GVM) rating.

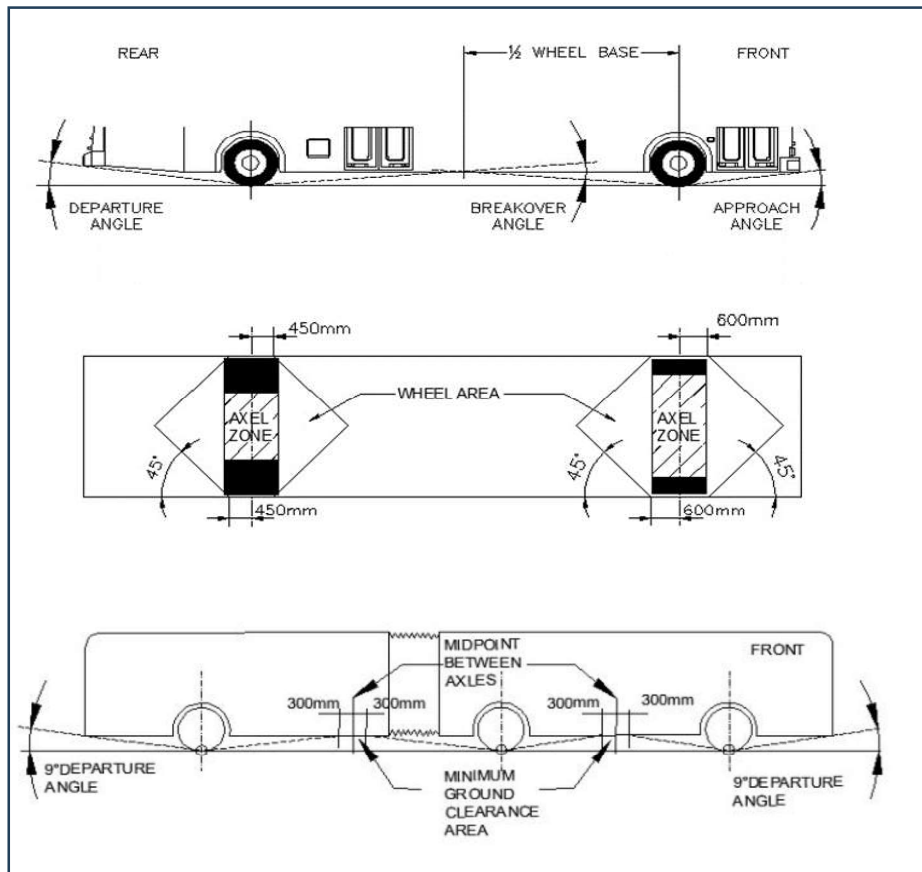


Figure 4: Bus under-body road clearance zones

Buses should be able to attain a ground clearance of no less than 200 mm except within the axle zone and wheel area, where the axle zone clearance, shall be no less than 140 mm. Wheel area clearance should be no less than 200 mm for parts fixed to the bus body and 150 mm for parts that move vertically with the axles.

Where these clearances can or cannot be attained, as a minimum, all buses shall be able to negotiate a standard speed hump at slow speeds. Refer to **ANNEXURE D for speed hup profile**.

4.5.1 Kerb clearance.

To facilitate the docking of buses at a stop or closed station to allow the deployment of passenger loading ramps a proprietary kerb referred to as "Kassel Kerb" have been installed. This will allow a bus's tyre wall to brush against the kerb without damage to the tyre.

When a bus tyre is in contact with a Kassel kerb, the bus body must be designed to avoid any contact with the kerb and/or any part of the station or stop infrastructure.

The Kassel Kerb has a height of 160 mm. No point on the left-side or right-side edge of the undercarriage shall be below 200 mm to ensure that the undercarriage and the Kassel kerb do not come into contact.

An illustration of a typical kerb-side (left-hand-side) Kassel Kerb installation is given in Figure 4.

When designing the bus body, it is important to note that a road cross-fall at bus stops or station may range between 2% to 5% positive or negative cross fall. The bus design shall cater for a cross fall ranging between -5% and +5%."

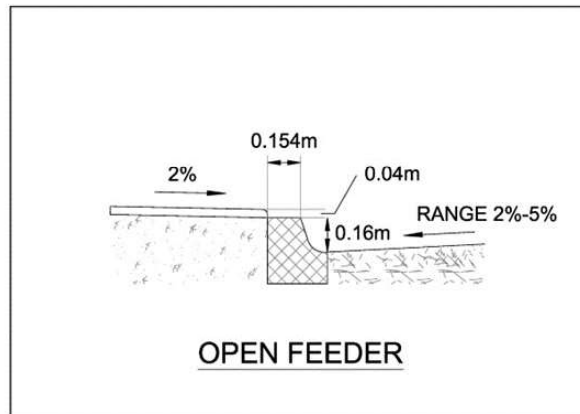


Figure 4: Typical "Kassel Kerb" installation (160mm high)

4.6 Floor Heights

The achievement of an appropriate floor height at closed stations will be fundamental to delivering a level-boarding experience for the passenger.

All floor measurements shall be with the bus at the design running height and on a level surface and with the standard installed tyres.

4.6.1 Low-floor and low-entry buses

Low-floor buses shall have a level floor throughout (no internal steps in aisle) with a floor height of 340mm (+/- 20mm) measured at the door sills.

Low-entry buses shall have a floor level throughout the forward two thirds (approximate) of the bus with a floor height of 340mm (+/- 20mm) measured at the door sills, except for the rear portion of the bus where the floor may be raised over the rear axle and may be accessed using a set of steps in the aisle.

- a. Floor heights at doors:
 - i. The achievement of an appropriate floor height at closed stations and stops is fundamental in delivering a "level-boarding" experience for the passenger. The targeted floor height (door sill) at stations, based on the distance from the road level to the floor of the vehicle at the doorways, is 340 mm (-20mm, +20mm). Within the range permitted by the boarding bridge specifications, this dimension must be achieved even when the vehicle is unevenly loaded, with passengers bunching on one side or at the front, middle or back of the bus.
 - ii. At stations boarding and alighting bridges (ramps) are to be deployed on all low-floor and low-entry buses at all right-hand side doors to provide level boarding between the bus and the station. This is the default position.
 - iii. In the case of low-entry buses where the rear right-hand-side (RHS) passenger doors are installed such that they stairs are provided to access the elevated interior floor section, the level of the first step (tread) shall be the door sill level of 340 mm (+/-20mm). A boarding ramp shall be provided to bridge between the door sill and the station. This is the default position.

b. Interior floor levels

- iv. The floor may be inclined along the longitudinal axis of the bus, and the incline shall not exceed 3.5 degrees off the horizontal except locally at the doors where a 2-degree slope toward the door is allowed.
- v. All floor measurements shall be with the bus at the design running height and on a level surface and with the standard installed tyres.
- vi. In the case of low-entry buses a maximum of three steps within the bus interior will be allowed to accommodate a raised aisle floor in the rear of the bus. The height difference between the floor levels should not exceed 600mm.

c. Left-hand -side passenger doorstep height for low-floor and low entry buses

- vii. Were passengers will be required to board and alight through the passenger left hand side (LHS) door the bus will generally dock at a bus stop where a Kessel kerb has been installed. At these stops boarding and alighting assistance may be provided by the deployment of a kerb side boarding bridge (or ramp). The resting bus floor height at a bus stop must be such to achieve ramp / boarding bridge grades between the bus and the stop acceptable for wheelchair access.
- viii. Kneeling may be permitted to achieve an appropriate floor rest height.
- ix. Buses may also be required to stop at a standard kerb side stop (no Kessel curb) were the boarding and alighting bridge (ramp) will not be deployed.

4.7 Interior floor to ceiling Clearance

The interior clearance height, from the vehicle floor to the ceiling in the passenger area, shall have a minimum height of 2200 mm. This height pertains to the main passenger area and not to the raised area in the rear of a low-entry bus. Suppliers are encouraged to maximise clearance heights in passenger areas.

4.8 Aisle Width

The minimum clear aisle width between pairs of transverse seats with all attached hardware shall be at least 500mm for 2x2 seat configuration for rapid transport buses. (Refer to the Road Traffic Regulations and Compulsory Specifications for details.)

5. KEY DIMENSIONS OF TRUNK STATIONS

To conform with the requirements of the Purchaser, the supplied vehicle must be able to operate in the “closed station” environment of the City of Cape Town’s Integrated Rapid Transport stations. i.e. passengers are only able to board and alight a bus via the right-hand side doors through a controlled station environment in which pre-boarding and post-alighting ticket verification can take place.

At bus stops ticket verification will generally take place on the bus at the left-hand side passenger door.

It is therefore a requirement that the vehicles must be able to dock at both left-hand-side bus stops and right-hand-side bus stations. Further the docking must permit the deployment of a boarding ramp (or bridge) to provide access for wheelchair using passengers and others with requiring assisted mobility.

5.1 Median (Right-Hand-Side) Bus Stations

The interface between the vehicles and the platform directly affects the safety and accessibility for passengers. The minimisation of the gap between the vehicle doorway and the platform is a principal feature of the system. Suppliers are to take note of the maximum permissible length of the door bridges (or ramps) and the impact thereof on the alignment of the bus with respect to the platform to ensure bridge safety. An illustrative example of that required is shown in figure below (Figure 5).

When at a station the vehicle must align the right-side doors with the closed station doors and must facilitate “level” boarding through the introduction of a driver-controlled ramp or bridge, at the door, that closes the gap between bus and platform with a ramp slope of not greater than 1 in 10.

The central factor in the closed stations is that vehicles must, in general, be able to arrive and depart independently of any other vehicle at the station, which will be as depicted in the figure below.

The buses must also be able to operate to conventional stop on the left-hand-side of the road to kerb height as shown in the figure below.

In general stations and stops will be positioned on roadways where the cross-fall will be in the order of two percent (2%).

At median (RHS) stations the cross section will generally be fall away from the kerb and at stops (LHS) will fall towards the kerb.

However due to the variability in road cross sections and the need to locate stops and stations where the ideal cross sections cannot be met the ramps must be designed to cater for a range cross fall ranging between at least -5% and +5%.

5.1.1 Docking of low-floor and low-entry BRT buses at stations.

A basic cross section showing the front elevation of a low-floor bus docking at a Closed Median Station is shown in Figure . Critical dimensions are the floor heights of the bus and the station and the positioning of the bus tyre to the adjacent Kassel Kerb.

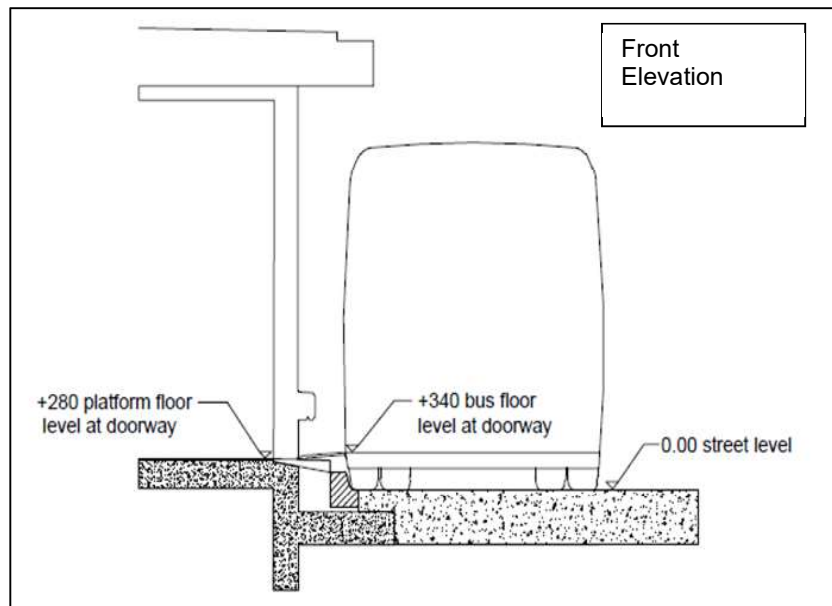


Figure 5: Trunk Station (RHS) bus docking detail for low-floor and low-entry buses.

5.1.2 Bus-stops (Kassel Kerbs)

All buses may be required to stop at MyCiti bus stops where Kassel kerbs have been installed. The typical left-hand kerb side details are shown in Figure 6.

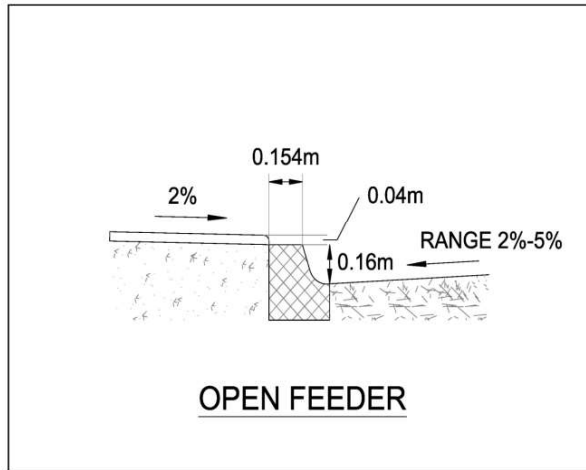


Figure 6: Left-Hand-Side / Kerb-Side Bus Stop Detail for low floor and low entry buses (12 m buses)

5.2 Bus turning geometry at Stations.

It is an essential requirement that buses can arrive and dock at stations or depart stations whether there are buses occupying the docking stations (pods) on either side of the intended docking station (pod) or departing station (pod). Stations may consist of two, three or more docking pods in series.

Dimensional details of a Trunk Stations showing the spacing between the station docking pods.

Where the stations are designed to **only** accommodate 18m buses the distance between the pods will be a minimum of 33,2m as illustrated in Figure 7.

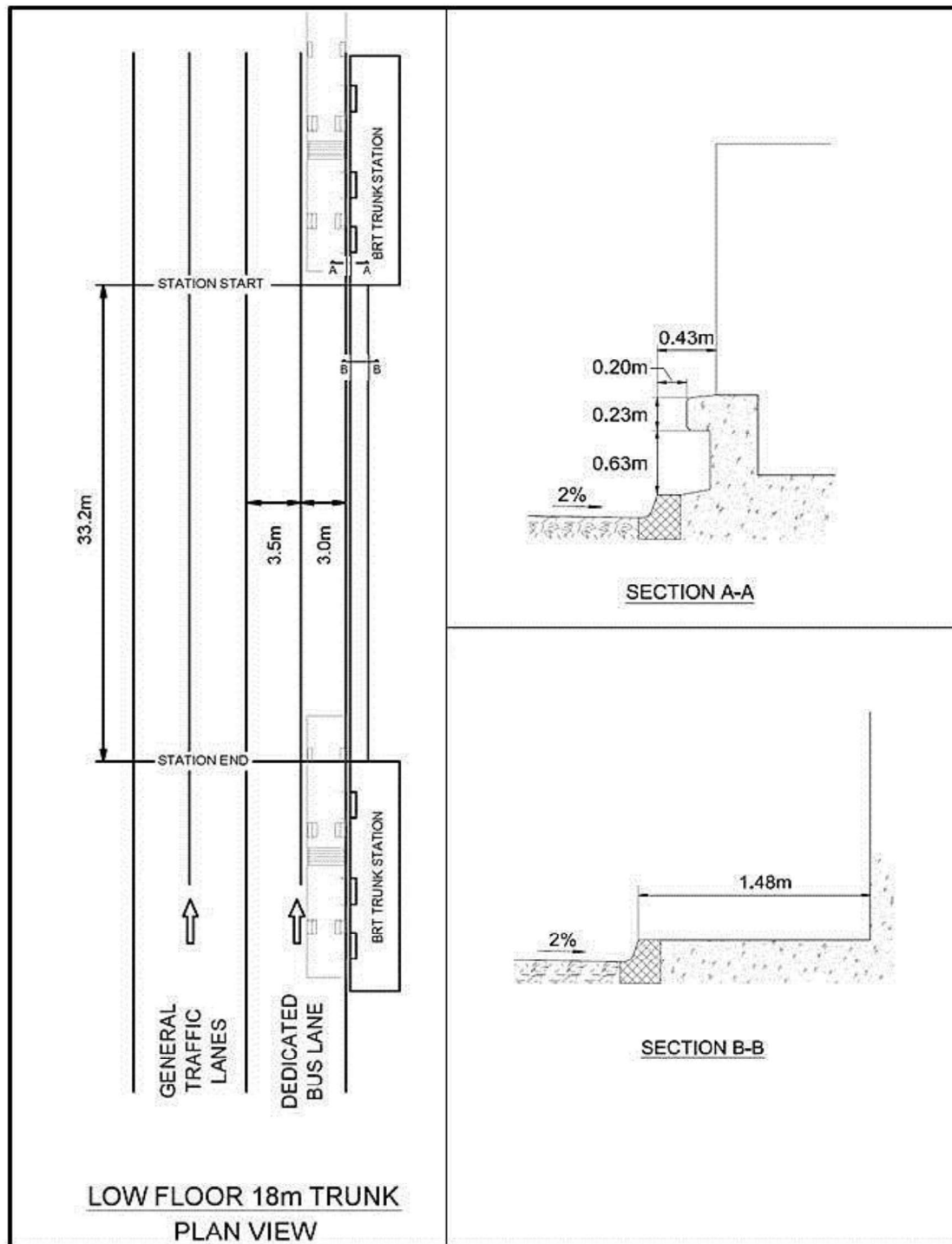


Figure 7: Dimensional details of a Trunk Station to accommodate 18m buses with 3 right hand side doors. Allows for independent arrivals and/or departures of buses at stations.

Dimensioned drawings of the turning geometry of each bus type must be provided to the Purchaser. The drawings must be sufficient show the ability of a bus to be able to arrive successfully dock at the station and depart the station independent of whether another bus is docked at an adjacent station platform in front of or behind the bus. Drawings (turning templates) showing the swept path of the bus should be provided.

5.3 Turning radii and tracking

The turning radius of a bus is a critical parameter in determining the bus's ability to properly dock at stations.

Critical turning dimensions to the bus's functional requirements in its operating environment is the swept path of the bus body. This includes the front and rear overhangs and parts of the bus body that defines the outer edge of the swept path as the bus follows a circular path at normal low operating speeds.

The ability of a bus to successfully dock at station shall be achieved at a speed greater than crawl speed and without full wheel lock to achieve the required turning radius.

The minimum turning radius of the vehicles is defined through the tracking movement of the front outer wheel. The turning radius is measured as the path of the front wheel when following a circular arc at a low speed, as limited by the vehicle steering mechanism.

The swept path of the bus while turning will be the radii defined by the track of the outermost bus body components as the turn is executed (TR0). These dimensions are critical to ensure sufficient clearance between a station and the bus when arriving or departing a station docking pod.

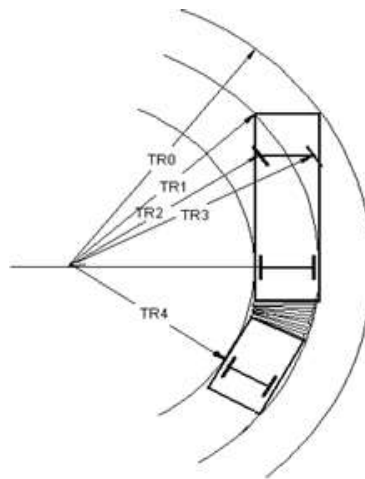


Figure 8: Turning radii for 18m buses

The Supplier shall provide the Purchaser with relevant turning radii data.

6. BUS BODY DESIGN

6.1 Body design

The aesthetics of the vehicles will play a significant role in transforming the public's perceptions of public transport services. The Purchaser therefore requires stylized front ends and a body design that evokes a modern appearance with preferably sleek and aerodynamic curve lines.

The Supplier shall provide a complete set drawing for the body design (all elevations and layout) and provide, renderings and/or images if available of the offered bus(es). Drawings of the body design (all elevations and layout) and renderings and/or images of the proposed body shape shall be provided.

6.2 Bus body

The bus shall have a clean, smooth, simple design, primarily derived from bus performance requirements and

passenger service criteria. The exterior and body features, including grilles and louvers, shall be shaped to facilitate complete and easy cleaning by hand sprayers and/ by automatic bus washers without snagging washer brushes. Water and dirt shall not be retained in or on any of the body features after leaving the washer. The body and windows shall be sealed to prevent leaking of air, dust or water under normal operating conditions and during cleaning in automatic bus washers for the service life of the bus.

Exterior panels shall be sufficiently stiff to minimize vibration, drumming or flexing while the bus is in service. When panels are lapped, the upper and forward panels shall act as a watershed. The windows, hatches and doors shall be able to be sealed. The bus exterior panels and fittings must be such that water is prevented from entering the bus interior. Accumulation of spray and splash generated by the bus's wheels shall be minimized on windows and mirrors.

6.3 Structure

The body structure shall be designed on the principle of durability to withstand public transport service conditions typical of an urban or intercity duty cycle throughout its service life. The vehicle structural frame shall be designed to operate with minimal maintenance throughout the 12-year design operating profile. It is anticipated that the meet the useful vehicle life shall be at least 15 years or 1,2 million kilometres.

The body shall be suitably reinforced at joints where stress concentration may occur. The vehicle shall safely withstand road shocks and other conditions found in urban services.

Body panelling shall have adequate thermal and acoustic properties and shall not vibrate unduly while the vehicle is in operation. The vehicle shall retain structural integrity throughout its service life, when maintained in accordance with the procedures specified in the service manual.

Prior to the start of any bus manufacturing or assembly processes, the structure of the proposed bus model shall have undergone appropriate structural testing and/or analysis to ensure necessary structural design standards are met.

Detailing shall be kept simple, add-on devices and trim shall be minimized and integrated into the basic design.

The body and all joints shall be protected against corrosion and leakage.

6.4 Distortion

The bus, loaded to GVM and under static conditions, shall not exhibit deflection or deformation that impairs the operation of the steering mechanism, doors, windows, passenger escape mechanisms or service doors. Static conditions shall include the vehicle at rest with any one wheel or dual set of wheels on a 160 mm kerb or in a 160 mm deep hole.

6.5 Resonance and Vibration

All structure, body and panel-bending mode frequencies, including vertical, lateral and torsional modes, shall be sufficiently removed from all primary excitation frequencies to minimize audible, visible or sensible resonant vibrations during normal service.

6.6 Propulsion Compartment Bulkheads

The passenger and propulsion system compartments shall be separated by a fire-resistant bulkhead. This bulkhead shall preclude or retard propagation of a compartment fire into the passenger compartment.

6.7 Materials and corrosion resistance

Body materials shall be selected, and the body fabricated to reduce maintenance, extend durability and provide consistency of appearance throughout the service life of the bus.

Where specified the vehicle shall be constructed using only inherently corrosion-resistant materials and fasteners such as stainless steel or composites to minimize deterioration. All materials that are not inherently corrosion resistant shall be protected with corrosion-resistant coatings. All joints and connections of dissimilar metals shall be corrosion resistant and shall be protected from galvanic corrosion.

All exposed surfaces and the interior surfaces of tubing and other enclosed members shall be corrosion resistant through the selection of inherently corrosion resistant material or the application of a corrosion protection system to the component surfaces or through cavity wax injection (or other protection methods) in specified areas.

The fixture of body panel, roofing materials and fittings shall be protected against corrosion and ingress of water or leakage of other fluids.

A heavy-duty protective treatment shall be applied to the under body of the vehicle.

6.7.1 Corrosion resistance structural materials

The structural frame of the vehicle body whether consisting of an integrated floor, roof and sidewall structure of metal tubes or a composite monocoque / mono-build structure, shall be constructed primarily of an **inherently corrosion resistant steel** such as 3CR12 or a metal with similar properties. The use of galvanized steel or other post form treatment shall not be permitted.

The bus sides, roof, under-structure and axle suspension components shall be designed to resist corrosion or deterioration from atmospheric conditions for a period of 12 years and shall maintain structural integrity and nearly maintain original appearance throughout its service life.

6.7.2 Mild Steel and other structural materials that are not inherently corrosion resistant.

Where mild steel is used for structural purposes i.e. chassis and where the use of inherently corrosion resistant metal/material is not suitable due to its mechanical properties, the mild steel shall be cleaned of any mill scale and treated for corrosion protection prior to fabrication. All exposed surfaces and the interior surfaces of enclosed members shall be treated to resist corrosion resistant application of a corrosion protection system.

Where corrosion protection coatings are to be applied, the substrate to which the coating is to be applied shall be thoroughly prepared to ensure proper adhesion and bonding of the coating.

Where any corrosion protection has been removed or damaged during fabrication or is otherwise absent, the steel shall be retreated for corrosion protection. Where this corrosion protection is applied post fabrication it shall contain a colouring pigment or other constituent component such that the extent of application is clearly visible.

6.7.3 Galvanic Corrosion

All contact areas of dissimilar metals where there is a potential for galvanic corrosion shall be protected against such.

6.8 Composite Materials and Moulding

Materials subject to shrinkage over time must be installed to accommodate the shrinkage so that no gaps develop over time.

6.9 Weathering, Ozone and UV Protection

All metal body parts shall have protective coatings suited to the coastal climate of Cape Town, and where exposed to the sun, the coating shall also be UV resistant.

Where provided, all external moulding and beading shall be of a UV resistant material such as, for example Ethylene Propylene Diene Monomer (EPDM) blended rubber which provides very good resistance to weathering, ozone and UV exposure.

6.10 Component materials

Suppliers shall on request provide details of the major component materials to be used in the fabrication of the bus body and their respective corrosion protection and /or weathering resistant properties. Major body component materials and corrosion protection details shall be provided.

7. PAINTING

7.1 Paint Materials and Application

The painting of the vehicle shall employ modern best practice and produce a high-quality finish. It is preferred that the paint materials and application procedures utilised be as environmentally friendly as possible, including consideration of water-based paints or low volatile organic content (VOC) paints.

The coatings shall be hard wearing, able to withstand 7-years operation without any visible corrosion or degradation in a coastal environmental (salt deposits) with high levels of UV exposure, and in the operating conditions of an urban public transport vehicle. Such wear resistance shall include the ability to withstand regular machine-washing of the vehicles.

Exterior finished surfaces shall be impervious to fuels, additives (e.g. Ad-blue) and commercial cleaning agents.

The process and materials used shall be such as to allow ready repainting of minor scratches and scrapes.

All primers, sealers, paint and any other materials used shall be compatible to assure chemical bond, adhesion, overall gloss retention, and to assure full warranty by the manufacturer. All paint application shall be in accordance with the specifications of the paints used.

The Supplier shall warranty paint finishes against failure (fading, flacking etc.) for a minimum of five (5) years.

7.2 Exterior surface finish

All exterior surfaces shall be smooth and free of wrinkles and dents. Exterior surfaces to be painted shall be properly prepared as required by the paint system Supplier prior to application of paint to assure a proper bond between the basic surface and successive coats of original paint for the service life of the bus. Drilled holes and cut-outs in exterior surfaces shall be made prior to cleaning, priming and painting, where possible, to prevent corrosion. The bus shall be completely painted prior to installation of exterior lights, windows, mirrors and other items that are applied to the exterior of the bus. Body filler materials may be used for surface dressing, but not for repair of damaged or improperly fitted panels.

Paint shall be applied smoothly and evenly with the finished surface free of visible dirt and the following other imperfections:

- a. blisters or bubbles appearing in the topcoat film
- b. chips, scratches, or gouges of the surface finish
- c. cracks in the paint film
- d. craters where paint failed to cover due to surface contamination
- e. overspray
- f. peeling / flaking
- g. runs or sags from excessive flow and failure to adhere uniformly to the surface
- h. "orange peel" or other similar defects
- i. chemical stains and water spots
- j. dry patch due to incorrect mixing of paint activators; and
- k. buffing swirls.

There shall be no bare or exposed metal surfaces showing on the exterior of the vehicles, exclusive of ornamentation, accessories and bumpers.

7.3 Paint Specification

The Purchaser requires that the specification adopted for the paint application is a high-quality durable performance specification suitable for use on public transport vehicles in a Mediterranean Coastal environment and is similar in performance to paint specifications that have been developed for industrial plant that operate in this type of environment.

The vehicle Supplier, in consultation with the paint supplier (if necessary) shall select the appropriate specification for the paint and the painting processes to ensure that the painted vehicles meet the durability and warranty requirements specified in this Technical Specification.

Suppliers shall submit the proposed paint specifications to be used prior to application.

7.4 Quality assurance and testing

In addition to the Supplier performing on-going in-production quality assurance testing of all paintwork the Purchaser may require that pre-production testing of body panels is undertaken.

The Supplier shall, where requested, prepare several test panels and submit them to an accredited laboratory, approved by the Purchaser, to be subject to the following performance testing:

- a. Adhesion ISO 2409
- b. Scratch Resistance SANS 279
- c. Impact Resistance SANS 5146
- d. Accelerated Weathering (QUV) ASTM G53
- e. Salt Spray Resistance (Q-FOG) SANS ISO 7253

The purchaser shall cover the costs of the initial tests as part of the complete bus. However, should any test panels fail the initial tests then the cost of any additional retesting requested by the Purchaser to assure quality, shall be borne by the Supplier.

The bus manufacturer shall institute a comprehensive quality assurance programme to ensure compliance with the paint specification. This quality assurance programme shall be made available to the Purchaser during any in-production inspection process.

7.5 Underside

The underside of the under-frame, flooring and stepwells, wheel-housings and all exposed under-floor surfaces shall be treated against corrosion and waterproofed with a protective fire-retardant coating.

7.6 Sea Freight

If vehicle components are to be imported and shipped via sea, then a special coating shall be applied to protect against damage from sea spray.

7.7 Colour

The Supplier shall, where requested submit a sample panel with the type of paint quality finish expected to be provided for the vehicle bodies. Samples panels shall be submitted by the Supplier to the Purchaser for approval 2 weeks prior to the painting of the first bus. Samples shall be provided for the following colours.

- a. RAL 5015 Sky blue
- b. RAL 5010 Gentian blue
- c. RAL 7040 Window grey

- d. RAL 3002 Karminrot (red)
- e. RAL 1023 Traffic yellow

Alternatively Pantone Solid Coated colour references for the bus paint and Ral Vinyl system are:

Table 4: Bus livery colour references

Colour	Pantone Solid Coated	Standex Ral Vinyl System
Dark Blue	7462 C	5010 Enzianblau
Light Blue	299C	5015 Himmelblau
Red	186 C	3000 Feuerrot
Grey- Swoosh	428 C	7040 Fenstergrau
Grey - Base	427 C	

The above colour palette are the current standard colours for the buses. The Suppliers shall refer to the Scope of Work for any alternative or additions to the colour palette.

7.8 Decals, Numbering and Signs

Monograms, numbers and other special signing shall be applied to the inside and outside of the bus as required. They may be painted signs, decals or pressure-sensitive appliques. The type of application shall be approved by the Purchaser.

All decals shall be installed per the decal supplier's recommendations. Decals shall be resistant to wear and environmental degradation including washing and to fading for a useful life period of at least five (5) years.

Signs shall be durable and fade, chip and/or peel resistant as applicable.

A schematic indicating the type of sign or decal, its design or description and placement location shall be included with the ANNEXURES. This schematic will show the typical requirements which may be modified during the design and/or production of the prototype or first production bus.

The Supplier shall include the price of these signs and decals in the price of the Standard bus,

7.9 Statutory markings and Signs

The Supplier shall include the price of in the price of the Standard bus the supply and application of all statutory reflective and other markings, signs and decals as per the requirements of the National Road Transport Act Regulations, the NRCS Compulsory Specifications.

7.10 Livery

Vehicle exteriors shall be painted to the graphic design provided by the Purchaser. Examples of the general form of the design are given below in Figure 9. Further examples are given in the ANNEXURES.

These examples of the external livery painting should be utilised to price this aspect of the vehicle fabrication only. The final design shall be confirmed in the Supplier Contract. The manufacturer's name and insignia shall not appear on the vehicle so as not to detract from the Purchaser's external designs.

Elements of the livery, the "MyCiTi" Logo for example, will be applied as decals rather than paint and shall be supplied by the vehicle Supplier. Artwork will be supplied by the Purchaser. These are to be of high quality, with a minimum useful life of five (5) years under the environmental conditions described in the Project Specification.

During the pre-production stage, the Purchaser will determine the extent to which decals are to be used in the vehicle livery.

A 4 or 5-digit code of +/- 450 mm letter size shall be painted on the roof of the bus. Details of the code will be provided by the Purchaser.

Prior to the painting of the buses the Supplier shall where requested, provide the Purchaser for approval samples of the body panel material painted in the livery colours.

The Supplier shall include in the price of the Standard bus, the painting of the body livery and supply and application of decals where these are elements of the livery design. This shall include the painting of a 4 or 5-digit code of +/- 450 mm letter size on the roof of the bus.



Figure 9: Proposed “MyCiTi” livery for typical 18 m rigid bus.

8. PASSENGER DOORS

8.1 General requirements

The passenger doorway configuration and size shall assist in the rapid and convenient boarding and alighting of passengers, including special needs users, which includes passengers using wheelchairs, parents with prams, people with crutches or other walking aids, the blind or partially sighted and those with hearing impairments.

8.1.1 Number, dimensions and location of doors.

All right-hand side doors shall be positioned in accordance with the requirements of the Road traffic Act Regulations, as set out shown in the Table 5.

The front left-sided doorway shall be located adjacent to the driver to enable the driver to observe door usage without additional equipment or undue effort.

Table 5: Doorway Dimensions and Door Placement

Vehicle type	Door Location	No. of doors	Doorway total width	Doorway clear width	Minimum door clearance height	Distance between doors Centre line to centre line	
						1st and 2nd door	2nd and 3rd
18 m	RHS	3	1250 mm	1100 mm	1850 mm	6000 mm +/- 100 mm	3800 mm +/- 100 mm
	LHS	1	1250 mm	1100 mm	1850 mm		
Note. Minimum door height of 1900 preferred. Emergency doors / exits as per Road Traffic Act Regulations.							

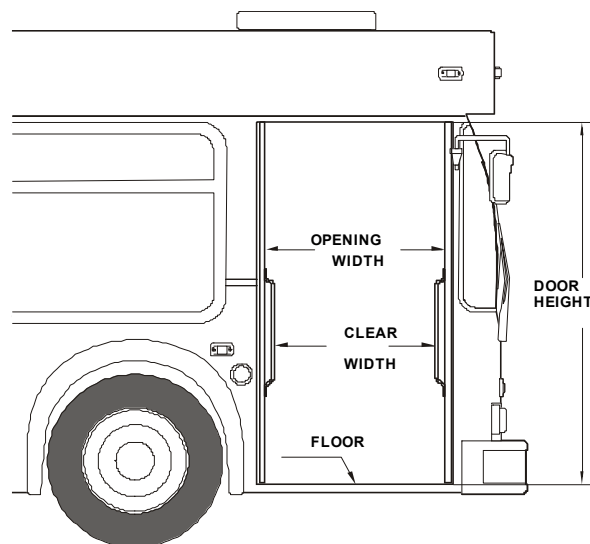
Buses shall have doorways positioned as per the dimensions given Table 5: Doorway Dimensions and Door Placement, unless stated otherwise in the Project Specification.

The door opening width, clear width and door height dimensions are illustrated 10.

8.1.2 Left-hand-side front passenger door position.

The left-hand-side (LHS) door shall be placed in front of the front axle adjacent to but opposite to the driver's position so that the driver may monitor the ticket validation process and offer (verbal) assistance where necessary.

However, in the case where there is a reduced front overhang due to the front axle being positioned forward e.g. under or forward of the driver's seat, the LHS door may be positioned behind the front axle but shall be positioned as far forward as practically possible and adjacent to the driver's cabin.

**Figure 10: Public transport Bus Minimum Door Opening –Typical Dimensions**

8.1.3 Emergency exits.

Emergency exits shall comply with all statutory requirements as per the National Road Transport Act and NRCS Compulsory Specifications.

8.2 Passenger Doors type and characteristics.

Two-leaf swing type doors shall be used for the street-side (RHS) doorways and the kerb side (LHS) passenger unless specified otherwise in the Project Specification.

The leading edges of the doors shall be fitted with auto-rebound pressure sensors to protect passengers during the closing process.

The doors shall be equipped with seals so as not to allow water, dust or air to flow around the edge of the door when closed. The lower edge of the door shall have a rubber weather strip or similar functioning door sweep.

A high contrast yellow warning strip of minimum 20 mm width shall be provided at the bottom of each door, above the weather strip, both inside and outside the vehicle.

8.2.1 Two-leaf swing type passenger door

Where used on the right-hand side of the vehicle, or where the bus will dock against a closed station platform outward opening two leaf swing doors shall open to the outside of the bus to partially close the gap between the bus and the closed station door.

The opening of the kerb-side doors shall be designed so as not to interfere with access to fare (ticket) verification equipment which may be placed either side of the entrance way.

The kerb-side doors must have handrails available to passengers when open.

Swing doors shall be of the type that are mounted to a vertical shaft assembly and designed for easy installation and maintenance.

8.3 Door Materials and Construction

Structure of the doors, their attachments, inside and outside trim panels and any mechanism exposed to the elements shall be corrosion resistant. Door panel construction shall be of corrosion-resistant metal or reinforced non-metallic composite materials. When fully opened, the doors shall provide a firm support and shall not be damaged if used as an assist by passengers during ingress or egress. Door edges shall be sealed to prevent infiltration of exterior moisture, noise, dirt and air elements from entering the passenger compartment, to the maximum extent possible based on door types.

The closing edge of each door panel shall have no less than 50mm of soft weather stripping. The doors, when closed, shall be effectively sealed, and the hard surfaces of the doors shall be at least 100 mm apart.

9. PASSENGER DOOR AND RAMPS ACTIVATION AND PSD INTEGRATION

The operation of the kerb side door(s) and street-side door(s) shall be independent of each other.

The operation of the street-side (RHS) doors shall be capable of being synchronised with the deployment of boarding ramps and opening and closing of the station platform screen doors through activation by the driver (refer to Sections dealing with Bus-PSD Control System).

All doors shall be capable of independent operation for maintenance and servicing purposes.

The door actuator(s) shall be under the complete control of the vehicle operator.

- a. Two or more modes of door activation shall be provided.
- b. The doors shall be capable of being opened individually without the activation of any integrated system.
- c. The activation of the door opening or closing shall be integrated with the bus-platform screen door (Bus - PSD) sequencing controller and boarding ramps where these are installed.

- d. The left-hand side passenger door shall be capable of being opened independent of ramp deployment. The left-hand side door ramp is to be controlled independently from all other systems.

The door activation unit shall be conveniently placed within the drive cabin with all functions clearly labelled and with open and closing LED status indicator provided for the doors and ramps. The ramps when deployed will prevent the bus from forward movement and only engage drive when the ramps and doors are closed.

9.1.1 Integrated Bus-Platform Station Door (Bus-PSD) Control System and activation

Buses shall be fitted with an Integrated system that on activation by the driver synchronizes the opening and closing of the bus doors and boarding ramps with the stations platform screen doors.

The Bus-and Platform Screen Door (Bus-PSD) control system shall be provided by the Purchaser's equipment providers. The Bus-PSD Control System shall require equipment to be installed on bus stations to manage the station doors and other support functions and on the buses where a remote activation device (RAD) is to be fitted in the driver's cabin and integrated with the bus door activation system.

The Supplier shall design the bus to permit the installation and functioning of the RAD for the Bus-PSD System. The design shall cater for ease-of-use and provide sufficient operational redundancy should a component of the unit fail. The serviceability testing and maintenance of the system's constituent components shall be a design consideration.

The functional requirements of the system and responsibility for supply and installation is addressed elsewhere in the Scope of Work and in the Technical Specification (TS2).

9.1.2 Integrated boarding ramp activation

Where buses are fitted with boarding ramps the deploying and stowage of the ramps shall be integrated and synchronized with the opening and closing activation of the bus doors by the driver.

9.1.3 Door activation

Doors shall open or close completely in not more than 3.0 seconds from the time of the door control actuation.

Where boarding ramps are installed, the ramps installed at all right-hand side doors shall be synchronised with the door opening and closing sequence. For safety reasons, the deployed and stowed of the shall precede the door opening and closing sequencing respectively. This should apply both to the bus doors and the station's platform screen doors.

Where the station door opening, and closing is activated through the Bus-PSD remote activation device (RAD) in the driver's cabin the following shall apply:

- a. The opening and closing of the station platform doors shall be synchronized to open and close within the 3 second activation period.
- b. The deployment of the boarding ramp(s) where installed shall deploy and stow as required within this period.

Door actuators shall be adjustable so that the door opening and closing speeds can be independently adjustable to satisfy the above requirements. Actuators and the complex door mechanism shall be concealed from passengers but shall be easily accessible for servicing. The door actuators shall be re-buildable.

Door actuators and associated linkages shall maximize door holding forces in the fully open and fully closed positions to provide firm, non-rattling, non-fluttering door panels.

If powered by compressed air, exhaust from the door system shall be routed below the floor of the bus to:

- c. Prevent accumulation of any oil that may be present in the air system.

- d. To muffle sound so that the passenger door operations shall not result in disturbing noise levels within the passenger cabin. The addition, a silencer to muffle pneumatic exhaust noise shall be provided to prevent disturbing noise levels penetrate the passenger cabin.

9.1.4 Visual and Audible warnings

A visual and audible warning of door opening, and closing shall be given. The visual warning shall include a warning light(s) positioned above the door aperture.

The audible warning when activated shall be preceded by a chime, followed by a softer melodic motive in preference to a continuous buzz or ring. A constant loud high-pitched buzz or ringing shall not be provided. The Supplier shall seek the Purchasers approval of the audible warning motive prior to installation of the warning device.

9.1.5 Door override and independent opening

Provision for an over-ride to the automatic door opening and closing synchronizing unit shall be provided which will allow each door to open or close independent of each other.

All doors shall be capable of being opened and closed independent of the bus-station door synchronization and actuation unit.

9.2 Door Closing Force

Closing door edge speed should not exceed 300 mm per second and opening door speed should not exceed 450mm. per second. Power doors shall not slam closed under any circumstance, even if the door is obstructed during the closing cycle. If a door is obstructed during the closing cycle, the pressure exerted on the obstruction shall not increase once initial contact has been made.

Power-close doors shall be equipped with an obstruction sensing system such that if an obstruction is within the path of the closing doors, the doors will stop and/or reverse direction prior to imparting a light firm pressure (about 70 kilopascal) on that obstruction. If a contactless obstruction sensing system is employed, it shall be capable of discriminating between the normal doorway environment and passengers or other obstructions within the doorway, and of altering the zones of detection based upon the operating state of the door system.

Whether or not the obstruction sensing system is present or functional, it shall be possible to withdraw a 40mm. diameter cylinder from between the centre edges of a closed and locked door with an outward force not greater than 160 Newton.

9.3 Emergency Door Operation (Passenger cabin)

In the event of an emergency passenger doors shall be able to be opened manually from inside the vehicle using a force of not more than 100 Newtons (~11 kilograms) after actuating an unlocking device located at the door. This system is to be independent from the driver console and may be of a pneumatic pressure relief valve type. The unlocking mechanisms must be protected from casual access by means of breakable cover or seal and an audible alarm should be activated with the manual override button.

The unlocking device shall be clearly marked as an emergency-only device. Emergency door releases are to be protected from casual activation and shall require two distinct actions to actuate i.e. unlocking (which may include removal or breaking of a type of cover) and actuating.

The door emergency unlocking device shall be accessible from the doorway area and positioned such that in the case of an emergency, it is accessible by most bus passengers including children. The unlocking device shall be easily reset by the operator without special tools or opening the door mechanism enclosure.

An emergency door control accessible from outside the bus shall be installed to permit the manual opening of the doors.

9.4 Door and ramp safety operation

Doors shall not open until the vehicle comes to a stop. Doors shall have an interlock control with brake and

accelerator to prevent movement of vehicle with doors or ramp in open position.

The door and ramp system shall function with ignition on or off.

On actuation of the door opening and closing sequences a visual and audible alarm shall be triggered. The visual alarm shall be a red flashing light situated in the door header and visible from both inside and outside the vehicle.

The audible alarm, when activated during the door opening and closing sequences shall be preceded by a chime, followed by a softer melodic motive as opposed to a continuous buzz or ring.

The door closing speed and force shall be limited to avoid injury to a passenger caught in a closing door. All doors shall be equipped with sensitive edges that will cause the doors to cycle open and reattempt the closing process when the edges encounter an obstruction. A maximum force of approximately 100 Newtons shall be required for a passenger to get free after having either door close upon them even if the sensitive edge or safety device on the door is inoperative.

Door alarm and dash light notification will be provided in cases where a person pushes the sensitive door edge or puts objects between edges when the door is in the closed position.

10. BOARDING AND ALIGHTING RAMPS (BRIDGES)

10.1 Ramps: General requirements

To facilitate the easier boarding and alighting of wheelchair bound passengers and others with mobility challenges, passenger doors shall be fitted with boarding ramps (bridges).

Observations of current bus operations at stops and stations should be undertaken by the Supplier when designing for the ramp installations.

Ramps and wheelchairs

The ramps shall provide a bridge between the vehicle floor and the station platform or curb shall conform to SANS 10370. The ramp shall be suitable to accommodate foot and wheelchair traffic and comply as much as possible with an overall slope no steeper than 1 in 10, with edges tapered adequately to readily allow traversal by the front wheels of a wheelchair. The bridge shall have a safe working load of not less than 300 kilograms and shall span the clear width of the open doorway.

Suppliers are referred to relevant sections of the specifications / guidelines for details of the station's doorways for the parameters for ramp deployment.

The Supplier shall ensure that the ramp, when deployed, satisfies the criteria for wheelchair access. Should the Supplier determine that any specified ramps lengths do not satisfy this requirement, the Supplier shall provide the Purchaser with an alternative design.

The ramps shall be profiled at the far edge to facilitate a smooth entry for wheelchairs, prams, and bicycles. When deployed, the ramp surface shall have a slip-resistant texture.

10.2 Ramp types.

The following ramp types may be deployed on the MyCiti bus fleet depending on depending on specific design criteria such as the type of bus, station and curb side stop dimensions and operational needs.

- a. Manual ramp (Driver deployed)
- b. Flip down ramp (Automated pneumatic or electrical)
- c. Extruding cassette, under-chassis (Automated electrical)

Examples of the ramps are shown in Figure 11, Figure 12, and Figure 13.

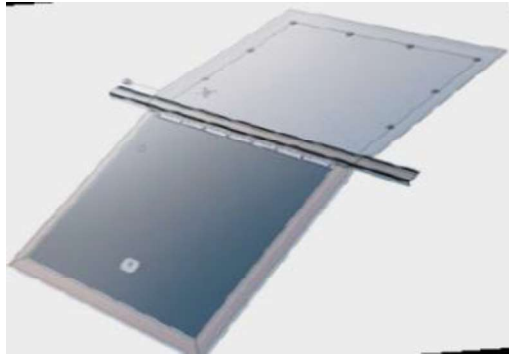


Figure 11: Manual ramp



Figure 12: Example of a flip-down type ramp

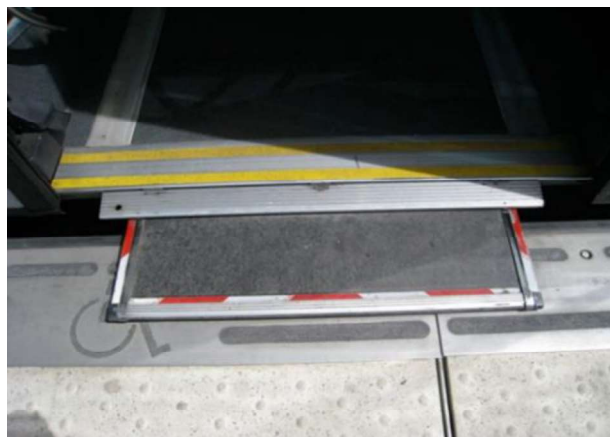


Figure 13: Example of a deployed cassette type

The default position for the various bus types of ramps (bridges) are set out in the Table 6 and should be fitted to the passenger doors unless specified otherwise in the Scope of Work / Project Specification.

Table 6: Boarding Ramps and Bus Types (Default Condition)

Condition	Bus Type	Left-hand-side doors	Right-hand-side doors
Default	Low Floor Bus	Cassette	Cassette type on all doors
	Low Entry Bus	Cassette	Cassette type on all doors
	High Floor bus	N/A	Flip-down type on all doors

Note: In a low-entry bus ramps shall be installed at all side doors in the low-floor and raised-floor section of the bus. This is required to ensure a continuous bridge between the station platform and the doorsill of the first step into the bus.

10.3 Alternative proposal to the default ramp types.

Where an alternative to the specified (default) ramp type is proposed by the Supplier

- a. which is an improved and proved design or
- b. where an alternative is required due practical design considerations such as space restrictions

The Supplier shall advise Purchaser of any alternative at least ten (10) working days before the tender closing. Subject to approval of the Purchaser an alternative design for the ramps may be submitted.

10.4 Cassette type ramp / boarding bridges

The cassette type ramps shall be an under-chassis automated extruding type, an example of which is illustrated in Figure 13.

The mechanisms of such ramps shall be protected against the ingress of dirt and where possible capable of self-cleaning.

The width of the ramps shall equal or exceed the opening free doorway width.

10.4.1 Right-hand side door cassette ramps

The ramp length of an automated ramp on the RHS of the bus may not be less than 350 mm nor exceed 440 mm measured from the outside edge of the bus body.

10.4.2 Left-hand side door cassette ramps

The LHS ramp length shall be 380 mm with tolerance of -0mm and +20mm.

The automated LHS ramp, when extended shall emit an audible warning to advise commuters waiting at bus stops that the ramp is being deployed.

10.5 Flip-down type ramp / boarding bridges

Where automated flip-down ramps are installed at right-hand-side (RHS) passenger doors the ramp length may not be less than 350 mm nor exceed 440 mm measured from the outside edge of the bus body.

10.6 Ramp deployment and stowage.

All boarding ramps, irrespective of the type, shall be retained within the body of the vehicle when not actively deployed.

The extruding/stowing mechanisms as well as the edges of the ramp shall not in any way project above the floor level when the ramp is accessible to passengers.

When actuating a door and ramp opening or closing sequence the ramps shall deploy rapidly prior to the opening of the vehicle passenger doors and retract rapidly after door closure.

The deployment mechanism is to incorporate a **failsafe arrangement**.

- a. that in the event of a person or object being in the path of a cassette type ramp applying any other force during deployment, there will be a retraction of the ramp. Such a failsafe mechanism shall not be required in the last stages of the cassette type ramp deployment to prevent the unintended retraction of the ramp when the ramp contacts the station boarding platform or curb side stop platform.
- b. that will prevent the ramps from being deployed while the vehicle is in motion.
- c. that will prevent the vehicle moving off from a stop or station until the ramp is fully stowed and locked in its travelling position.

The rest or failure position of the ramp locks shall require pressure or power to be applied to release the locks and deploy the ramp(s).

All door and boarding ramp/bridge actuation equipment shall generate a low noise level when operated. If necessary, equipment shall be insulated to prevent excessive actuation noise entering the vehicle interior when operated. Noise levels in the passenger cabin shall not exceed specified noise levels.

10.7 Ramp testing and failure recovery.

Automated ramps shall be capable of being extended and retracted without any external support and should be capable of a self-diagnostic test to ensure that the ramp is functioning properly.

Ramps shall be capable of being manually retracted and stowed from any extended position by an operator should a failure of the automated controller occur when in operation.

Any special tool required to manually retract the ramp must be stored in a secure position that is easily accessible to the operator. An operator must be able to complete the recovery storage action within 3.5 minutes unless the system is completely unserviceable due to mechanical failure or damage.

10.8 Door and ramp status indicators (Driver's cabin)

Given the vulnerability of doors and ramps to malfunction and the impact this has on operations a display console giving the status of the doors and ramps shall be in an ergonomically well place position in the operator's cabin.

The display console shall indicate the open or closed status of individual doors and the deployed status of boarding ramps. Should there be a malfunction of the doors or ramps i.e. a failure to open or close then this should be made evident to the operator.

11. BUS EXTERIOR FITINGS AND WINDOWS

11.1 Windows and Windscreens

11.1.1 Windows

Windows shall be provided along the sides of the vehicle as well as at the rear of the vehicle. These shall have the following characteristics:

- a. The window areas shall be as large as possible to give the seated and standing passengers an unobstructed exterior view. The window unit (exterior measurement) shall be a minimum of 980 mm in height.
- b. Windows shall be of the bonded type. Windows shall not be mounted in a rubber moulding.

- c. All glass shall be tinted in a neutral colour, complimentary to the bus exterior, to an approximate level of 70% to 80% light transmission (i.e., glass permits approximately 70% - 80% of visible light to enter).
- d. The maximum solar energy transmittance shall not exceed 40 percent.
- e. Windows over electronic displays shall not be tinted.
- f. Side windows shall have the look of a seamless or continuous window when viewed from outside the vehicle. All windows shall be structurally adequate for this purpose.
- g. The exterior of the windows shall withstand damage and scratching from use of a vehicle wash system. This would include, but not be limited to soaps, spinning brushes and hand brushes.
- h. A positive lock type emergency latch shall be furnished on each emergency window frame. Each window shall have a decal describing emergency window operation procedures. The location of the decal shall be determined by the Purchaser.
- i. The emergency release latches shall be protected from theft and casual use.
- j. Side windows shall be designed to prevent the entrance of air and water under all conditions (wind, rain, etc.) when windows are closed.
- k. The number of windows that shall provide the option of being opened by the passenger shall be maximized with at least 50% of the windows being capable of being opened.



Figure 6: Examples of sliding vents (left) and hopper (right) vents.

- l. The actual number of windows with vents shall be determined during pre-production planning with the Purchaser.
- m. The window opening shall be a sliding vent that is operable by passengers. Operable window panels shall be equipped with latches that secure the window in the fully open and fully closed positions.
- n. Only where a sliding vent is not possible, and a top hopper vent is possible a top hopper vent may be provided.
- o. The height of the top vents shall be such that they do not cause wind to blow directly in the face of passengers. Suppliers are encouraged to innovate with respect to the size and position of the vent.
- p. Where windows are used as emergency exits each window shall have a decal describing emergency window operation procedures. The Purchaser shall determine the location of the decal.
- q. Window glass is to be available locally.

11.1.2 Windscreen, Windscreen Wipers and Sun Visor

The windscreen and windscreen wipers shall have the following characteristics:

- a. Windscreen glass to be available locally.
- b. The windscreen shall be shaped, rather than flat, to support the desired modern, streamlined appearance desired by the Purchaser.
- c. The windscreen shall be designed for easy replacement and maintenance.
- d. Windscreens shall be angled sufficiently to reduce glare from the interior vehicle lighting.
- e. A fully adjustable sun visor shall be installed for the driver's use. The installation shall preclude vibration in normal street operation. The visor shall be a full see through, mesh style with a release cord that allows the visor to return to the normal position.
- f. Demisters heater/blower) shall be provided that can effectively demist the entire windscreen in 2 minutes from a cold start and maintain a clear windscreen during operations in adverse weather conditions.
- g. A Windscreen washer shall be provided.
- h. Two (2) electric-operated heavy-duty windscreen wipers with self-parking features shall be furnished. The wiper motors shall be variable speed having at least a high and low speed setting with an intermittent setting. There shall also be a "mist" mode where the wipers shall make approximately 2-3 swipes per minute.
- i. The largest wiper blade possible for Windscreen design shall be used.
- j. Wiper motors and washer water reservoir shall be installed in an easily accessible location for ease in maintenance and inspection. Wiper motors shall be accessible from the exterior of the vehicle and properly sealed.

11.2 Licence Disk Provisions

Provision for a secure licence disk holder for up to three (3) licence disks shall be provided. The disk holder shall be tamper-proof and not easily accessible by passengers. The disks shall be visible through the left front windscreen.

11.2.1 Driver's side window

The driver's side window shall have the following characteristics:

- a. The driver's windows shall be glazed with tinted laminated safety glass. The top one-third of the glass shall be tinted to the maximum legal limit for tinting.
- b. The driver's side windows shall be split, sliding windows. The sliding portion shall move freely without rocking or binding.
- c. Driver's side window shall have a see-through pull-down shade.

12. EXTERIOR PANELS, ROOF GUTTER AND BUMPERS

12.1 Exterior panels

Exterior panels shall be sufficiently stiff to prevent vibration, drumming or flexing while the vehicle is in service.

Special care shall be taken with the outside sheathing, roof, roof bonnets and the interior finish so that all kinks and buckles are removed before assembling and so that they present a true, smooth finish without grinding or cutting material below its standard thickness.

Sealing and fastening of joints shall prevent entrance of moisture and dirt.

Exterior panels shall be bonded or welded to the body frame. The lower side panels below the window line which are exposed to impact damage shall be easily removable and replaceable.

12.2 Roof gutter

A roof gutter shall be installed if the body style does not stop water flow into or onto windows, doors, and mirrors.

12.3 Bumpers

The vehicle shall incorporate energy absorption bumpers so that no structural or body part of the vehicle shall be damaged because of the vehicle rolling, on a horizontal surface, perpendicularly, backwards or forwards into an immovable barrier at speeds up to five (5) km/hr. The bumper shall be capable of returning to its pre-impact shape.

The energy absorption system of the bumper area shall not require service or maintenance in normal operation during service life of the vehicle.

Bumper height shall be such that when one bus is parked behind another, a portion of the bumper faces will contact each other.

Bumper material shall be corrosion-resistant and withstand repeated impacts of the specified loads without sustaining damage.

Bumpers shall be modular necessitating only part replacement if damaged.

12.4 License Plate Provisions

Provisions shall be made to mount standard-size license plates on the front and rear of the bus. These provisions shall direct-mount or recess the license plates so that they can be cleaned by automatic bus-washing equipment without being caught by the brushes. Plates shall be affixed with rivets or similar fixtures.

12.4.1 Wing mirrors

Vehicles shall be equipped with two convex, electrically adjustable outside rear view mirrors, mounted on the front corners of the vehicle. The mirrors shall be fitted with de-misters and all the control switches shall be mounted in a position readily accessible to the driver whilst sitting in the normal driving position.

The mirror frame shall be mounted with a single attachment point from above. The mirror assembly shall be of the shock-absorbing type, able to deflect out of its normal position on light impact, especially from the front, to minimise the opportunity for damage. Ideally, the mirrors will be mounted to be within the swept arc of the front of the vehicle.

Spare parts for wing mirrors shall be readily available.

In addition to the mirror assembly being of the shock-absorbing type the assembly mount should be detachable at the body interface to minimise body damage in the event of a heavy-impact.

The Supplier shall provide the styling for the Purchaser's approval prior to production.

Table 7: Summary of the key dimensional aspects of the wing mirrors

Dimension Element	Value
Distance from outside edge of left-side mirror to the outside edge of vehicle body (nominal)	250 mm
Distance from outside edge of right-side mirror to the outside edge of vehicle body (maximum)	250 mm

Distance from ground level to the bottom edge of left-side mirror (nominal)	1 800 mm
Distance from ground level to the bottom edge of right-side mirror (minimum)	1 800 mm

Notwithstanding any to the contrary in this specification all wing mirrors shall comply with the requirements of all regulatory and compulsory specification requirements.

The Supplier is to take note of the proximity and the dimensions of bus stations and road camber tolerances when designing the bus to ensure that there will be adequate clearance between the bus side mirrors and the station during normal operations.

13. EXTERNAL ACCESS POINTS

13.1 External access doors

Access doors shall be provided, where necessary, for the easy maintenance of equipment.

Access to the engine compartment, transmission compartment, radiator compartment, and ITS control compartment doors shall be controlled by some form of standardized universal key access. All such access doors that require a tool to open shall be standardized throughout the vehicle and will require male tool to open or lock. ("T" key style is acceptable).

Access doors shall be provided with positive hold open devices and corrosion resistant latches. Side access doors shall have flush type latches. Doors shall be of a robust construction and shall be capable of withstanding regular use and resistant to unauthorised access.

When the engine access door is open, it shall not obstruct the rear vehicle lights.

There shall be an access door for emergency workers to gain entry to the "Battery Disconnect" and it shall be labelled as such. This access door shall not require tools to gain access. The placement of this access door shall be carefully considered given that the right-hand side of the bus will not be accessible when the bus is docked at bus station and the left-hand side of the bus will be exposed to passing traffic.

Similar consideration shall be given to the positioning and labelling of an external emergency door release, if provided.

13.2 Roof escape hatch / air vents

Emergency roof escape hatches shall be provided in each vehicle and be of a robust construction.

The hatches shall have a seal around the opening and shall be opened by pulling the release handle. Instruction decals shall be placed on the underside of the hatch.

Roof hatches, subject to compliance with regulatory requirements for emergency exits and if designed for such dual emergency and ventilation purposes may be used for ventilation during warm weather.

14. EXTERIOR LIGHTING

14.1.1 Headlamps, running lights and rear taillights.

- a. The heavy-duty, long-life headlamps and lights that utilize modern LED technology shall be installed as the preferred option. The Supplier shall obtain the Purchaser's authority to utilise an alternative technology.

- b. The headlamp assembly housings shall be robust in nature and the lamps able to withstand vibration while operating under variable road conditions.
- c. LED daytime running lights shall be provided and shall be independent from the headlamp function.
- d. Headlamps, running lamps and rear taillights should be individual units and shall not be assembled in clustered units that wrap-around the leading and trailing corners of the bus where such wrap-around clusters are vulnerable to damage.
- e. Modularity in design is an important factor and bulbs and / or lamps assemblies must be replaceable on an individual basis.
- f. Access to bulbs and or assemblies must be easily accessible for maintenance.

14.1.2 Exterior door lighting

An exterior white LED light shall be provided at each door to adequately illuminate the outside area when the doors open.

14.1.3 Running, indicator, reversing and marker lights and reflectors

The buses shall be fitted with daytime running lights that are on when the engine is running. These and the indicator, reversing and marker lights, and reflectors shall have the following characteristics:

- a. LED lights shall be used where possible.
- b. The daytime running lights shall be independent from the headlamp function.
- c. Direction indicator lights shall be visible from front, rear and sides of the vehicle, with additional side units fitted if necessary. The indicator lights shall double as hazard lights, the control for which will override the indicator controls. Hazard and indicator functions shall result in a low volume audible signal in the driver compartment, but with different tones.
- d. The vehicle shall be fitted with reversing lights, which shall also engage an audible reversing signal, clearly audible in the vicinity of the vehicle with the engine running.
- e. Marker lights shall be installed, one on each upper corner of the body. All lenses shall have smooth outside surface to prevent collection of dirt and/or other accumulation.
- f. Access to bulbs and or assemblies must be easily accessible for maintenance.
- g. Reflectors at the front, rear and on each side of the vehicle shall be provided. Reflectors shall be installed on both sides of the vehicle. The vehicles shall be supplied with all compulsory reflectors, including reflective tape, as required in South African law.

15. THE BUS INTERIOR

15.1 Interior: General Requirements

Materials shall be selected based on maintenance, ease of cleaning, durability, appearance, safety, flammability, and tactile qualities. Materials shall be strong enough to resist everyday abuse and be vandalism and corrosion resistant. Trim and attachment details shall be kept simple and unobtrusive. Interior trim shall be secured to avoid resonant vibrations under normal operational conditions.

15.2 Interior panels and trim

The interior of the passenger doors shall blend in with the appearance of the vehicle interior.

The interior side walls, ceiling trim panels and sections between large side windows down to the bottom of the window openings shall be of an aesthetically attractive and durable material.

Panels shall be installed with no droop or buckling across the width of the panels and shall be secured without loose edges.

Panels shall be easily replaceable and tamper resistant. They shall be reinforced, as necessary, to resist vandalism and other rigors of public transport bus service. Individual trim panels and parts shall be interchangeable to the extent practicable.

A sample of the interior panel shall be provided to the Purchaser during the design-review stage for approval.

15.2.1 Interior colour scheme

The colour of the wall panels shall contrast with that of the surface of the floor and this contrast is to be most clearly defined at the junction of the floor to the wall. In general, the internal colour scheme, complementing the Purchasers existing trunk vehicle fleet, is to be proposed by the Supplier, but should be non-marking, with a light and airy feel. The Supplier should include clear graphics showing examples of that offered in the tender submission.

The Purchaser's colour choices will be confirmed by the Purchaser during the initial design-review stage prior to the approval of the final design.

15.2.2 System and Route Maps

System maps will be placed on all vehicles in receptacles that are readily accessible to passengers.

The Supplier shall provide at least one location on each vehicle a receptacle / map holder for a replaceable system map. Ideally the map will be placed near the front or the middle of the vehicle. The panel behind the passenger doors is considered most appropriate, subject to limited obstruction of the driver's view of the vehicle interior. Incorporation into an internal partition and modesty panels may be considered, subject to the functional requirements of such panel or partition not being compromised.

The Supplier shall provide the mount and receptacle or holder for the map(s). The map shall be held between transparent screens that are both tamper proof, resistant to scratches and abrasion and comply with necessary safety requirements for screens.

The Supplier shall note the proposed location of the system map(s) in the drawings submitted for the interior of the vehicle. System maps of portrait mounted A2 size will be preferred.

15.2.3 Linear Route Maps and Advertising Space (provision above windows)

a. Linear Route Maps

Space to place linear route maps opposite the passenger doors or if not practical, adjacent to the passenger doors in the area above the windows but below the ceiling / headliner.

Route maps may be of the form of decals placed directly onto panelling or alternatively the space may take form of rectangular panels fixed above the window.

b. Advertising Space

To optimise system revenues, where practical and not required for the linear route maps, provision for discrete advertising space should be made, throughout the length of the vehicle.

The preferred space will be area above the windows below the ceiling / headliner where advertising decals may be placed directly onto panelling or alternatively the advertising space may take form of rectangular panels above the window. Suppliers may however propose alternatives, providing clear graphics showing how such alternative shall appear in the vehicle.

A sample of the route map will be provided by the Purchaser during the initial design-review stages prior to design approval of the location and form of the space for linear maps and strip advertising.

15.2.4 Grab-rails and stanchions.

- a. Full grip grab-rails and stanchions shall be provided for the safety of the standees and for ingress and egress.
- b. Vertical support posts shall be placed on both sides of the aisle at a spacing equivalent to every second seat position except for the wheelchair bays and door vestibules areas where vertical grab-posts are to be placed on either side of each Grab-rails and where appropriate on both sides of the aisle. The positioning of grab posts at seat positions shall alternate across the aisle.
- c. Grab-rails and stanchions shall be properly supported and held in place according to industry standards. Fittings and fasteners used shall be of stainless steel.
- d. Ceiling grab-rails, one on each side of the vehicle aisle, shall be in line with the aisle edge of the seats and shall extend from front to rear of vehicle.
- e. If relevant to the chosen interior design, a horizontal passenger assist shall be placed across the front of the vehicle to prevent injuries on the windscreen in the event of a sudden stop.
- f. High contrast yellow shall be used for the grab-rails and the stanchions. Suppliers are to provide clear graphics showing the proposed colour or colour alternatives. Where alternatives are offered, the selected colour will be confirmed by the Purchaser in the Supplier Contract.

15.2.5 Subway / grab straps

- a. Colour coordinated subway (grab) straps shall be installed on the grab-rails running the length of the vehicle.
- b. The straps shall be of a soft, but strong and durable material and shall have a positive fastening system.

15.2.6 ITS equipment enclosures

In-cabin accessible but lockable Intelligent Transport Systems (ITS) equipment enclosures are to be provided that will house the installation of a full suite of Advanced Public Transport Management (APTMS) and Automatic Fare Collection (AFC) systems and other electronic equipment suites.

All enclosures built to accommodate components of the ITS equipment shall be integrated into the interior structure and the equipment enclosures shall be secured from unauthorised access.

Refer to TS 2: Design And Installation Guideline for On-Board Intelligent Transport Systems (ITS) Equipment for details of the ITS enclosure requirements.

16. SEATING AND STANDING AREA**16.1 Passenger seats****16.1.1 Seat configuration**

In general, seats will be oriented in a 2 x 2 individual seat configuration. However, in some locations, such as near the front of the vehicle, a single seat or a 1 x 2 configuration will be acceptable.

16.1.2 Seating spacing dimensions

Individual seats shall be provided in all instances unless an alternate configuration is specified in the Project Specification.

The standard seat width shall be a minimum of 420 mm. A minimum 730 mm leg pitch shall be provided.

Where preferential seats are provided the clear distance from the front of the seat to the rear of the next seat shall

not be less than 230 mm. Where the preferential seat faces a bulkhead or partition more than 1 200 mm in height, this distance is to increase to a minimum of 300 mm.

16.1.3 Number of seats

The number of seats to be provided for each of the bus categories is set out in **Error! Reference source not found.** The seat numbers may however be reduced to accommodate additional equipment or for other reasons specified in the Project Specification.

Side facing flip-down seats may be installed in the wheelchair bay only for use by passengers when the wheelchair bay is unoccupied.

The Supplier shall attempt to maximise the number of standard seats provided.

The minimum number of seats shall be specified in the Scope of Work. Where no minimum number is given the standard number of seats given in Table 8 shall be provided.

Table 8: Standard seat numbers

Bus Type / Category	Number of Standard seats (Excludes driver's seat and flip-down seats and wheelchair bays)	Wheelchair bays
18 m Lowentry/low floor articulated bus	40	2

16.1.4 Internal seating layouts

Typical seatings layouts are illustrated in Figure 14.

Suppliers shall provide drawings of the proposed interior layout of each vehicle type being offered showing the configuration of the doors, aisle widths, seating, wheelchairs spacing and any raised floor areas.

Suppliers are encouraged to demonstrate innovation in the proposed layout. Suppliers may provide more than one possible layout option. The chosen layout may be altered through discussions with the Purchaser, provided there are no cost implications of such alterations. Suppliers shall maximise seating and minimise the placement of seats on pedestals on either side of the aisle.

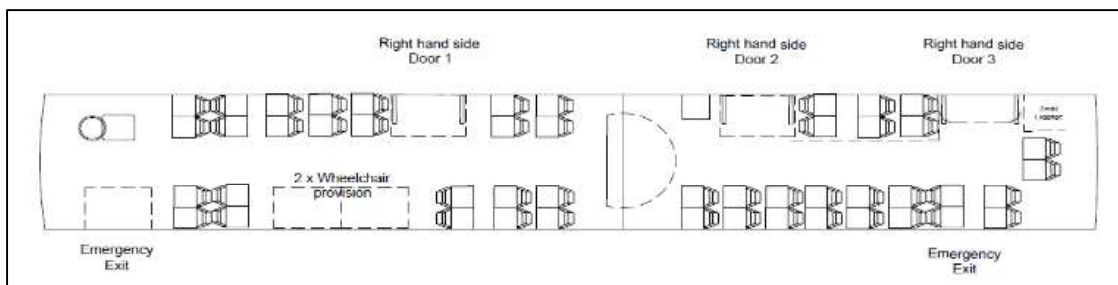


Figure 14: Typical 18m articulated bus 2x2 seat layout

Seat support structure and seating materials

The structure of the seat shall be hard, durable plastic supported on a metal frame. The passenger contact areas at the base and at the back shall be readily replaceable and of a durable soft padded plastic or synthetic cloth material panels (inserts) that is easily maintained and cleaned. Notwithstanding ease of replacement the seating panels (inserts) shall be constructed and affixed so that passengers cannot easily tamper, lift or pry inserts from the seat structure this causing damage to the seats.

Seating material shall be locally produced to be like that used elsewhere in the MyCiti system. The Supplier shall, where requested, provide the Purchaser with samples of the seating material during the design / prototype bus assembly stage to enable the Purchaser to review and select the seating material for installation.

All passenger seats shall be equipped with a hand-hold rail at the top of the seat back-rest, similar to as shown in Figure 15 and Figure 16.

A handhold at the sides is optional but encouraged.

The seats shall be fitted with replaceable seat panels.

Suppliers shall provide details of the seats type being provided prior to approval of the design.

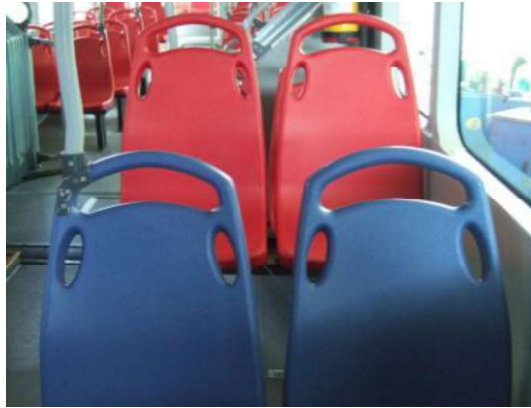


Figure 157: Typical example of the type of seat structure with top and side hand-holds



Figure 16: Typical example of the type of seat structure and material.

16.2 Special needs seating

The vehicles shall include provision for wheelchair(s), a cycle bay as well as priority seating areas (preferential seats) for other special needs passengers.

16.2.1 Preferential seats

In compliance with the South African National Road Traffic Act Regulation Cl.245, preferential seats shall be provided for near the passenger doors and shall be accessible without a step being required for access to these seats. The minimum number of preferential seats is set out in Table 9: Preferential seating requirements.

Table 9: Preferential seating requirements

Vehicle	Number of preferential seats
18 m	8

Preferential seating shall comply with the requirements of SANS 20107: Annex 8 (Clauses 3.2.2 to 3.2.7.) The seat pitch seats shall be greater for these seats than other seats in the vehicle.

The preferential seats shall be distinguishable from other seats through two mechanisms.

- a. The seats must have red padded inserts.
- b. Pictograms are to be placed on the nearby sidewall will indicate that certain passengers always have priority for the seats.

16.2.2 Wheelchair bays

Open bays for wheelchairs shall be provided as indicated in Table 10. Bays shall be wheelchair accessible from both the front left-hand side door and the front right-side doors.

Table 10: Wheelchair bay requirements

Vehicle Type	Number of Bays	Location
18 m	2	Near front right hand side door

Wheelchair bays shall have the following characteristics:

- a. The bay may also be used by passengers with prams and passengers with bicycles. Signage noting these usages shall be affixed to the side wall of the interior space near the bay. The Purchaser will provide text and artwork for installation by the supplier during the pre-production phase.
- b. Where the accommodation of bicycles is not required then the standard dimensions set out in SANS 10370 shall apply.
- c. The wheelchair bay shall be provided with an approved independent passenger and wheelchair restraint system including a seat belt and stanchions / grab rails as necessary. The equipment is to comply SANS 10370. (Refer also to ISO 10542.)
- d. The wheelchair bay shall include a padded backrest to minimize injury arising out of the passenger's head being thrown backwards (relative to the wheelchair) by sudden acceleration or deceleration of the vehicle, as may be relevant to the direction in which the wheelchair faces.
- e. At least 2 flip-up, side-facing seats are to be added to each wheelchair bay. The Supplier is encouraged to provide as many flip-up/down seats as can be accommodated in the space.

16.2.3 Pictograms

The wheelchair bays shall have pictograms in accordance with SANS 20107: Annex 4, Figure 17.

The pictograms shall be visible from the outside, both on the front of the vehicle and adjacent to the relevant passenger doors, as shown in the example of Appropriate pictograms shall also be placed internally adjacent to each "special needs" bay and preferential seating area.

The pictograms will indicate that the area is for the preferred use of disabled persons, passengers with prams, and passengers with bicycles. The artwork for the pictograms shall be approved by the Purchaser. The

manufacture of the pictogram decals and their installation shall be the responsibility of the Supplier.

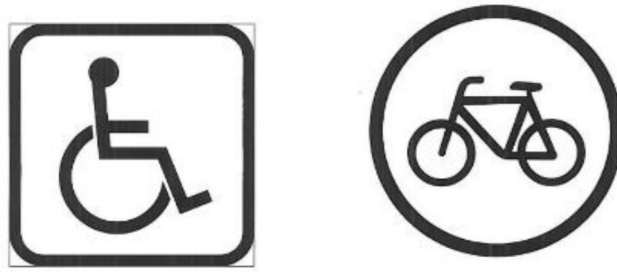


Figure 87: Pictogram for wheelchairs and bicycles.

16.2.4 Driver alert: Wheelchair bay and preferential seats

A means of communicating with the driver shall be placed adjacent to any preferential seat and within any special needs bay and shall comply with the requirements of SANS 20107: Annex 8 Clause 3.3. The device shall alert the driver to an emergency or urgent request.

16.3 Aisle Width

The minimum clear aisle width shall comply with the requirements of the South African Road Traffic Act Regulations.

Further the passenger aisle shall of sufficient width to accommodate the movement of a passenger in a self-propelled wheelchair entering the bus via either the left-hand side (LHS) 2or right-hand side (RHS) door, accessing the wheelchair bay and exiting the bus via either the LHS or RHS passenger door. Refer to SANS 10370:2008 for dimensional requirements.

16.4 Standing passengers

Suppliers shall maximise standing capacity for the high-standee format vehicles within the limitations of the given maximum permissible axle loads, axle load distribution etc. of the applicable Compulsory Specifications and Road Traffic Act Regulations.

All vehicles shall be homologated at their maximum design standing densities permitted.

The standing density of 6.25 passengers per square meter of free floor area of a rapid transport bus is sought.

The Supplier shall where request, provide details of the number of seated and standing passengers that can be accommodated on the vehicle, the free floor area available for standees, permitted and calculated maximum axle loads, axle distribution, tyre ratings and design speed etc.

Details of the free-floor-space area, the number of standees, and the number of passenger-seats shall be provided.

17. DRIVER'S COMPARTMENT

17.1 Driver's enclosure

The driver area shall be enclosed by a barrier which shall provide security to the driver and limit the ability for passenger conversation and/or physical interference. Access to the driver area shall be provided by an internal door between the passenger compartment and the driver's compartment. The door shall be capable of being locked by the operator/driver.

A barrier or bulkhead between the driver and the street-side front passenger seat shall be provided and shall extend from the top floor to the ceiling the level of the seated driver and shall fit close to the enclosure door, the bus side windows and wall to prevent passengers from reaching the driver or the driver's personal effects.

The upper portions of the rear and the left-hand side (kerb-side) barrier or bulkheads and the internal access door shall include transparent elements that will not impede the driver's ability to observe both the left-hand side entry/exit validation equipment and the passenger compartment.

The compartment shall have facility for drivers to monitor fare validation/ fare box transactions, where provision for such has been made or may be installed for passengers alighting and boarding at the left-hand side passenger door and to communicate with passengers.

The barrier shall minimize glare and reflections in the windscreen directly in front of the barrier from interior lighting during night operation.

Location and shape of the enclosure must permit full seat travel and installation / storage of requisite equipment and the entire partition assembly must be strong to support the enclosures access door assembly and for the mounting of equipment where such may be required.

17.2 Driver's seat

The driver's seat shall include a headrest, high back, lumbar support, air operated height adjustments, side bolsters and fore and aft slide. The driver's seat to come equipped with a 3-point seat belt, and an alarm indicating that the handbrake has not been applied when driver takes pressure off the seat. The seat shall be upholstered in all cloth fabric.

17.3 Compartment ergonomics.

The Supplier shall, where requested, supply state of the art ergonomic engineering to the vehicle driver's environment to maximise driver comfort and ease of operation for extended periods of time.

All switches and controls necessary for the operation of the vehicle, including door master, shall be conveniently located in the driver's area and shall provide for ease of operation in the context of their function and frequency of use. Switches and controls shall be within the hand reach envelope.

Allowance for the installation and positioning of various ancillary items such as a Driver Terminal, CCTV monitor, microphone etc details for which are provided in the list of Intelligent Transport Systems equipment to be installed on the bus and detailed in *TS 2: Design And Installation Guideline for On-Board Intelligent Transport Systems (ITS) Equipment*.

Controls shall be located so the boarding passengers may not easily tamper with control settings.

Drawings of the proposed layout of the driver's compartment shall be provided on request of the Purchaser.

17.4 Interior mirrors

In addition to the presence of cameras and displays, mirrors shall be provided for the driver to view the whole passenger cabin without leaving his/her seat and without shoulder movement. Where placed within the passenger space, mirrors must be located clear of passenger movement spaces to avoid causing an obstruction to or being knocked by passengers.

17.5 Signage

Signage shall be provided near the driver's compartment. The signage shall state that the driver carries no cash, and that the driver is not able to provide any change. The signage shall also state that any abuse of the driver shall result in prosecution.

The exact wording of the signage will be provided by the Purchaser during the pre-production stage. All textual signage will be Afrikaans, English and Xhosa.

17.6 Additional requirements

Over and above any other items that may be listed elsewhere in this specification, the following are to be provided in or in the proximity of the driver's compartment:

- a. A basic toolbox must be fitted behind the driver. (for stowage of compartment keys etc)
- b. A triangle kit for roadway incidents.
- c. A lockable storage holder next to the driver for storage of personal belongings
- d. Provision of space / holders for operating license certificate and valid operational permit on dashboard or driver side window.
- e. Fire extinguisher.

The placement of this and any other equipment in the driver's compartment shall in no way inhibit the driver's mobility nor the adjustment of the driver's seat.

18. FLOOR

18.1 Floor Design

The floor shall be essentially a continuous plane, except at the wheel housings and platforms. Where the floor meets the walls of the bus, as well as other vertical surfaces such as platform risers, the surface edges shall be blended with a circular section of radius or installed in a fully sealed butt joint. A moulding or cover shall prevent debris accumulation between the floor and wheel housings. The vehicle floor in the entrance and exit doors shall have a lateral slope not exceeding 2 degrees to allow for drainage.

The floor design in a low-entry bus shall be as per that above but shall consist of two levels (bi-level construction). Aft of the rear door extending to the rear settee riser, the floor height may be raised with equally spaced steps. An increased slope will be allowed on the upper level.

18.2 Construction

The floor shall consist of the subfloor and the floor covering that will last the life of the bus. The floor deck may be integral with the basic structure or mounted on the structure securely to prevent chafing or horizontal movement and designed to last the life of the bus. The floor as assembled, including the sealer, attachments and covering, shall be waterproof, non-hygroscopic and resistant to mould growth.

The floor deck shall be reinforced as needed to support passenger loads with no more than 15 mm elastic deflection from the normal plane when under gross load and withstand the application of 2.5 times gross load weight without permanent detrimental deformation.

The subfloor shall be treated to be resistant to the effects of moisture, including decay (dry rot). It shall be impervious to wood-destroying insects.

The floor shall provide adequate insulation to prevent road and other vehicle generated noise from entering the passenger cabin and where required an anti-squeak material shall be placed between the floor and under-floor frame members and around wheel housing.

18.3 Floor covering

The floor covering shall have a non-skid walking surface that remains effective in all weather conditions. The colour and pattern shall be consistent throughout the floor covering.

The floor covering, as well as transitions of flooring material to the main floor and to the entrance and exit area, shall be smooth and present no tripping hazards.

The floor shall be easily cleaned and shall be arranged to minimize debris accumulation.

Seams shall be sealed/welded per manufacturer's specifications. The floor covering shall be capable of withstanding daily mopping / wet scrubbing and prevent liquids from seeping under the covering.

Aesthetically pleasing floor covering shall be durable heavy-duty non-slip material with friction coefficient of not less than 0.68 when wet and have a minimum thickness of 2 mm.

Any areas on the floor that are not intended for standees, such as areas "swept" during passenger door operation, area next to the driver's cab etc. shall be clearly and permanently marked.

No-standing areas shall be clearly demarcated using a bold high contrast yellow floor material. Appropriate signage indicating the no-standing area shall be installed in suitable positions.

Suppliers shall provide details of the floor material with the submission of Supplier's design. Samples may be requested by the Purchaser during the initial design/prototype development stage.

Where alternatives are offered, the Purchaser's choices will be confirmed during the design-acceptance stage of the prototype/ first production vehicle approval process.

18.4 Access doors and hatches in floor

Access openings in the floor shall be avoided as far as possible. When absolutely required for maintenance, tamper proof access doors shall be sealed to prevent the entry of fumes, liquids, or dust, and shall be securely fastened with appropriate fasteners, and shall not create a tripping hazard. All holes in the floor material, for mounting bolts, seams, etc., shall be caulked and sealed before sanding. Two sets of keys shall be provided with each bus. All interior hatches shall use the same key where practically possible.

18.5 Wheel housing

To the extent that any exposed wheel housings are present in the interior space:

- a. The wheel housing shall be finished on the vehicle interior to withstand scuffing, wear and abuse from passenger feet. The wheel housings shall be trimmed and sealed at all mating edges.
- b. The colour of the wheel housing shall complement the vehicle interior. Suppliers are to propose colours in keeping with the general colour scheme inside the bus. The Purchaser's choices will be confirmed in the design review process.

19. INTERNAL PARTITIONS AND MODESTY PANELS

19.1 Partition Panels

Floor to ceiling shatterproof partition panels shall be installed at the side of the doorways and behind the driver (as part of the driver's enclosure) and shall be constructed of durable, corrosion-resistant material complementing the interior of the bus shall be provided to act as both a physical and visual barrier for seated passengers.

The partition panels shall be opaque below (modesty panel) and transparent (clear) non-glass panel above 900 mm so that the driver has a clear view of the passenger area. Where the upper portion of such panels are used for information display purposes (maps) the information panel shall consist of two transplant elements within which information may be placed.

- a. The partition panels shall be of material suited to the purpose and able to withstand any normally experienced level of impact from passengers or luggage. The driver panel should be highly resistant to impact, even from deliberate assault with a solid object.
- b. Partition panels shall incorporate handholds that assist seated passengers in arising or steadying themselves. Sufficient space must be provided to prevent passengers' hands being trapped and injured between the partitions and any supporting stanchions.

- c. Design and installation of modesty panels located in front of forward-facing seats shall include a handhold or grab handle along its top edge. These dividers shall be mounted on the sidewall and shall project toward the aisle no farther than passenger knee projection in longitudinal seats or the aisle side of the transverse seats.
- d. Modesty panels shall extend from at least the window opening of the side windows, and those forward of transverse seats shall extend downward to 60 mm. above the floor. Panels forward of longitudinal seats shall extend to below the level of the seat cushion.
- e. Where relevant, adequate clearance shall be provided for passenger's hands between partition panel handrails and the rear half of doors, during complete opening and closing cycles. No less than 50mm. clearance between the modesty panel and a fully open, inward opening door shall be provided.
- f. The corners of all modesty panels that are exposed shall be rounded (nominal 50mm radius) and all exposed edges beveled.
- g. Suppliers are to propose colours in keeping with the general colour scheme inside the bus. The Purchaser's choices will be confirmed in the Supplier Contract.

19.2 Front End

The entire front end of the bus shall be sealed to prevent debris accumulation behind the dash and to prevent the driver's feet from kicking or fouling wiring and other equipment. The front end shall be free of protrusions that are hazardous to passengers standing at the front of the standee line area of the bus during rapid decelerations. Panelling across the front of the bus and any trim around the driver's compartment shall be formed metal or composite material. Composite dash panels shall be reinforced as necessary, vandal-resistant and replaceable. All coloured, painted and plated parts forward of the driver's barrier shall be finished with a surface that reduces glare. Any mounted equipment must have provision to support the weight of equipment.

19.3 Rear Bulkhead

The rear bulkhead and rear interior surfaces shall be material suitable for exterior skin; painted and finished to exterior quality; or panelled with melamine-type material, composite, or scratch-resistant plastic and trimmed with stainless steel, aluminium or composite materials.

The rear bulkhead panelling shall be contoured to fit the ceiling, side walls and seat backs so that any litter or trash will tend to fall to the floor or seating surface when the bus is on a level surface. Any air vents in this area shall be louvered to reduce airflow noise and to reduce the probability of trash or litter being thrown or drawn through the grille. If it is necessary to remove the panel to service components located on the rear bulkhead, the panel shall be hinged or shall be able to be easily removed and replaced. Grilles where access to or adjustment of equipment is required shall be heavy-duty and designed to minimize damage and limit unauthorized access.

19.4 Headlining

Ceiling panels shall be made of durable, corrosion resistant, easily cleanable material. Headlining shall be supported to prevent buckling, drumming or flexing and shall be secured without loose edges. Headlining materials shall be treated or insulated to prevent marks due to condensation where panels are in contact with metal members. Mouldings and trim strips, as required to make the edges tamperproof, shall be stainless steel, aluminium, composite or plastic, coloured to complement the ceiling material. Headlining panels covering operational equipment that is mounted above the ceiling shall be on hinges for ease of service but retained to prevent inadvertent opening.

19.5 Fastening

Interior panels shall be attached so that there are no exposed unfinished or rough edges or rough surfaces. Fasteners should be corrosion resistant. Panels and fasteners shall not be easily removable by passengers. Exposed interior fasteners should be minimized, and where required shall be tamper-resistant.

20. FIRE EXTINGUISHERS (INTERIOR CABIN)

The Supplier shall furnish and install dry chemical fire extinguishers with the appropriate hose assembly. The extinguisher located near the driver shall be 9kg, or larger and accessible to the driver without the need to move or open anything except the fire-extinguisher quick release bracket.

The extinguisher shall be fixed in such a manner that should the quick release bracket be accidentally released the extinguisher shall not fall free of the bracket and interfere with the driver's ability to control the vehicle.

Table 11: Fire Extinguisher Requirements

Vehicle	Fire Extinguisher requirements
18 m	Driver cabin plus two suitably distributed in the vehicle.

The extinguishers shall have a South African certification tag attached at the time of acceptance and at time of vehicle delivery, the fire extinguisher inspection certificate shall be not more than one month old at time of bus delivery.

The fire extinguishers shall be in easily accessible locations. Mounting of the extinguishers shall be rigid and in such a way as to prevent vibration, noise and accidental discharge. If not mounted in the driver's compartment driver's compartment fire extinguishers shall be mounted in an accessible but tamper proof enclosure that shall have a clear inspection front panel to prevent vandalism and theft. The enclosure shall be clearly labelled. The Supplier may submit to the Purchaser an alternative mounting option.

The interior of the vehicle shall be fitted with the required fire and safety decals.

The placement of the fire equipment and the decals shall be agreed to by the Purchaser during the pre-production period.

21. VENTILATION AND AIR-CONDITIONING

The design of the bus shall facilitate natural ventilation. In addition, buses shall be fitted with either a forced ventilation system or an air-conditioning system.

DEFAULT Natural ventilation together with a forced ventilation system shall be provided on 18m buses.

ALTERNATIVE Air conditioners shall be provided if specified in the Scope of Work / Project Specification.

21.1 Natural ventilation

Natural ventilation shall be provided through the facility of openable windows and roof vents.

21.2 Forced Ventilation: Passenger cabin.

Where a forced ventilation is used without air-conditioning, the bus shall be fitted with roof ventilation system of a proven commercial type which may be easily serviced and for which replacement parts shall be available. The ventilation system shall make use of electrically driven fans that ensure a constant supply of fresh air into the bus, evenly distributed over its full length. The ventilation system shall be designed to prevent the ingress of water during its operation, particularly during high intensity rainfall.

The system shall achieve a nominal air renewal rate of approximately 30 times the bus volume per hour using

fans and extractors at normal operating flow rate and a higher refresh rate (up to 60 times) when maximum flow rate is engaged.

Airflow shall be evenly distributed throughout the bus. Where the normal flow rate is engaged, a minimum flow velocity of 0.1 m/s at a height of 1.5m above floor at each isle seat position should be achieved along the length of the bus. The maximum velocity on any passenger should not exceed 0.5 m/s.

21.2.1 Air-conditioning (Optional Item)

To be installed only if specified in the Scope of Work / Project Specification and allowed for in the Pricing Schedules.

The bus to be built for the possible introduction of an air-conditioning system but only air-conditioning equipment shall only be included if provided in the Project specification.

Where an air-conditioning system is installed, the system shall achieve 10°C below ambient temperature inside the full bus within 30 minutes of being engaged with no door openings for this period. The air-conditioner shall distribute air evenly throughout the vehicle and must be effective throughout the complete bus interior including the driver's area. To satisfy environmental requirements low environmental impact refrigerants shall be used.

21.3 Driver's Area Ventilation

The bus interior climate control system shall deliver at least 4 m³/min of air to the driver's area when operating in the ventilating and cooling modes. Adjustable nozzles shall permit variable distribution or shutdown of the airflow.

Heated airflow shall be provided in the driver's cabin. The windshield demister or alternate heating unit shall have the capability of diverting / partly diverting heated air to the operator's feet and legs. The demister or interior climate control system shall maintain visibility through the operator's side window.

21.4 Electronic Display de-misting

Heated air flow from the demister, or an alternate heating device, shall also be capable of being directed to the electronic destination display (EDD) consoles to prevent fogging and maintaining the external visibility of the displays during periods of inclement weather.

21.5 Equipment (APTMS & AFC) enclosure ventilation

Filtered dry air from a forced ventilation system shall be ducted to the ITS equipment enclosures to ensure that there is sufficient airflow to dissipate the heat built up by the enclosed electronic equipment and to vent this air from the enclosure. The Supplier shall liaise with supplier of the electronic equipment to be installed in these bays to ensure that the Ingress Protection rating (IP) and temperature tolerances can be maintained.

22. INTERIOR INSULATION

22.1 Thermal roof and side insulation

To minimise the transfer of heat into the passenger cabin special attention must be given to the thermal insulation between the roof and ceiling of the bus essentially shielding the headliner and preventing the solar thermal radiation from transferring heat to the passenger cabin.

Insulation material used between the inner and outer panels shall minimize the entry and/or retention of moisture. Insulation properties shall be unimpaired during the service life of the bus.

This thermal insulation shall extend to the top of the window frame and where possible extend from the roof to the floor level.

22.2 General thermal and acoustic requirements for the body

Aside from the general thermal and acoustic requirements for the body, the passenger cabin area over the engine and drive shaft shall be heavily insulated for both noise and heat with suitable fire and moisture resistant insulation material. The insulation material shall not trap moisture against the bodywork or in other way be detrimental to

the integrity of the vehicle.

Insulation properties shall be unimpaired during the service life of the bus. Any insulation material used inside the engine compartment shall not absorb or retain oils or water and shall be designed to prevent casual damage that may occur during maintenance operations.

The bus body shall be thoroughly sealed so that the driver or passengers cannot feel drafts during normal operations with the passenger doors, vents and windows closed.

23. INTERNAL LIGHTING

23.1 Passenger area

LED lights shall be used for interior lighting in the passenger saloon without intermittent breaks and shall be installed in the cover area on both sides and along the total length of the vehicle and shall not encroach on the minimum interior headroom.

Lenses shall be designed to effectively “mask” the light source. The lens material used to cover shall be translucent polycarbonate. Lenses shall be sealed to inhibit incursion of dust and insects yet be easily removable for service. Access panels shall be provided to allow servicing of components located behind light panels. If necessary, the entire light fixture shall be hinged.

The light on each side of the bus (behind the driver and the front door to the second row of sets) is normally to be turned on only when the front door is opened, when the bus is in the “night run” mode. As soon as the door closes, these lights shall go out. These lights shall be turned on at any time if the toggle switch is in the “on” position. All interior lighting shall be turned off whenever the transmission selector is in reverse, and the engine run switch is in the “on” position.

The interior lighting design shall require the approval of the Purchaser.

23.2 Driver's compartment

A driver's compartment lamp, with a full-range dimmer, shall be mounted to illuminate the entire driver's area.

23.3 Interior door lighting

All door threshold areas shall be adequately illuminated with LED type lights activated only when the door is open. The lights shall be shielded to prevent light from directly shining into passenger or driver's eyes.

Light fixtures shall be totally enclosed, splash proof, designed to provide ease of cleaning as well as lamp and housing removal and shall not be easily removable by passengers.

23.4 Seating Areas

The interior lighting system shall provide a minimum 150 lux illumination on a 0.1 sq. meter plane at, centred 850 mm above the floor and 600mm in front of the seat back at each seat position. Allowable average light level for the rear bench seats shall be 75 lux.

23.5 Ailes Vestibules and Doors

Floor surface illumination in the aisles shall be a minimum of 100 lux and the vestibule area a minimum of 40 lux with the doors open and a minimum of 20 lux with the doors closed.

The entrance / exit area and curb lights shall illuminate when the front door is open and master run switch is on and in the “lights on” position.

23.6 Step Lighting

Step lighting for the intermediate steps between lower and upper floor levels shall be a minimum of 40 lux and

shall illuminate in all engine run positions. The step lighting shall be low-profile to minimize tripping and snagging hazards for passengers and shall be shielded as necessary to protect passengers' eyes from glare.

23.7 Turntable Lighting

Lighting in the turntable / bellows area of an articulated bus can be reduced to 75 lux.

24. INTERIOR ACCESS PANELS AND DOORS

Access for maintenance and replacement of equipment shall where required, be provided by panels and doors that appear to be an integral part of the interior. Access doors shall be hinged with gas props or over-centre springs, where practical, to hold the doors out of the mechanic's way. Panels shall prevent entry of mechanism lubricant into the bus interior. All fasteners that retain access panels shall be captive in the cover. Access doors shall be secured with hand screws or latches. All fasteners that retain access panels shall be captive in the cover.

Access openings in the floor shall be sealed to prevent entry of fumes and water into the bus interior. Flooring material at or around access openings shall be flush with the floor and shall be edge-bound with stainless steel or another material that is acceptable to the Purchaser to prevent the edges from coming loose. Access openings shall be asymmetrical so that reinstalled flooring shall be properly aligned. Fasteners shall tighten flush with the floor.

The number of special fastener tools required for panel and access door fasteners shall be minimized.

25. VEHICLE PERFORMANCE: PROPULSION SYSTEM

25.1.1 Power

The propulsion system shall be sized to provide sufficient power to enable the bus to meet the defined acceleration, top speed, and gradeability requirements, and operate all propulsion-driven accessories. Performance shall be verified using actual road test results.

25.2 Top Speed

Buses shall be capable of achieving their top speed on a straight, level road at GVM with all accessories operating as set out below. The bus shall be capable of safely maintaining the vehicle speed according to the recommendations by the tyre manufacturer.

- a. 18 m low-floor or low entry buses should be able to attain and maintain a minimum speed of 75 km/hr.

Where buses are required to meet and maintain specific minimum speeds this will be specified in the Scope of Work (or Project Specification).

25.3 Gradeability

Startability and gradeability requirements shall be met on grades with a dry commercial asphalt or concrete pavement at GVWR with all accessories operating. The propulsion system shall enable the bus to start from a full stop and achieve and maintain a speed as set out in the Scope of Work.

25.4 Speed Limitation (Governing)

Notwithstanding the top speed and gradeability requirements the vehicles shall incorporate a mechanism to limit (or govern) the maximum vehicle speed. The maximum operational speed of the vehicles shall be set (governed) by the Supplier in consultation with the Purchaser during the pre-production phase. The Supplier shall provide any access codes and or necessary special tools required to set the governing of the vehicle speed.

25.5 Acceleration and deceleration

The acceleration and deceleration of a bus shall be sufficiently gradual and smooth to prevent throwing standing passengers off-balance.

Initial acceleration rates of between 0,7 m/s² and 1,0 m/s² are acceptable. Acceleration under normal operation shall not exceed a rate of 1,2m/s².

26. DIESEL INTERNAL COMBUSTION ENGINE PROPULSION SYSTEM

26.1 General

Unless specified differently the in the Scope of Work/Project Specification the engine shall comply with applicable emissions standards and useful life requirements specified in this specification (TS1).

The engine control system shall protect the engine against progressive damage. The system shall monitor conditions critical for safe operation and automatically derate power and/or speed and initiate engine shutdown as needed.

26.2 Engine Position

All buses shall be rear engine powered.

Irrespective of their location in the vehicle, engines will be separated from the passenger compartment by means of a sound, vapour and fireproof wall.

26.3 Design life.

The propulsion system shall have a design life of at least 1,000,000 kilometres and subject to proper operating and maintenance practices and expected service life of 1,500,000 kilometres. The Supplier is to provide details maintenance scheduling required for the specified design life and operational performance set out in this specification.

26.3.1 Fuel System

The engine shall be diesel powered. Components of the fuel management and/or control system shall have a design life of not less than 240,000 kilometres without replacement or major service.

26.4 Electronically controlled engine management system

The engine shall be equipped with an electronically controlled management system, compatible with either 12- or 24-volt power distribution. The engine control system shall be capable of transmitting and receiving electronic inputs and data from other drivetrain components and broadcasting that data to other vehicle systems. Communication between electronic drivetrain components and other vehicle systems shall be made using the communications networks. The engine's electronic management system shall monitor operating conditions and provide instantaneous adjustments to optimize both engine and bus performance. The system shall be programmable to allow optimization of programmable features. Tachometer

The engine shall be equipped with a tachometer adapter for use of an electronic tachometer.

26.5 Interlock

The engine starting system shall be protected by an interlock that prevents its engagement when the engine is running.

26.6 Engine monitoring system

The engine control system shall protect the engine against progressive damage. The system shall monitor conditions critical for safe operation and automatically de-rate power and/or speed and initiate engine shutdown

as needed. This device shall be designed to protect the engine and vehicle from any serious damage arising from overheating (coolant or metal), low coolant level, low oil pressure or other relevant deviation from the normal operating conditions. It is envisaged that this system will have two or three modes:

- b. That limits the engine power but allows the bus to proceed safely at limited engine load.
- c. That shuts down the engine completely, cutting off fuel supply.
- d. That disconnects all electrical systems after shutting down the engine (fire protection).

The engine shall be protected against over-revving.

26.7 Engine Mounting

The engine mount shall provide maximum isolation of audible frequencies over the range of 35Hz to 275Hz. All power plant mounting shall be mechanically isolated to minimise transfer of vibration to the body structure and provide a minimum clearance of 20mm. Mounts shall control the movement of the power plant so as not to affect performance of belt-driven accessories or cause strain in piping and wiring connections to the power plant.

26.8 Service

The propulsion system shall be arranged for ease of access and maintenance. The Supplier shall list all special tools, fixtures or facility requirements recommended for servicing the muffler, exhaust system, air cleaner, air compressor, starter, alternator, radiator, all accessories and any other component requiring service or replacement shall be easily removable and independent of the engine and transmission removal.

26.9 Air Intake

The air intake location shall be chosen to minimise the intake of dirt and dust. Air filters shall have easy access for removal and installation. The air filter shall be monitored by a filter minder. The minder shall be installed as to give true and accurate readings and be mounted in a location easily viewed and reset by the maintenance staff.

26.10 Fuel Economy

26.10.1 Fuel consumption rates.

The Supplier shall provide information relating the projected fuel consumption of the bus under transit operations. Where such information for the bus body and chassis combination is not available an estimate shall be provided for the chassis using a body of similar mass and aerodynamic characteristics.

Test results from applicable test procedures shall be provided to the Purchaser. Results shall include vehicle configuration and test environment information. Manufactures are to specify the test methods used.

26.10.2 UIPT's Standardized On-Road Test Cycles (SORT)

Test results to be provided shall, where available, be based on the UIPT's Standardized On-Road Test Cycles (SORT) procedures for the three SORT cycles: SORT 1, SORT 2 and SORT 3 (SORT 1 for heavy urban, SORT 3 for easy suburban (peri-urban) and SORT 2 for mixed or easy urban) should be provided. Each SORT-cycle correlates (fits) with an average commercial speed of 12 km/h, 18 km/h and 25 km/h for SORT 1, 2 and 3 respectively.

26.10.3 Alternative fuel test information

Where bus manufacturers / suppliers are unable to provide UIPT's standardised and modular test cycle for the measurement of fuel consumption of diesel buses (SORT) manufactures/ suppliers shall provide test results from other standardised methods that best match the following commercial speeds: 12 km/h, 18 km/h and 25 km/h in a typical BRT operating environment.

26.11 Transmission

Vehicles shall be equipped with electronically controlled automatic gearboxes, suited to the bus, that are matched

to the engine and other drive train components to ensure the required performance characteristics over the full vehicle operating range. The system gearbox shall provide smooth power transfer throughout the power range and shall not transfer any power when the gear selector is in neutral.

The transmission shall be **multiple speed, automatic shift with torque converter, retarder and electronic controlled**. Gross input power, gross input torque and rated input speed shall be compatible with the engine.

The transmission shall be designed to operate for not less than 500,000 kilometres on the design operating profile without major service. A service life shall have of at least 750 000 km is expected. The transmission should be easily removable without disturbing the engine and accessible for service.

The electronic controls shall be capable of transmitting and receiving electronic inputs and data from other drivetrain components and broadcasting that data to other vehicle systems. Communication between electronic drivetrain components and other vehicle systems shall be made using the communications networks. Electronic controls shall be compatible with either 12- or 24-volt power distribution, provide consistent shift quality and compensate for changing conditions such as variations in vehicle weight and engine power.

The gearbox shall be equipped with a starter interlock to prevent engagement of the engine starter unless the transmission is in neutral and then only if the engine is not running.

A nominal brake pedal application of 40 to 70 kilopascal should be required by the driver to engage forward or reverse range from the neutral position to prevent sudden acceleration of the bus from a parked position.

The gearbox shall be controlled by a key shift pad that shall indicate the selected gear and also provide electronic readings of fluid level and failure codes. The transmission control shall be designed to protect the transmission from any possible damage as a result of improper use of controls.

The transmission shall be equipped or wired so that it cannot be shifted from forward to reverse or vice versa while the vehicle is in motion. It shall also not be possible to engage any gear other than Neutral or Park if the boarding ramps are extended. However, to accommodate emergency situations, the boarding ramp-gear interlock shall be provided with a manual over-ride accessible at some point close to the boarding ramp.

The electronically controlled transmission shall have on-board diagnostic capabilities, be able to monitor functions, store and time stamp out-of-parameter conditions in memory and communicate faults and vital conditions to service personnel. The transmission shall contain built-in protection software to guard against severe damage. The on-board diagnostic system shall trigger a visual alarm to the driver when the electronic control unit detects a malfunction.

An electronic transmission fluid level monitoring and protection system shall be provided.

A conveniently located filler and dipstick tube for checking and filling the transmission shall be provided. The transmission oil filter and dipstick shall be located so that it is not a burn hazard and must be accessible with the engine compartment door open. Adequate transmission cooling shall be provided for heavy load operation in expected the ambient conditions set out in the Project Specification.

26.12 Retarder

The vehicle shall be fitted with a transmission fitted or electro-magnetic fitted retarder.

The retarder shall be designed to extend brake lining service life and suitable to accommodate the downhill operation on the worst grades in the network.

The application of the retarder shall cause a smooth blending of both retarder and service brake function. A physical indication shall be displayed in the driver cabin with the activation and engagement of the retarder.

Actuation of ABS and/or automatic traction control (ATC) shall override the operation of the brake retarder.

The retarder shall be adjustable within the limits of the powertrain and activated when the brake pedal is depressed. The Purchaser will work with the OEM/drive system manufacturer to determine retarder performance setting.

The retarder shall not control the maximum road speed nor engage when maximum speed is reached.

Where an alternative to a transmission retarder is permitted in the Project Specification as an option, the vehicle shall be fitted with or electro-magnetic retarder.

Exhaust retarders will not be permissible. Retarders are to be quiet in operation.

26.13 Engine Cooling System

The cooling systems shall be of sufficient size to maintain all engine and transmission fluids and engine intake air at safe, continuous operating temperatures during the most severe operations possible and in accordance with engine and transmission manufacturers' cooling system requirements. A sealed coolant cycle system shall be used. The cooling system fan controls should sense the temperatures of the operating fluids and the intake air, and if either is above safe operating conditions the cooling fan should be engaged. The fan control system shall be designed with a fail-safe mode of "fan on."

The cooling system shall be designed to meet the climatic conditions in Cape Town. Although such conditions are unusual in Cape Town, vehicles must be able to operate continuously at full load in ambient temperatures of up to 40°C. The buses may operate in mixed traffic and could be subjected to congestion traffic conditions and will be required to stop at stations and signalised intersections frequently along the route. The engine shall use liquid cooling and the radiator shall be of durable corrosion-resistant construction with bolted-on removable tanks. The radiator shall be of sufficient size to properly cool the engine, transmission, retarder and related components used in heavy service under the conditions noted above. The cooling system should be located either centrally or on the right-hand-side of the bus and shall be positioned such that the pick-up and ingress of litter from the curb-side channel of the busway is minimised.

Adequate access shall be provided for inspection and filling of the cooling system without removing any other equipment. A visual indicator to determine satisfactory engine coolant level shall be provided and shall be accessible by opening one of the engine compartment access doors. An electronic warning indicator of low coolant level shall be provided.

26.14 Fuel System

26.14.1 Fuel type.

The buses shall operate using diesel fuel with a low sulphur content of **10 ppm**.

26.14.2 Fuel Lines

Fuel lines shall be securely mounted, braced and supported as designed by the bus manufacturer to minimize vibration and chafing and shall be protected against damage, corrosion or breakage due to strain or wear. Manifolds connecting fuel containers shall be designed and fabricated to minimize vibration and shall be installed in protected locations to prevent line or manifold damage from unsecured objects or road debris. Fuel hose and hose connections, where permitted, shall be made from materials resistant to corrosion and fuel and protected from fretting and high heat. Fuel hoses shall be accessible for ease of serviceability.

26.15 Filters

The fuel system shall incorporate adequate filtration devices including a readily accessible particulate filter and a water trap with warning lights in the driver compartment warning the driver of the need to maintain the filters.

26.15.1 Fuel tank.

The fuel system shall comply with all relevant South Africa legislation and any South African National Standards that might be applicable. Particular attention is to be paid to ensuring that the fuel tank is isolated from the passenger cabin and poses the minimum possible hazard to passengers in the event of an accident.

26.15.2 Fuel tank capacity.

The capacity of the fuel tank(s) should preferable be more than 200 litres.

The minimum fuel tank(s) capacity shall be sized to allow for at least 300 kilometres of operation on a single tank without the need to refill.

26.15.3 Fuel tank Structure:

The corrosion and heat resistant fuel tank(s) shall be made sufficiently heavy gauge material internally to prevent baffled surging. The tank shall be internally braced and externally supported in such a manner as to eliminate the possibility of developing vibration fatigue cracks. All openings shall have adequate stiffeners so that a flat surface is presented to the attaching plates.

The fuel tank(s) shall be securely mounted to the vehicle to prevent movement during vehicle manoeuvres but shall be easily removed for cleaning or replacement. The tank shall have an inspection plate or removable filler neck to enhance cleaning and inspection. The tank shall be baffled internally to, prevent fuel sloshing regardless of fuel level.

The tank(s) shall either be located between chassis frame members or protected by a steel barrier to provide protection in the event of a side body impact.

The fuel gauge sensor shall be mounted so as to permit replacement without removing the tank (s). The sensor and driver's fuel gauge are to be accurately calibrated to reflect the actual tank contents to within approximately 5% of the true value when the vehicle is on level ground over the full tank range.

26.15.4 Filler provision

The tank filler pipe shall be so designed as to prevent back splash when the tank reaches full, as the fuel fill nozzle shuts off. Anti-theft fuel devices shall be provided at the tank filler pipe to prevent theft of fuel, but shall not reduce the fill rate, which is to be provided at a nominal rate of 100 l/min.

It is required that the fuel filler be located on the **right-hand side (RHS)** of the vehicle.

26.16 Emissions and Exhaust**26.16.1 Exhaust Emission standards.**

Unless specified differently in the Project Specification the emission requirements shall meet or better the EURO VI **emission standards**.

26.16.2 Selective Catalytic Reduction Fluid

The use of Selective Catalytic Reduction system to meet NOx level requirements will require a diesel exhaust fluid injection system to be installed.

Where the exhaust emission system is expected to make requiring a consumable liquid additive such as "Ad Blue", the filler point for this additive shall be placed close to the fuel filler, on the right side of the vehicle, precautions being taken to avoid cross-contamination.

The diesel exhaust fluid filler shall accommodate a nozzle that forms a sealed connection during the refuelling process to eliminate spills.

The Suppliers shall liaise with the Purchaser regarding the type of filler to be installed.

26.16.3 Exhaust System

The MyCiTi stations generally located on the right-hand side of a median lane. For this reason, it is preferred that exhaust gases are emitted from a location on the lower rear left-hand side of the vehicle but directed slightly to the right to minimise potential impact when open left side stops are used for some reason. Where a left side exhaust is not possible, the exhaust shall be directed towards the middle of the road as far as possible.

The entire exhaust system shall be adequately shielded to prevent heat damage to any bus component and to shield the passenger cabin from thermal radiation.

The exhaust and tail pipes shall be designed to provide sufficient clearance from the running gear under all operating conditions. Exhaust system parts shall not foul the axle, or any part of the vehicle when the vehicle body is raised on the jacking pads. The exhaust outlet shall be designed to minimize rain, or water generated from high-pressure washing systems from entering the exhaust pipe and causing damage to the after-treatment systems if installed.

The tailpipe shall extend slightly beyond the edge of the body to prevent exhaust from being trapped under the body and discoloration of body panels.

27. COOLING SYSTEM

The capacity of the cooling system shall be adequate to maintain design component temperatures under all operating conditions for the design life of the vehicle in the service area and environment of the agency.

27.1.1 Component Thermal Management

Under the vehicle operating temperature range, the thermal management system shall be designed such that each component will remain in its allowed operating range.

Component temperature sensors may be used for monitoring, control or component/system protection. If equipped and serviceable, component temperature sensors shall be easily accessible. Under typical failure modes or out-of-limit conditions, component temperature sensors shall not disable the bus unless there is an immediate risk of hazardous fault propagation (e.g., temperature levels in the motor area known to start fires).

If a component temperature sensor must disable the bus, the component/system must comply with the automatic propulsion system protection/shutdown override feature requirement of the propulsion system.

Motor cooling fans shall be of durable, corrosion-resistant construction and designed so a mechanic can gain access. The cooling fan and mounting bracket shall be designed to withstand the thermal fatigue and vibration associated with the installed configuration.

A means of determining satisfactory component coolant level shall be provided. A spring-loaded, push-button type valve or lever shall be provided to safely release pressure or vacuum in the cooling system.

Control and drive of the radiator and charge air cooler fan(s) shall be the Contractor's standard design.

Mounting location of radiator and charge air cooler shall be the Contractor's standard design.

27.1.2 Charge Air Cooling

The charge air cooling system, also referred to as after-coolers or inter-coolers, shall provide maximum air intake temperature reduction with minimal pressure loss. The charge air radiator shall be sized and positioned to meet engine manufacturer's requirements. Air ducting and fittings shall be protected against heat sources and shall be configured to minimize restrictions and maintain sealing integrity.

28. HYDRAULIC SYSTEMS

Hydraulic system service tasks shall be minimized and scheduled no more frequently than those of other major systems. All elements of the hydraulic system shall be easily accessible for service or unit replacement. Critical points in the hydraulic system shall be fitted with service ports so that portable diagnostic equipment may be connected or sensors for an off-board diagnostic system permanently attached to monitor system operation when applicable. A tamper-proof priority system shall prevent the loss of power steering during operation of the bus if other devices are also powered by the hydraulic system.

The hydraulic system shall operate within the allowable temperature range as specified by the lubricant manufacturer.

28.1 Fluid Lines

All lines shall be rigidly supported to prevent chafing damage, fatigue failures, degradation and tension strain. Lines should be sufficiently flexible to minimize mechanical loads on the components. Lines passing through a panel, frame or bulkhead shall be protected by grommets (or similar devices) that fit snugly to both the line and the perimeter of the hole that the line passes through to prevent chafing and wear.

Pipes and fluid hoses shall not be bundled with or used to support electrical wire harnesses.

Lines shall be as short as practicable and shall be routed or shielded so that failure of a line shall not allow the contents to spray or drain onto any component operable above the auto-ignition temperature of the fluid.

All hoses, pipes, lines and fittings shall be specified and installed per the manufacturer's recommendations.

28.2 Fittings and Clamps

All clamps shall always maintain a constant tension, expanding and contracting with the line in response to temperature changes and aging of the line material. The lines shall be designed for use in the environment where they are installed. For example, high-temperature resistant in the engine compartment etc.

Compression fittings shall be standardized to prevent the intermixing of components. Compression fitting components from more than one manufacturer shall not be mixed, even if the components are known to be interchangeable.

All lines, hoses and piping, where passing through a panel, bulkhead or frame shall be insulated and protected by grommets (or similar devices) that fit snugly to both the line and the perimeter of the hole that the line passes through to prevent chafing and wear.

28.3 Radiator piping and clamps

Radiator piping shall be stainless steel or brass tubing, and if practicable, hoses shall be eliminated. Necessary hoses shall be impervious to all bus fluids. All hoses shall be secured with stainless steel clamps that provide a complete 360-degree seal. The clamps shall always maintain a constant tension, expanding and contracting with the hose in response to temperature changes and aging of the hose material.

28.4 Oil and Hydraulic Lines

Oil and hydraulic lines shall be compatible with the substances they carry. The lines shall be designed and intended for use in the environment where they are installed. For example, high-temperature resistant in the engine compartment, resistant to road grit near the road surface etc.

Lines within the engine compartment shall be composed of steel tubing where practicable, except in locations where flexible lines are required.

Hydraulic lines of the same size and with the same fittings as those on other piping systems of the bus, but not interchangeable, shall be tagged or marked for use on the hydraulic system only.

29. SUSPENSION

29.1 General Requirements

The bus shall have air suspension (pneumatic) with automatic electronic self-levelling control, automatically and "instantaneously" adjusting to any load imbalances that may occur. The suspension self-adjustment system shall prevent a horizontal deflection of the wing mirror from exceeding 45 mm due to uneven loading conditions inside the vehicle.

The basic suspension system shall last the service life of the bus without major overhaul or replacement. Adjustment points shall be minimized and shall not be subject to a loss of adjustment in service. Routine adjustments shall be easily accomplished by limiting the removal or disconnecting the components.

The basic suspension system shall last the life of the vehicle without major overhaul or replacement.

All friction parts shall be equipped with replaceable bushings and inserts. Items such as bushings and air springs shall be easily and quickly replaceable.

Wearing surfaces that require lubrication shall have individual lubrication fittings.

29.2 Alignment

All axles should be properly aligned so the vehicle tracks accurately within the size and geometry of the vehicle.

29.3 Springs and Shock Absorbers

29.3.1 Suspension Travel

The suspension system should permit a minimum wheel travel of 70 mm jounce-upward travel of a wheel when the bus hits a bump (higher than street surface), and 70mm rebound-downward travel when the bus comes off a bump and the wheels fall relative to the body. Elastomeric bumpers shall be provided at the limit of jounce travel. Rebound travel may be limited by elastomeric bumpers or hydraulically within the shock absorbers.

Suspensions shall incorporate appropriate devices for automatic height control so that regardless of load the bus height relative to the centreline of the wheels does not change more than 15 mm at any point from the height required.

29.3.2 Damping

Vertical damping of the suspension system shall be accomplished by hydraulic shock absorbers mounted to the suspension arms or axles and attached to an appropriate location on the chassis. Damping shall be sufficient to control coach motion to three cycles or less after hitting road perturbations. The shock absorber bushing shall be made of elastomeric material that will last the life of the shock absorber. The damper shall incorporate a secondary hydraulic rebound stop.

29.3.3 Lubrication

All elements of steering, suspension and drive systems requiring scheduled lubrication shall be provided with standard grease fittings. These fittings shall be located for ease of inspection and shall be accessible with a standard grease gun from a pit or with the bus on a hoist. Each element requiring lubrication, shall have its own grease fitting with a relief path. The lubricant specified shall be standard for all elements on the bus serviced by standard fittings and shall be required no less than every 10,000 kilometres.

The bus manufacture may offer alternatives to standard grease fittings such as auto lube or remote grease manifold systems subject to the agreement of the Purchaser.

29.4 Kneeling

29.4.1 Kneeling system at bus stops

Where kneeling systems are provided the following shall apply.

- a. The kneeling system shall lower the left-hand side (LHS) entrance of the bus a minimum of 60mm during loading or unloading operations regardless of load up to GVM, but to a LHS door sill height of not less than 280mm. The kneeling control shall provide the following functions:
- b. Downward control must be held to allow downward kneeling movement.
- c. Release of the control during downward movement must completely stop the lowering motion and hold the height of the bus at that position.
- d. Upward control actuation must allow the bus to return to normal floor height without the driver having to hold the control.

- e. An indicator visible to the driver shall be illuminated until the bus is raised to a height adequate for safe street travel. An audible warning alarm will sound simultaneously with the operation of the kneeler to alert passengers and bystanders.
- f. A warning light mounted near the kerbside of the front door, a minimum 50 mm. diameter amber lens, shall be provided that will blink when the kneel feature is activated.

29.4.2 Kneeling Interlock and disable function.

The brake and throttle interlock shall prevent movement when the bus is kneeled. The kneeling control shall be disabled when the bus is in motion. After kneeling, the bus shall rise within 3 seconds to a height permitting the bus to resume service and shall rise to the correct operating height within 7 seconds regardless of load up to GVM. During the lowering and raising operation, the maximum vertical acceleration shall not exceed 0.2g, and the jerk shall not exceed 0.3g/second.

The kneeling function shall be capable of being disabled and the bus maintaining its standard operating height.

29.4.3 Keeling disabled at Right Hand Side closed bus stations. bus stations.

The kneeling control shall be disabled, and the bus floor level shall remain at its operating height of 340 mm when the right-hand side door(s) and boarding ramp(s) are activated.

30. WHEELS AND TYRES

30.1 Wheel characteristics

All wheels shall be interchangeable and shall be removable without a puller. Wheels shall be compatible with tyres in size and load-carrying capacity. Front wheels and tyres shall be balanced as an entity/unit. The vehicle's wheels shall have the following characteristics:

- a. All wheels on the vehicle should be of the same size and type and interchangeable between axles. The wheel rims shall be powder coated in a colour determined by the Purchaser during the pre-production period.
- b. Vehicles shall be delivered with the full complement of wheels.
- c. Wheels fitted to the bus shall be fitted with wheel nut indicators and on wheels where studs are exposed, stud protectors.
- d. Valve extenders shall be provided and held in position with an appropriately designed valve extension holder properly affixed to the wheel rim.

30.2 Spare Wheel

The number of spare wheels (rims and tyres) to be provide shall be given in the Project Specification.

30.3 Splash guards / splash aprons.

Splash guards / aprons shall be provided and shall have the following characteristics:

- a. Splash guards / aprons shall be made of composition or rubberized material.
- b. The design of the splash guards / aprons shall preclude the accumulation of dirt.

30.4 Tyres

Tyres shall be suitable for the conditions of transit service and sustained operation at the maximum speed capability of the bus. Load on any tyre at GMV shall not exceed the tyre Supplier's rating.

The vehicle shall be fitted with Steel Belt Radial, tubeless tyres of a rated capacity not less than the load which will be imposed on them when the vehicle is loaded to its maximum designed load. Different ply ratings on front

and rear wheels will not be acceptable.

All buses shall be fitted with new tyres.

30.4.1 Tyre specifications

- a. The Supplier shall ensure that the bus is fitted with the correct tyre that will complement the combined characteristics of the bus chassis, body design, operating regime and loading to maintain a safe and efficient operation.
- b. The cross-section width of the tyres must be such that they permit safe operating speed of the two bus types for the given maximum permissible axle loads.
- c. Tyres shall be suitable for the above operation in the Cape Town weather and temperature environment; with road surface temperatures of up to 70°C. The supplied tyres shall be readily available in South Africa.
- d. The correct operating tyre pressure for the relevant axle is to be indicated in a visible position within the wheel arches.
- e. The tyres shall have a radial ply construction.
- f. The load on any tyre when the vehicle is at its permissible GVM shall not exceed the tyre supplier's rating.
- g. Tyres shall be interchangeable between axles on the vehicle.
- h. The tyres shall not be re-treaded and shall be NRCS registered.
- i. Tyres shall not be more than one year old at date of delivery of the bus and shall be unused.

30.5 Branding of tyres

Not applicable

30.6 Tyre Pressure Indicators

Tyre pressures are to be indicated on the wheel archers of all vehicles. The tyre pressures shall be painted or embossed on a plate that is fixed to the bus body. Decals shall not be used for this purpose.

31. STEERING

31.1 General

Vehicles shall be right-hand drive.

All vehicles shall be fitted with electric (electronic) or hydraulic power steering.

In the event of hydraulic power steering, a fluid reservoir that is easily accessible for checking and filling fluid level without removing any equipment shall be provided. The reservoir shall be permanently labelled and accessible with engine access door open.

Steering columns shall be adjustable to accommodate driver needs, but only while the vehicle is at a standstill and the engine is shut down.

31.2 Steering Wheel

The steering wheel diameter shall be approximately 450-500 mm; the rim diameter shall be approximately 22-32mm and shaped for firm grip with comfort for long periods of time.

Steering wheel spokes and wheel thickness shall ensure visibility of the dashboard so that vital instrumentation

is clearly visible at centre neutral position.

31.3 Steering Wheel Turning Effort

Power steering failure shall not result in loss of steering control. With the bus in operation, the steering effort should not exceed 250 Newtons at the steering wheel rim and perceived free play in the steering system shall not materially increase as a result of power assist failure. Gearing should require no more than seven turns of the steering wheel lock-to-lock.

Caster angle shall be selected to provide a tendency for the return of the front wheels to the straight position with minimal assistance from the driver.

31.4 AXLES

31.4.1 Front Steering Axle

The front axle shall be solid beam or of an independent suspension design, non-driving with a load rating sufficient for the bus loaded to GVM and shall be equipped with grease type front wheel bearings and seals or sealed oil-type front wheel bearings.

All friction points on the front axle shall be equipped with replaceable bushings or inserts and, if needed, lubrication fittings easily accessible from a pit or hoist.

31.4.2 Drive Axle

Buses driven by a heavy-duty axle shall have a load rating sufficient for the bus loaded to GMV and the drive axle shall have a design life to operate for not less than 500,000 kilometres on the design operating profile without replacement or major repairs. The lubricant drain plug shall be magnetic type. The drive shaft shall be guarded to prevent hitting any critical systems, including brake lines, coach floor or the ground, in the event of a tube or universal joint failure.

31.4.3 Turning radii and tracking

The ability of a bus to successfully dock at station shall be achieved at a speed greater than crawl speed and without full wheel lock to achieve the required turning radius.

Details of the bus-station docking horizontal turning geometric requirements and vertical cross sections are provided in 5: KEY DIMENSIONS OF TRUNK STATIONS

32. BRAKES

Vehicles are to have anti-lock brake systems designed to ensure safe braking under normal and emergency conditions and appropriate for the operating environment. The braking system shall be balanced such that braking effort is appropriately distributed between all wheels to ensure maximum tyre kilometres and equal rate of wear in front and rear brake blocks. The braking system shall meet all current national and local safety standards.

32.1 Service Brake

Brakes shall be self-adjusting. Brake wear indicators shall be provided.

An electronic brake monitoring system and vehicle brake warning system shall be installed which shall notify the driver and maintenance staff of unsafe brake conditions.

32.2 Regenerative Braking (Electric)

In addition to traditional mechanical friction service braking, the bus shall be equipped with regenerative braking designed to improve energy efficiency and extend brake lining service life. The application of regenerative braking

shall cause a smooth blending of both regenerative and service brake function. Actuation of ABS and/or automatic traction control (ATC) shall override the operation of the regenerative brake. To protect the ESS system from over-charge, regenerative braking should be limited to above a certain SOC which is defined by the manufacturer. Documentation and training should be provided to the Purchaser.

32.3 Air-Actuated Brakes

Service brakes shall be controlled and actuated by a compressed air system. Force to activate the brake pedal control shall be an essentially linear function of the bus deceleration rate. The ECU for the ABS system (anti-lock brake system) shall be protected, yet in an accessible location to allow for ease of service.

The total braking effort shall be distributed through use of an EBD (electronic brake force distribution) system between all wheels in such a ratio as to ensure equal friction material wear rate at all wheel locations. Manufacturer shall demonstrate compliance by providing a copy of a thermos-dynamic brake balance test upon request.

32.4 Automatic Traction Control

Microprocessor controlled automatic traction control (ATC) shall be provided.

32.4.1 Friction Material

The brake linings shall be made of non-asbestos material. To aid maintenance personnel in determining extent of wear, a provision such as a scribe line or chamfer indicating the thickness at which replacement becomes necessary shall be provided on each brake lining. Hubs replaceable wheel bearing seals shall run on replaceable wear surfaces or be of an integral wear surface sealed design. Wheel bearing and hub seals and unitized hub assemblies shall not leak or weep lubricant when operating on the design operating profile for the duration of the initial manufacturer's warranty.

32.4.2 Disc Brakes on All Axles

The bus shall be equipped with disc brakes on all axles, and the brake discs shall allow machining of each side of the disc to obtain smooth surfaces per manufacturer's specifications.

The brake system material and design shall be selected to absorb and dissipate heat quickly so that the heat generated during braking operation does not glaze brake linings.

32.4.3 Parking / Emergency Brake

The parking brake shall be a spring-operated system, actuated by a valve that exhausts compressed air to apply the brakes.

An emergency brake release shall be provided to release the brakes in the event of automatic emergency brake application. The driver shall be able to manually depress and hold down the emergency brake release valve to release the brakes and manoeuvre the bus to safety. Once the driver releases the emergency brake release valve, the brakes shall engage to hold the bus in place.

33. INTERLOCKS

33.1 RHS Passenger Door Interlocks and boarding bridges / ramps

To prevent opening mid and rear passenger doors and deploying associated boarding ramps while the bus is in motion, an interlock shall be integrated with the door controls to prevent the right-hand side front mid and rear doors and or boarding ramps from being enabled or opened unless the bus is stationary.

To preclude movement of the bus, an accelerator interlock shall lock the accelerator in the closed position, and a brake interlock shall engage the service brake system to stop movement of the bus when the driver's door control is moved enable or open position, or door panel is opened more than 75mm. from the fully closed position (as measured at the leading edge of the door panel). The interlock engagement shall bring the bus to a smooth stop and shall be capable of holding a fully loaded bus on a 6 percent grade, with the engine at idle and the transmission

in gear, until the interlocks are released. These interlock functions shall be active whenever the vehicle Master Run Switch is in any run position.

All door systems shall employ brake and accelerator interlocks, thereby never allowing the possibility of release of the brake or accelerator interlock while an interlocked door is in an unsecured condition, unless the door master switch has been actuated to intentionally release the interlocks.

33.2 LHS Passenger Door Interlocks

An accelerator interlock shall lock the accelerator in the closed position, and a brake interlock shall engage the service brake system to stop movement of the bus whenever front doors are open.

34. PNEUMATIC SYSTEM

34.1 General

The bus air system shall operate the air-powered accessories and the braking system with reserve capacity. New buses shall not leak down more than 30 kPa over a 15-minute period of time as indicated on the dash gauge.

Provision shall be made to apply shop air to the bus air systems. A quick disconnect fitting shall be easily accessible and located in the engine compartment and near the front bumper area for towing. Retained caps shall be installed to protect fitting against dirt and moisture when not in use. Air for the compressor shall be filtered. The air system shall be protected per FMVSS 121 or appropriate SANS or EU standard.

34.2 Air Compressor

An engine-driven or electrical compressor may be supplied.

34.3 Air Lines and Fittings

Air lines, except necessary flexible lines, shall conform to the installation and material requirements of requisite standards for copper tubing with standard, brass, flared or ball sleeve fittings, or for nylon tubing if not subject to temperatures over 100 degrees C.

Nylon tubing shall be installed in a constant color-coding standard. coding system as indicated below may be adopted or another standard coding may be used:

- Black: auxiliary equipment and drain valve connections
- Green: suspension systems
- Red: supply lines
- Yellow: service Brake lines
- Blue: park Brake lines.

Line supports shall prevent movement, flexing, tension, strain and vibration. Copper lines shall be supported to prevent the lines from touching one another or any component of the bus. To the extent practicable and before installation, the lines shall be pre-bent on a fixture that prevents tube flattening or excessive local strain. Copper lines shall be bent only once at any point, including pre-bending and installation. Rigid lines shall be supported at no more than 1,5 m intervals. Nylon lines may be grouped and shall be supported at 1.0 m. intervals or less.

The compressor discharge line between power plant and body-mounted equipment shall be flexible convoluted copper or stainless-steel line or may be flexible Teflon hose with a braided stainless-steel jacket. Other lines necessary to maintain system reliability shall be flexible Teflon hose with a braided stainless-steel jacket. End fittings shall be standard brass or steel, flanged, swivel-type fittings. Flexible hoses shall be as short as practicable and individually supported. They shall not touch one another or any part of the bus except for the supporting grommets. Flexible lines shall be supported at 0.6 m intervals or less.

Air lines shall be clean before installation and shall be installed to minimize air leaks. All air lines shall be routed to prevent water traps to the extent possible. Grommets or insulated clamps shall protect the air lines at all points where they pass through under-structure components.

34.4 Air Reservoirs

All air reservoirs shall meet the requirements of requisite SANS standards and shall be equipped with guarded or flush type drain valves (spring-loaded). Major structural members shall protect these valves and any automatic moisture ejector valves from road hazards. Reservoirs shall be sloped toward the drain valve. All air reservoirs shall have drain valves that discharge below floor level with lines routed to eliminate the possibility of water traps and in the drain line. Air reservoirs shall be easily accessible.

34.5 Air System Dryer

An air dryer shall prevent accumulation of moisture and oil in the air system. The air dryer system shall include one or more replaceable desiccant cartridges. A provision shall be included to collect/ remove oil from the air system to prevent affecting function and/or damaging pneumatic system components. The air system shall be equipped with an air dryer located before the no. 1 air tank as far from the compressor as possible.

35. DRIVE SHAFT

The drive shaft (where applicable) shall be suited to the mass and performance requirements of the vehicles and shall have lubrication fittings provided for the universal and slip joints. There shall be suitable protective guards around the drive shaft. Heat shield(s) shall be provided if necessary. No wiring or tubing shall be within striking distance of driveline unless protected by adequate shielding.

36. MAINTENANCE AND SERVICING

36.1.1 Diesel bus

The engine compartment shall be arranged so that accessibility for all routine maintenance is assured. No special tools, other than dollies and hoists shall be required to remove the power plant. Quick connectors shall be used on all lines for ease when removing the power plant. The power plant shall be removable as one complete unit.

The muffler, exhaust system, air cleaner, air compressor, starter, alternator, radiator, all accessories and any other component requiring service or replacement shall be easily removable and independent of the engine and transmission removal.

Engine bay oil pressure gauge and coolant temperature gauges shall be equipped with maximum indicator pointers. These gauges shall be easily read during service and mounted in an area where they shall not be damaged during minor or major repairs.

Adequate engine compartment lights shall be controlled by a switch in the engine compartment and shall facilitate maintenance and inspection.

The engine oil filler shall be located inside the engine compartment.

All fluid fill locations shall be permanently labelled to help ensure correct fluid is added; and all fills shall be easily accessible with standard funnels and pour spouts. All lubricant sumps shall be fitted with magnetic type, hex head drain plugs of a standard size.

All hydraulic lines shall be compatible with the hydraulic fluid and maximum pressures of the system. The use of flexible lines shall be minimised. Non-interchangeable lines with the same fittings as on other piping systems of the vehicle shall be tagged or marked for use on the hydraulic system only. Hydraulic lines shall be individually and rigidly supported to prevent chafing damage, fatigue failure and tension strain on the lines and fittings.

The hydraulic system shall be configured and/or shielded so that failure or any flexible line shall not allow hydraulic

fluid to spray or drain onto any component likely to be operating at above the auto ignition temperature of the fluid.

37. ELECTRICAL, ELECTRONIC AND DATA COMMUNICATION SYSTEMS

37.1 Overview

37.1.1 Electrical System

The electrical system will consist of vehicle battery systems and components that generate distribute and store power throughout the vehicle. (e.g. generator, voltage regulator, wiring, relays, and connectors).

The system includes the provision of an auxiliary power supply to support on-board electronic equipment (Integument Transports systems or ITS) after vehicle shut down.

37.1.2 Electronic devices

Electronic devices are individual systems and components that process and store data, integrate electronic information or perform other specific functions.

37.1.3 Data communications

The data communication system consists of the bi-directional communications networks that electronic devices use to share data with other electronic devices and systems. Communication networks are essential to integrating electronic functions, both on-board the vehicle and off.

Data communications systems are divided into three levels to reflect the use of multiple data networks:

- a. Drivetrain level: Components related to the drivetrain including the propulsion system components and anti-lock braking system (ABS), which may include traction control.
- b. Information level: Components whose primary function is the collection, control or display of data that is not necessary to the safe drivability of the vehicle (i.e., the vehicle will continue to operate when those functions are inoperable). These components typically consist of those required for automatic vehicle location (AVL) systems, destination signs, fare boxes, passenger counters, radio systems, automated voice and signage systems, video surveillance and similar components.
- c. Multiplex level: Electrical or electronic devices controlled through input/output signals such as discrete, analog and serial data information.

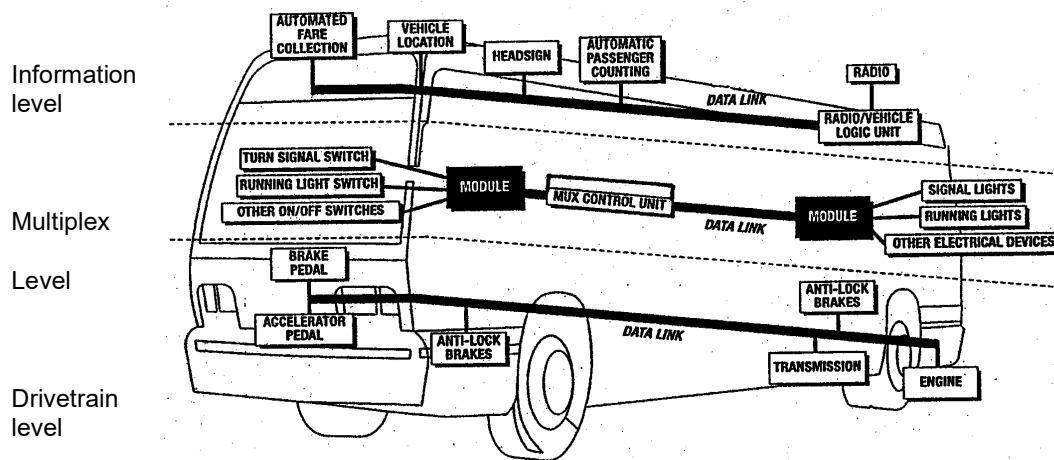


Figure 18: Data Communications Systems Levels (Typical components, illustrative only)

37.2 Vehicle telematics

Major manufacturers of buses and coaches have agreed to give third parties access to vehicle data and have designed a common interface.

Communication systems that require vehicle information for their operations or provide information for vehicle monitoring purposes shall adhere with an open interface standard for information exchange typically used for Fleet Management Systems (FMS).

For these purposes the system must comply with Bus-FMS-Standards (www.bus-fms-standard.com).

37.3 Modular Design

Design of the electrical, electronic and data communication systems shall be modular so that each electronic device, apparatus panel, or wiring bundle is easily separable from its interconnect by means of connectors.

Wiring shall be colour-coded, and connectors labelled for ease of identification, fault tracing, repair and maintenance.

Power plant wiring shall be an independent wiring harness. Replacement of the engine compartment wiring harness (es) shall not require pulling wires through any bulkhead or removing any terminals from the wires.

37.4 Environmental and Mounting Requirements

The electrical system and its electronic components shall be capable of operating in the area of the vehicle in which they will be installed.

Electrical and electronic equipment shall not be located in an environment that will reduce the performance or shorten the life of the component or electrical system when operating within the design operating profile. As a recommendation, no vehicle component shall generate, or be affected by, electromagnetic interference or radio frequency interference (EMI/RFI) that can disturb the performance of electrical/electronic equipment.

The Purchaser shall follow recommendations from bus manufacturers and subsystem Suppliers regarding methods to prevent damage from voltage spikes generated from welding, jump starts, shorts, etc. This information shall be provided by the bus manufacturers and subsystem Suppliers.

37.5 Hardware Mounting

The mounting of the hardware shall not be used to provide the sole source ground, and all hardware shall be isolated from potential electromagnetic interference / radio frequency interference (EMI/RFI).

All electrical/electronic hardware mounted in the interior of the vehicle shall be inaccessible to passengers and hidden from view unless intended to be viewed. All electrical/electronic hardware mounted on the exterior of the vehicle that is not designed to be installed in an exposed environment shall be mounted in a sealed enclosure.

Typically, IP44 and IP56 (ingress protection ratings) or higher shall apply depending on the exposure risk. The IP rating applied shall be determined by the supplier of the electrical / electronic equipment being fitted to the vehicle.

37.6 Electronic Equipment to be installed by the Supplier and Purchaser.

The Supplier (bus manufacturer) shall make the necessary provision for the mounting and connecting of all the electronic and electrical equipment to be fitted to the bus.

The installation mounting and other provisions shall be to the required standards and requirements for the installation of such equipment as defined by the equipment supplier.

The detailed requirements for the provision and installation of this equipment are set out in the Scope of Work and technical specification TS 2: *Design and Installation Guideline for On-Board Intelligent Transport Systems (ITS) Equipment*.

38. GENERAL ELECTRICAL REQUIREMENTS

38.1 Low Voltage System - 24V DC

The low-voltage system to be provided shall essentially provide power to service two basic requirements viz.

- d. To power the normal vehicle electrical systems during operations.
- e. To provide power to the on-board ITS equipment to permit wireless or other communications between the bus and data servers after the vehicle's operational shut down. This may include a power controller and auxiliary power supply (batteries).

The following shall apply to the bus low-voltage systems as may be applicable.

38.1.1 Low-Voltage Batteries (24V DC)

Where batteries are required to power the buses general low voltage electrical systems and/or the ancillary APTMS and AFS systems the batteries shall be 24 V DC.

Appropriately sized deep-cycling sealed maintenance-free batteries shall be provided. The batteries shall be designed and installed to withstand the operating environment. Each battery shall have a purchase date no more than one year from the date of release for shipment to the Agency.

Battery compartments must be well ventilated to prevent gaseous build-up while protecting the compartment from road spray, water intrusion etc.

38.1.2 Low-Voltage Battery Cables

The battery terminal-ends and cables shall be color-coded with red for the primary positive, black for negative and another colour for any intermediate voltage cables. Positive and negative battery cables shall not cross each other, if possible, be flexible and sufficiently long to reach the batteries with the tray in the extended position without stretching or pulling on any connection and shall not lie directly on top of the batteries.

Except as interrupted by the master battery switch the battery and starter wiring shall be continuous cables with connections secured by bolted terminals.

38.1.3 Battery Compartment (LV)

The battery compartment shall prevent accumulation of debris on top of the batteries and shall be vented and self-draining. It shall be accessible only from the outside of the vehicle. All components within the battery

compartment, and the compartment itself, shall be protected from damage or corrosion from the electrolyte. The inside surface of the battery compartment's access door shall be electrically insulated, as required, to prevent the battery terminals from shorting on the door if the door is damaged in an accident or if a battery comes loose.

The battery hold-down bracket shall be constructed of a non-metallic material.

This access door shall not require any special locking devices to gain access to the battery disconnect switch. The door shall be flush-fitting and incorporate a spring tensioner or equal to retain the door in a closed position when not in use.

The batteries shall be securely mounted on a stainless steel or equivalent corrosion resistant tray that can accommodate the size and weight of the batteries. The battery tray shall pull out easily and properly support the batteries while they are being serviced. The tray shall allow each battery cell to be easily serviced and filled. A locking device shall retain the battery tray to the stowed position. If not located in the engine compartment, the same fire-resistant properties must apply to the battery compartment. No sparking devices should be located within the battery box.

38.1.4 Battery Disconnect (LV)

The vehicle shall be equipped with battery quick disconnect switch(es). The battery compartment door shall conveniently accommodate operation of quick disconnect switch(es) and the battery quick disconnect access door shall be identified with a decal.

The decal size shall not be less than 9 × 12 cm.

38.1.5 Master Battery Switch

A single master switch shall be provided near the battery compartment for the disconnecting of all battery positives. The location of the master battery switch shall be clearly identified on the exterior access panel, be accessible in less than 10 seconds and protected from corrosion from fumes and battery acid.

Turning the master switch off with the power-plant operating shall shut off the engine and shall not damage any component of the electrical system. The master switch shall be capable of carrying and interrupting the total circuit load.

A second master switch or overnight ignition switch shall be provided for disconnecting the main batteries while allowing current to be drawn from the axillary power supply power various electronic systems overnight. Turning the overnight ignition switch off with the power-plant operating shall shut off the engine and shall not damage any component of the electrical system.

The auxiliary batteries shall be equipped with separate switches for disconnecting the 24v power.

38.1.6 Low-Voltage Generation and Distribution

The low voltage generating system shall maintain the charge on fully charged batteries. Voltage monitoring and over-voltage output protection shall be provided.

Dedicated power and ground shall be provided as specified by the component or system manufacturer. Cabling to the equipment must be sized to supply the current requirements with no greater than a 5 percent volt drop across the length of the cable.

Where power is supplied to 3rd party supplied ITS equipment (e.g. APTMS and AFS) the Supplier shall confirm with the equipment provider and supply the current to the equipment within the required tolerances.

38.1.7 Circuit Protection

All branch circuits, except battery-to-starting motor and battery-to-generator/alternator circuits, shall be protected by current-limiting devices such as circuit breakers, fuses or solid-state devices sized to the requirements of the circuit. Electronic circuit protection for the cranking motor shall be provided to prevent overheating. The circuit breakers or fuses shall be easily accessible for authorized personnel. The protection units shall be grouped together in the minimum practical housings to facilitate simple access for fault finding. Fuses shall be used only

where it can be demonstrated that circuit breakers are not practicable. This requirement applies to in-line fuses supplied by either the bus manufacturer or a sub contacted supplier. Fuse holders shall be constructed to be rugged and waterproof. All manual reset circuit breakers critical to the operation of the bus shall be mounted in a location convenient to the Purchaser's mechanic with visible indication of open circuits. The Purchaser shall consider the application of automatic reset circuit breakers on a case-by-case basis. The Supplier shall show all in-line fuses in the final harness drawings. Any manually resettable circuit breakers shall provide a visible indication of open circuits. Any manually resettable circuit breakers shall provide a visible indication of open circuits.

Circuit breakers or fuses shall be sized to a minimum of 15 percent larger than the total circuit load. The current rating for the wire used for each circuit must exceed the size of the circuit protection being used by at least one wire gauge.

38.1.8 Grounds

The battery shall be grounded to the vehicle chassis/frame at one location only, as close to the batteries as possible. When using a chassis ground system, the chassis shall be grounded to the frame in multiple locations, evenly distributed throughout the vehicle to eliminate ground loops. No more than four ground ring/spade terminal connections shall be made per ground stud.

Electronic equipment requiring an isolated ground to the battery (i.e., electronic ground) shall not be grounded through the chassis.

38.1.9 Low Voltage/Low Current Wiring and Terminals

All power and ground wiring shall conform to requirements of SAE Recommended Practice J1127, J1128 and J1292 or equivalent ICE or SANS specifications and / or requirements. Double insulation shall be maintained as close to the junction box, electrical compartment or terminals as possible. The requirement for double insulation shall be met by sheathing all wires and harnesses with non-conductive, rigid or flexible conduit. Where practical heat shrunk insulation sheathing shall be used in preference to plastic electrical insulation tape.

Wiring shall be grouped, numbered and/or color-coded. Wiring harnesses shall not contain wires of different voltage classes unless all wires within the harness are insulated for the highest voltage present in the harness. Kinking, grounding at multiple points, stretching, and exceeding minimum bend radius shall be prevented.

Strain-relief fittings shall be provided at all points where wiring enters electrical compartments. Grommets or other protective material shall be installed at points where wiring penetrates metal structures outside of electrical enclosures. Wiring supports shall be protective and non-conductive at areas of wire contact and shall not be damaged by heat, water, solvents or chafing.

To the extent practicable, wiring shall not be located in environmentally exposed locations under the vehicle. Wiring and electrical equipment necessarily located under the vehicle shall be insulated from water, heat, corrosion and mechanical damage. Where feasible, front to rear electrical harnesses should be installed above the window line of the vehicle.

All wiring harnesses over 1.5 m long and containing at least five wires shall include 10 percent (minimum one wire) excess wires for spares. This requirement for spare wires does not apply to data links and communication cables. Wiring harness length shall allow end terminals to be replaced twice without pulling, stretching or replacing the wire. Terminals shall be crimped to the wiring according to the connector manufacturer's recommendations for techniques and tools. All cable connectors shall be locking type, keyed and sealed, unless enclosed in watertight cabinets or vehicle interior. Pins shall be removable, crimp contact type, of the correct size and rating for the wire being terminated. Unused pin positions shall be sealed with sealing plugs. Adjacent connectors shall either use different inserts or different insert orientations to prevent incorrect connections.

Terminals shall be crimped, corrosion-resistant and full ring type or interlocking lugs with insulating ferrules. When using pressure type screw terminal strips, only stranded wire shall be used. Insulation clearance shall ensure that wires have a minimum of "visible clearance" and a maximum of two times the conductor diameter or 1.6 mm whichever is less. When using shielded or coaxial cable, upon stripping of the insulation, the metallic braid shall be free from frayed strands that can penetrate the insulation of the inner wires.

Ultra-sonic and T-splices may be used with 3.66 mm diameter (AWG 7) or smaller wire. When a T-splice is used,

it shall meet these additional requirements:

- a. It shall include a mechanical clamp in addition to solder on the splice.
- b. The wire shall support no mechanical load in the area of the splice.
- c. The wire shall be supported to prevent flexing.

All splicing shall be staggered in the harness so that no two splices are positioned in the same location within the harness.

Wiring located in the engine compartment shall be routed away from high-heat sources or shielded and/or insulated from temperatures exceeding the wiring and connector operating requirements.

The instrument panel and wiring shall be easily accessible for service from the driver's seat or top of the panel. The instrument panel shall be separately removable and replaceable without damaging the instrument panel or gauges. Wiring shall have sufficient length and be routed to permit service without stretching or chafing the wires.

38.1.10 Electrical Components

All electrical components, including switches, relays, flashers and circuit breakers, shall be heavy-duty designs with either a successful history of application in heavy-duty vehicles or design specifications for an equivalent environment.

All electric motors shall be heavy-duty brushless type where practical and have a continuous duty rating of no less than 40,000 hours (except cranking motors, washer pumps and wiper motors). All electric motors shall be easily accessible for servicing.

38.1.11 Electrical Compartments

All relays, controllers, flashers, circuit breakers and other electrical components shall be mounted in easily accessible electrical compartments. All compartments exposed to the outside environment shall be corrosion-resistant and sealed. The components and their functions in each electrical compartment shall be identified and their location permanently recorded on a drawing attached to the inside of the access panel or door. The drawing shall be protected from oil, grease, fuel and abrasion.

"Rear start and run" controls shall be mounted in an accessible location in the engine compartment and shall be protected from the environment.

38.2 Auxiliary Electronic Power Supply (24V DC)

The vehicle shall be provided with a 24 V DC (auxiliary) electrical power system that is capable of supplying power for sufficient duration to power several electronic systems (ITS) that are required to remain functional while the main power-plant is shut down.

The purpose of the auxiliary power source is to prevent power drawdown from the primary or main battery system which may drain the main battery of sufficient power to restart the engine, a critical consideration for diesel powered buses.

Where a Supplier elects to provide an auxiliary battery system for this purpose the battery shall meet the general requirements set out in these specifications i.e. SOW, TS1 And TS2.

If gel-pack, or any form of sealed (non-venting) batteries are used for auxiliary power they may be mounted on the interior of the vehicle if they are contained in an enclosed, non-airtight compartment and accessible only to maintenance personnel. This compartment shall contain a warning label prohibiting the use of vented (flooded) lead-acid batteries.

Suppliers may elect to provide an alternative to an auxiliary battery system provided that the alternative will satisfy the stated requirements for the provision of auxiliary power.

These systems are described in the Scope of Work and relevant supporting the technical document TS 2: Design

and Installation Guideline for On-Board Intelligent Transport Systems (ITS) Equipment where information on the respective power draw of the required equipment is provided. The systems generally become active once the vehicle enters a depot for overnight charging where wireless downloading of CCTV, AFS and other data commences. (It should be noted that downloading of data will primarily occur at the overnight charging stations where power from the charging equipment could be used to assist with the download power draw, but this shall not be the only mode of operation as wireless data downloads may be required at locations other than at depot charging stations.)

The system shall be self-monitoring and its management system shall provide a cut off to prevent damage to the system if the power draw-down exceeds permissible limits.

39. GENERAL ELECTRONIC REQUIREMENTS

If an electronic component has an internal real-time clock, it shall provide its own battery backup to monitor time when battery power is disconnected, and/or it may be updated by a network component.

All electronic component Suppliers shall ensure that their equipment is self-protecting in the event of shorts in the cabling, and also in over-voltage (over 32V DC on a 24V DC nominal voltage rating with a maximum of 50V DC) and reverse polarity conditions. If an electronic component is required to interface with other components, it shall not require external pull-up and/or pull-down resistors. Where this is not possible, the use of a pull-up or pull-down resistor shall be limited as much as possible and easily accessible and labelled.

39.1 Wiring and Terminals

Kinking, grounding at multiple points, stretching and reducing the bend radius below the manufacturer's recommended minimum shall not be permitted.

39.2 Discrete I/O (Inputs/Outputs)

All wiring to I/O devices, either at the harness level or individual wires, shall be labelled, stamped or color-coded in a fashion that allows unique identification at a spacing not exceeding 10cm. wiring for each I/O device shall be bundled together. If the I/O terminals are the same voltages, then jumpers may be used to connect the common nodes of each I/O terminal.

39.3 Shielding

All wiring that requires shielding shall meet the following minimum requirements. A shield shall be generated by connecting to a ground, which is sourced from a power distribution bus bar or chassis. A shield shall be connected at one location only, typically at one end of the cable. However certain standards or special requirements, such as RF applications, have separate shielding techniques that also shall be used as applicable.

NOTE: A shield grounded at each end forms a ground loop, which can cause intermittent faults.

When using shielded or coaxial cable, upon stripping of the insulation, the metallic braid shall be free from frayed strands, which can penetrate the insulation of the inner wires. To prevent the introduction of noise, the shield shall not be connected to the common side of a logic circuit.

39.4 Communications

The data network cabling shall be selected and installed according to the selected protocol requirements. The physical layer of all network communication systems shall not be used for any purpose other than communication between the system components, unless provided for in the network specifications.

Communications networks that use power line carriers (e.g., data modulated on a 24V-power line) shall meet the most stringent applicable wiring and terminal specifications.

39.5 Radio Frequency (RF)

RF components, such as radios, video devices, cameras, global positioning systems (GPS), etc., shall use coaxial

cable to carry the signal. All RF systems require special design consideration for losses along the cable. Connectors shall be minimized, since each connector and crimp have a loss that will attribute to attenuation of the signal. Cabling should allow for the removal of antennas or attached electronics without removing the installed cable between them. If this cannot be done, then a conduit of sufficient size shall be provided for ease of attachment of antenna and cable assembly. The corresponding component vendors shall be consulted for proper application of equipment, including installation of cables.

39.6 Audio

Cabling used for microphone level and line level signals shall be 0.65 mm diameter minimum with shielded twisted pair and cabling used for amplifier level signals shall be 1 mm diameter minimum, unless specified otherwise by the equipment supplier.

39.7 Multiplexing

39.7.1 General

The primary purpose of the multiplexing system is control of components necessary to operate the vehicle. This is accomplished by processing information from input devices and controlling output devices through the use of an internal logic program.

Versatility and future expansion shall be provided for by expandable system architecture. The multiplex system shall be capable of accepting new inputs and outputs through the addition of new modules and/or the utilization of existing spare inputs and outputs. All like components in the multiplex system shall be modular and interchangeable with self-diagnostic capabilities. The modules shall be easily accessible for troubleshooting electrical failures and performing system maintenance. Multiplex input/output modules shall use solid-state devices to provide extended service life and individual circuit protection.

Ten percent of the total number of inputs and outputs, or at least one each for each voltage type utilized (0V, 12V, 24V), at each module location shall be designated as spares.

39.7.2 System Configuration

Multiplexing may either be distributed or centralized. A distributed system shall process information on multiple control modules within the network. A centralized system shall process the information on a single control module. Either system shall consist of several modules connected to form a control network.

39.7.3 I/O Signals

The input/output for the multiplex system may contain three types of electrical signals: discrete, analogue or serial data.

Discrete signals shall reflect the on/off status of switches, levers, limit switches, lights, etc. Analogue signals shall reflect numerical data as represented by a voltage signal (0-12V, 10-24V, etc.) or current signal (4-20 mA). Both types of analogue signals shall represent the status of variable devices such as rheostats, potentiometers, temperature probes, etc. Serial data signals shall reflect ASCII or alphanumeric data used in the communication between other on-board components.

39.8 Data Communications

39.8.1 General

All data communication networks shall be in accordance with nationally recognized interface standard and regulations such as those published or adopted by SANS and ICASA, including ISO and others SAE standards where applicable.

Any electronic vehicle components used on a network shall be conformance tested to the corresponding network standard.

39.8.2 Drivetrain Level

Drivetrain components, consisting of the motor(s), motor invertors(s), retarder, anti-lock braking system and all other related components, shall be integrated and communicate fully with respect to vehicle operation with data with forward and backward compatibilities using Diagnostics, Fault Detection and Data Access. Drivetrain performance, maintenance and diagnostic data, and other electronic messages shall be formatted and transmitted on the communications networks.

The drivetrain level shall have the ability to record abnormal events in memory and provide diagnostic codes and other information to service personnel. At a minimum, this network level shall provide live/fail status, current hardware serial number, software/data revisions and uninterrupted timing functions.

a. Programmability (Software)

The drivetrain level components shall be programmable by the Purchaser with limitations as specified by the sub-system Supplier.

b. Vehicle Logic Unit (VLU)

The Supplier shall provide a communications interface (typically DIN 72585) which shall link to the VLU. (Refer to TS2). Data outputs from the monitoring equipment shall be recorded onto the Vehicle Logic Unit (VLU) for later compilation and analysis. The Supplier shall confirm the required interfaces and applicable standards during the final design approval process.

c. Bus-FMS-Standards (telematics)

Communication systems that require vehicle information for their operations or provide information for vehicle monitoring purposes shall adhere with an open interface standard for information exchange typically used for Fleet Management Systems (FMS). For these purposes the system must comply with Bus-FMS-Standards (www.bus-fms-standard.com)

d. Systems for ESS charge management and operational data collection and reporting require that the chargers will need to integrate with the bus through its on-board management system's common communication protocols.

39.8.3 Multiplex Level

a. Data Access

At a minimum, information shall be made available via a communication port on the multiplex system. The location of the communication port shall be easily accessible. A hardware gateway and/or wireless communications system are options if requested by the Purchaser. The communication port(s) shall be located as specified by the Purchaser.

b. Diagnostics and Fault Detection

The multiplex system shall have a proven method of determining its status (system health and input/output status) and detecting either active (online) or inactive (offline) faults through the use of on-board visual/audible indicators.

In addition to the indicators, the system shall employ an advanced diagnostic and fault detection system, which shall be accessible via either a personal computer or a handheld unit. Either unit shall have the ability to check logic function. The diagnostic data can be incorporated into the information level network or the central data access system.

c. Programmability (Software)

The multiplex system shall have security provisions to protect its software from unwanted changes.

39.9 Electronic Noise Control

Electrical and electronic sub-systems and components on all buses shall not emit electromagnetic radiation that will interfere with on-board systems, components or equipment, telephone service, radio or TV reception or violate national regulations.

Electrical and electronic sub-systems on the buses shall not be affected by external sources of RFI/EMI. This includes, but is not limited to, radio and TV transmission, portable electronic devices including computers in the vicinity of or on-board the buses, ac or dc power lines and RFI/EMI emissions from other vehicles.

39.10 Electrical Compartments

All relays, controllers, flashers, circuit breakers and other electrical components shall be mounted in easily accessible electrical compartments. All compartments exposed to the outside environment shall be corrosion-resistant and sealed. The components and their functions in each electrical compartment shall be identified and their location permanently recorded on a drawing attached to the inside of the access panel or door. The drawing shall be protected from oil, grease, fuel and abrasion.

40. DOCUMENTATION

At least four copies of a fully detailed wiring diagrams, or manuals, shall be provided at the delivery of the first vehicle. Wiring diagrams must indicate tap in points for all system functions to permit communication with the VLU and other third-party electronic equipment.

PLEASE NOTE THAT WHEREVER THIS DOCUMENT REFERS TO ANY PARTICULAR TRADEMARK, NAME, PATENT, DESIGN, TYPE, SPECIFIC ORIGIN OR PRODUCER, SUCH REFERENCE SHALL BE DEEMED TO BE ACCOMPANIED BY THE WORDS 'OR EQUIVALENT'

MYCITI RAPID TRANSPORT
LOW FLOOR OR LOW ENTRY DIESEL POWERED BUSES

Part 2

**TS 2: Design and Installation Guideline for On-Board
Intelligent Transport Systems (ITS) Equipment**

TS 2: DESIGN AND INSTALLATION GUIDELINE FOR ON-BOARD INTELLIGENT TRANSPORT SYSTEMS (ITS)

1. ON-BOARD INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

1.1 Overview ITS Equipment Installations

The Purchaser intends to use Intelligent Transport Systems (ITS) applications to improve the passenger experience and facilitate better management of the vehicle fleet and control of the system. In the context of this specification the ITS equipment shall be interpreted in the widest context and shall include the equipment and associated components listed below and elsewhere in the suite of these MyCiti bus specifications.

ITS equipment is to be installed by both the bus Supplier and by the Purchaser's ITS equipment providers.

The ITS equipment will include equipment to be procured and installed by the bus Supplier as part of the Standard bus.

The Purchaser's shall use its domestic ITS equipment providers to supply and install the Advanced Public Transport Management systems (APTMS), the Automatic Fare Collection System and the Bus-Platform Screen Door (Bus-PSD) synchronization units on the bus, as part of the Complete bus.

A basic overview of the ITS on-board installations is shown in Figure 19, On-board ITS Equipment

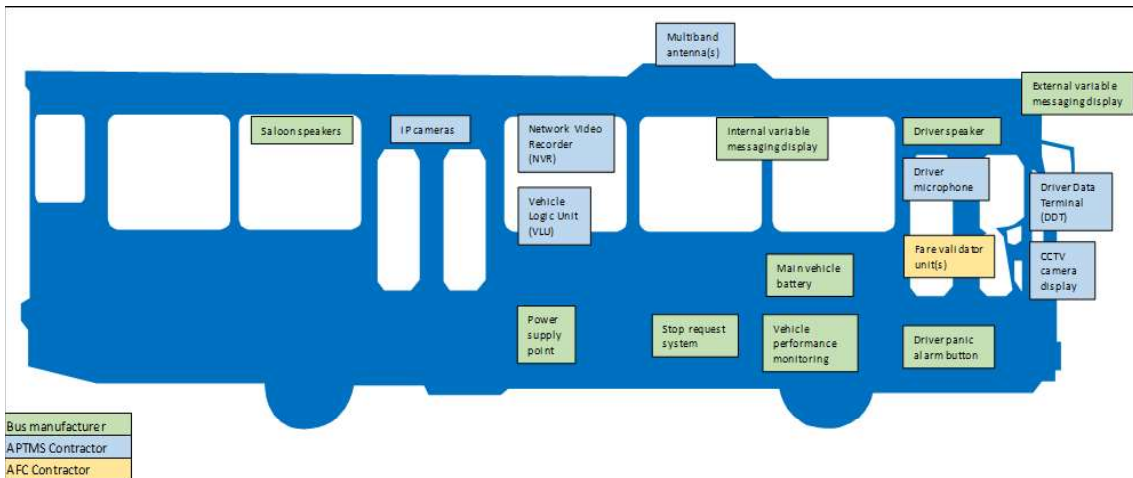


Figure 19: Overview of On-Board ITS Installations

High Level Dependencies in Figure 20 and the responsibility for on-board equipment installations in Table 12

These specifications the ITS equipment can be broadly grouped into the following categories:

- Advanced Public Transport Management Systems (APTMS) primarily for operator, service management and passenger information.
- Driver / bus interface systems including driver displays, audio systems, panic alarms, and stop request systems, public Wi-Fi etc.
- Automatic Fare Collection System (AFC) including fare validators and fare processing unit.
- Bus Door and Station Platform Screen Door Control (opening / closing Synchronization) System (Bus-PSD Control System)
- Telematics systems for bus performance, mechanical and driver behavior monitoring

1.2 On-board ITS Equipment High Level Dependencies

The high-level dependencies between the ITS equipment to be provided by the Supplier and the other 3rd party equipment suppliers, including the Purchaser's own domestic ITS equipment providers, is illustrated in Figure 20: On-board ITS and other equipment high-level dependencies.

This figure is schematic only and the Supplier shall liaise with the Purchaser's ITS equipment providers to confirm the dependencies in terms of power and data interface requirements and all cabling needs.

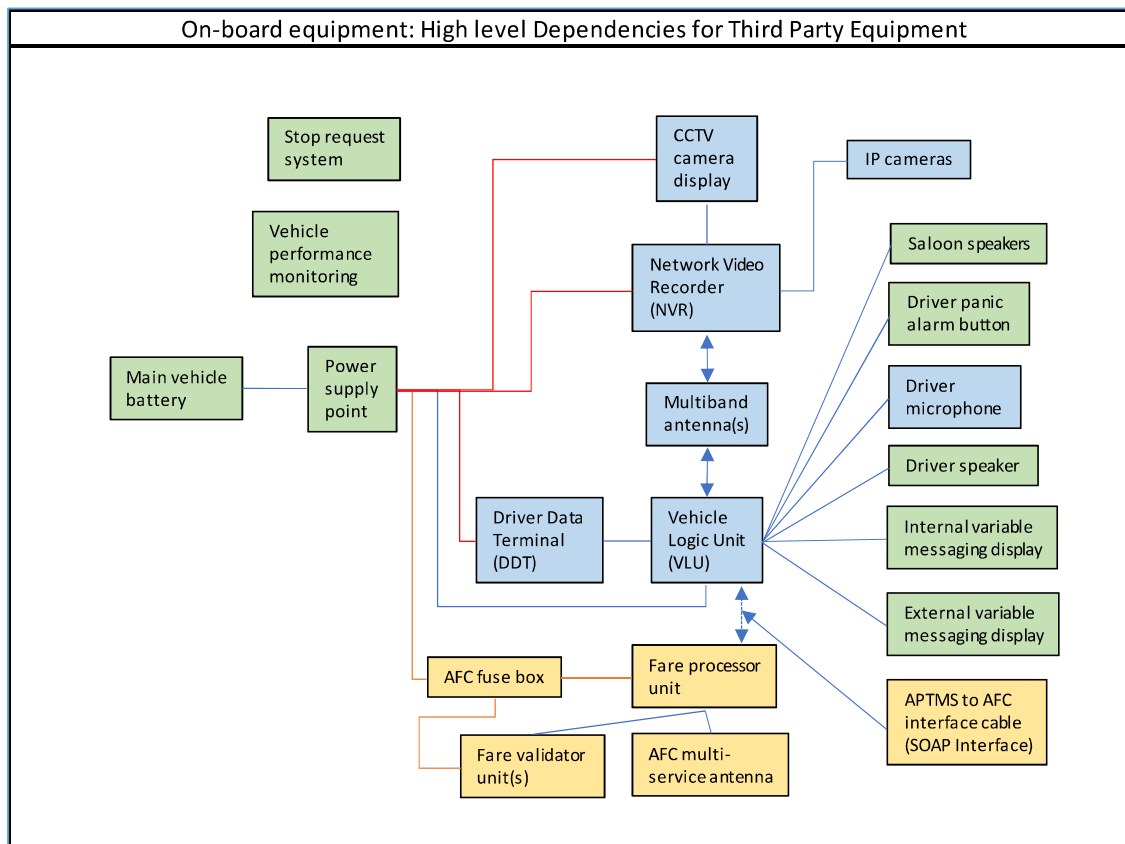


Figure 20: On-board ITS and other equipment high-level dependencies.

1.3 General responsibility for on-board equipment installations

The general responsibility for the supply, installation, warranty, and maintenance of the on-board ITS installations is set out in for illustrative purposes. The respective responsibilities for the supply, installation, warranty, and maintenance shall be confirmed in the Scope of Works. However, these general responsibilities shall apply unless specified differently in the Scope of Work.

Table 12: On-board Equipment Responsibility Matrix

Equipment	Equipment Supplier	Installation	Commissioning	Warranty	Maintenance
Bus Systems (as part of the Standard bus)					
External variable messaging display (EDD)	Bus manufacturer	Bus manufacturer	Bus manufacturer/ APTMS Contractor	Bus Manufacturer	VOC

Equipment	Equipment Supplier	Installation	Commissioning	Warranty	Maintenance
Internal variable messaging display (EDD)	Bus manufacturer	Bus manufacturer	Bus manufacturer/ APTMS Contractor	Bus Manufacturer	VOC
Electronic Destination Display (EDD) Controller	Bus manufacturer	Bus manufacturer	Bus manufacturer/ APTMS Contractor	Bus Manufacturer	VOC
Saloon speakers	Bus manufacturer	Bus manufacturer	Bus manufacturer/ APTMS Contractor	Bus Manufacturer	VOC
Driver speaker	Bus manufacturer	Bus manufacturer	Bus manufacturer/ APTMS Contractor	Bus Manufacturer	VOC
Driver microphone	Bus manufacturer/ APTMS Contractor	Bus manufacturer/ APTMS Contractor	Bus manufacturer/ APTMS Contractor	Bus manufacturer/ APTMS Contractor	Bus manufacturer/ APTMS Contractor
Driver panic alarm button	Bus manufacturer	Bus manufacturer	Bus manufacturer/ APTMS Contractor	Bus Manufacturer	VOC
Stop request system	Bus manufacturer	Bus manufacturer	Bus manufacturer/APTMS Contractor	Bus Manufacturer	VOC
Auxiliary power supply system	Bus manufacturer	Bus manufacturer	Bus manufacturer	Bus manufacturer	VOC
Main vehicle battery	Bus manufacturer	Bus manufacturer	Bus manufacturer/APTMS Contractor	Bus Manufacturer	VOC
BUS-PSD Control System (as part of the Complete bus)					
RAD unit	Bus-PSD Contractor	Bus-PSD Contractor	Bus-PSD Contractor	Bus-PSD Contractor	Facilities Management Contractor

Equipment	Equipment Supplier	Installation	Commissioning	Warranty	Maintenance
CCTV (as part of the Complete bus)					
IP cameras and PoE switches	APTMS Contractor	APTMS Contractor	APTMS Contractor	APTMS Contractor	APTMS Contractor
CCTV camera display(s)	APTMS Contractor	APTMS Contractor	APTMS Contractor	APTMS Contractor	APTMS Contractor
APTMS (as part of the Complete bus)					
Network Video Recorder (NVR)	APTMS Contractor	APTMS Contractor	APTMS Contractor	APTMS Contractor	APTMS Contractor
Multiband antenna(s)	APTMS Contractor	APTMS Contractor	APTMS Contractor	APTMS Contractor	APTMS Contractor
Vehicle Logic Unit (VLU)	APTMS Contractor	APTMS Contractor	APTMS Contractor	APTMS Contractor	APTMS Contractor
Driver Data Terminal (DDT)	APTMS Contractor	APTMS Contractor	APTMS Contractor	APTMS Contractor	APTMS Contractor
AFC (as part of the Complete bus)					
Fare validator unit(s)	AFC Contractor	AFC Contractor	AFC Contractor	AFC Contractor	AFC Contractor
Fare processing unit(s)	AFC Contractor	AFC Contractor	AFC Contractor	AFC Contractor	AFC Contractor
AFC Multi-service antenna (GPS, 3G, Wi-Fi)	AFC Contractor	AFC Contractor	AFC Contractor	AFC Contractor	AFC Contractor
Optional equipment (as part of the Standard bus if selected – refer to PS 1)					
Vehicle performance monitoring (telematics)	Bus manufacturer	Bus manufacturer	Bus maintenance contractor	Bus Manufacturer	VOC
Public On-board Wi-Fi modem and antenna	Bus manufacturer	Bus manufacturer	Bus maintenance contractor	Bus Manufacturer	VOC
On-board public USB charging ports	Bus manufacturer	Bus manufacturer	Bus maintenance contractor	Bus Manufacturer	VOC

The above table sets out the general responsibilities for the supply, installation and on-going maintenance of the on-board ITS equipment installation. The bus Supplier shall however refer to the Scope of Work for any changes to these general responsibilities supply, installation and warranty.

In general, the bus Supplier/ manufacture shall remain responsible for the physical installation (fixture) of any equipment or equipment supports or mounting rails that needs to be attached to the bus body or its structure and for the routing of all wiring looms etc. whether the equipment and or wiring looms or cabling is supplied by the bus manufacturer, the Purchaser's equipment providers (domestic subcontractors) or other 3rd party equipment suppliers.

The supplier of the ITS equipment is to assist with the installation of their requested equipment as required by the bus manufacturer and shall remain responsible for the testing, commissioning, and ongoing maintenance of this equipment.

The bus Supplier/ manufacturer may permit individual equipment suppliers to install (fix) their own equipment subject to the bus Supplier's supervision and approval.

Ongoing maintenance and warranty work shall be carried out by the equipment supplier, which may be the bus Supplier/ manufacturer or by the Purchaser's equipment providers in terms of their respective contracts with the Purchaser.

A general schematic of the ITS equipment installation requirements is provided in Figure 21: ITS Equipment Installation. This figure is provided for basic information only and the bus supplier in consultation with the ITS equipment providers will need to undertake a detailed design for the installation of the ITS equipment. Note that the technology labels are for illustrative purposes, and it is the intent that the latest applicable technologies should be installed. Technology selection will be finalised during the final design stage.

2. PURCHASER'S APTMS SUPPLIER'S RESPONSIBILITY FOR ON-BOARD ITS INSTALLATION.

In general, the Purchaser's ITS equipment suppliers shall be responsible for:

- a. The installation of all their respective ITS equipment located in their respective equipment enclosures or at fixed mounting points including:
- b. The fixture of the equipment to the supplied mounting points, exclusive of any required vibration dampening material/mechanism.
- c. The installation of a local fuse box and the distribution of power from the bus Supplier's power point to the individual components in the equipment enclosures.
- d. Data communication requirements (cabling, connectors etc) to connect to the bus Supplier's data interface point(s) situated in enclosures or at equipment mounting positions.
- e. Data communication requirements (cabling, connectors etc) to connect between ITS components supplied by the Purchaser's equipment providers.
- f. The installation of equipment outside the equipment enclosures e.g. fare validators and antenna.
- g. Data communication requirements between the electronic components as follows:
- h. The AFC equipment supplier shall provide the communication cabling between the fare processing unit, the fare validators, AFC multi-service antenna and the AFC to APTMS interface cable (SOAP interface)

The APTMS equipment supplier (shall provide the communication / data cabling between Vehicle Logic Unit, the driver data terminal and multiband antenna as well as between the various components of the CCTV system i.e. cameras, driver display, POE x-port switches, VGA and Ethernet cables).

3. SUPPLIER'S RESPONSIBILITY FOR ON-BOARD ITS EQUIPMENT INSTALLATIONS

In general, the Supplier shall be responsible for:

- a. The provision of an independent ITS /auxiliary power supply system and associated charging equipment.

- b. The provision of electrical power from the auxiliary power supply system to the following.
- c. equipment enclosures where in relevant Supplier's provided ITS equipment am other ITS equipment (e.g. APTMS, AFC) is to be installed by the Purchaser's ITS equipment suppliers.
- d. equipment not placed in equipment bays where required.
- e. The interface with the bus data systems to integrate the requisite digital and analogue communication with:
- f. the Supplier provided equipment.
- g. ITS equipment (e.g. APTMS, AFC) installed others in the equipment enclosures.
- h. equipment not placed in equipment enclosures.
- i. The installation of mounting rails and support fixtures for all ITS equipment installations including that not placed in enclosures e.g. fare validator mounting and roof antenna mounting fixtures etc.
- j. Installation of cabling looms to be supplied by Purchaser's ITS equipment suppliers and other 3rd parties for their respective equipment. Alternatively, the Supplier shall provide trunking throughout the bus for the future installation of 3rd party cabling. This requirement has to be finalized during detail design stage and agreed upon with Purchaser in writing.
- k. The installation of a local fuse box on the power line at the power source point and at the at the terminal point prior to the to the individual ITS component connectors in the equipment enclosures and installed elsewhere.
- l. The provision of data communication cabling from the bus data interface point(s) to connectors installed within equipment enclosures and between such the equipment where not provided by others.
- m. The Suppliers' responsibility shall not be limited to this list and other requirements as may be necessary throughout this document shall also be included.

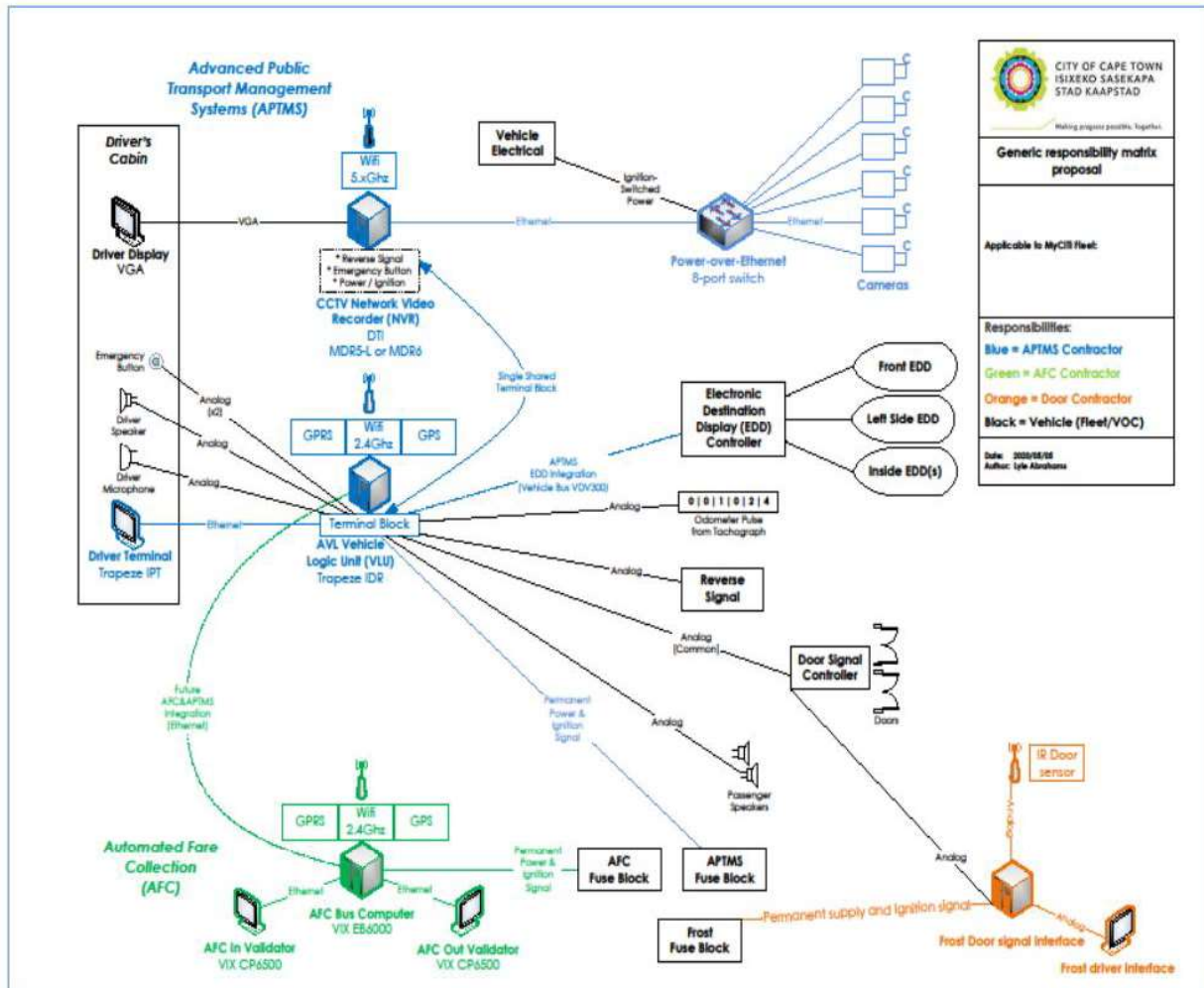


Figure 21: ITS Equipment Installation Schematic

3.1.1 ITS Equipment enclosures

The Supplier shall provide suitable enclosures (or cabinets) to house the ITS equipment. These enclosures which may be located behind the ceiling cove panels or other suitable location shall conform to the following requirements.

Separate enclosures (equipment bays or cabinets) shall be provided for each of the following items and their associated equipment:

- Network Video recorder.
- Vehicle logic unit
- Fare Processing unit
- Electronic Destination Display (EDD) Controller
- Vehicle performance monitoring unit (Telematics Unit)
- Public on-board Wi-Fi modem

The enclosures shall be secure and lockable to prevent unauthorised access to the equipment. The equipment bays shall be independently lockable with separate keys for the enclosure. The Supplier shall provide the Purchaser with a minimum of four (4) sets of keys for each on the lockable enclosures.

The enclosures shall be insulated against the transfer of radiant heat. This is critically important where ITS equipment may be located close to the exterior panels / roof of the vehicle.

The enclosures shall be ventilated. Sufficient airflow to dissipate any heat build-up produced by the enclosed electronic equipment and to vent this air from the enclosure shall be provided. Filtered dry from a forced ventilation system may be ducted into equipment enclosures. Alternatively venting by means of electric fans fitted to the enclosures and coupled to ventilation ducting may be provided.

The combination of thermal insulation and venting of the bays shall be such that the recommended operating temperature regime of the equipment is not exceeded at ambient temperatures of 42°C and thermal radiation is at a maximum.

The Supplier shall liaise with suppliers of the electronic equipment to ensure that the enclosures installed in these enclosures to ensure that the Ingress Protection rating (IP) is maintained. A minimum IP 5,5 shall be provided.

The enclosures shall be fitted with robust mounting points for the fitting of the ITS equipment, fuse boxes, power connections etc. The mounting points shall allow for the fitting of vibration dampening between the mounting and the fitting, if required. Any vibration dampening installation shall be fitted by ITS equipment supplier.

The APTMS and AFC equipment to be installed (or mock-ups thereof) will, where possible, be provided to the Supplier to design the equipment bays, the mountings and to test the physical installation thereof. The Purchaser's ITS equipment providers / 3rd party will be responsible for the actual fitment and testing of the actual ITS equipment.

3.1.2 ITS Equipment enclosure: Power supply

The Supplier shall provide and install in each equipment enclosure power connection points to allow the ITS equipment suppliers to install a local fuse and distribution box for the connection of power to their respective ITS components being installed in the enclosure.

The Supplier shall provide two separate power connection points in each equipment enclosure from the auxiliary batteries as follows:

A relay switched supply. The relay shall be configured to disconnect the load once the auxiliary battery voltage level drops below a certain threshold (typically 21 to 22V – to be agreed with the City in writing).

A direct "permanent" supply, i.e. not relay switched with a separate ignition signal (on/off). Once the auxiliary battery voltage level drops below a certain threshold (typically 21 to 22V – to be agreed with the City in writing) the ignition signal shall be disconnected. This supply will be used by devices such as the VLU and NVR with integrated power management. It avoids abrupt power cuts and file corruption while allowing the units to go through a managed shut down procedure as soon as the ignition signal is disconnected.

The power connection shall be provided via an independent power cable leading directly from the ITS power supply system to each enclosure. The Supplier (bus) shall be responsible for providing all cable trunking/ ducting and wiring harnessing between each enclosure and the ITS power supply system.

Each power cable shall contain a main fuse which shall be located at / close to the ITS power supply system.

3.1.3 ITS Equipment enclosure: Data interface

The Supplier shall provide and install in each enclosure a data connection point(s) to allow the ITS equipment supplier communicate with the vehicles data systems e.g. CAN bus and Bus-FMS interface.

The Supplier / bus manufacturer shall confirm the data interface requirements (data signal requirements and connector type) with the ITS equipment supplier.

The Supplier shall install a terminal block suitable for automotive use with spring loaded blade terminals. The terminal block shall allow through connections and shall be installed and used to manufacturers specifications. The Supplier shall take care to ensure the size of the terminal receptacles is compatible with the wire gauge. Two wires shall not share the same connector/spring-blade, unless specifically designed for that purpose.

The Supplier shall wire signals to one side of the terminal block as required and as agreed with the ITS equipment supplier in writing.

3.1.4 Multiband Fixed mobile/GPS/Wi-Fi Antennae

The Supplier shall make provision for the installation of multiband antennae e.g. 3G, 4G, LTE, 5G /GPS/Wi-Fi on the vehicle roof.

3.1.5 On-board ITS equipment cabling and installation.

To facilitate the wiring of the Supplier's ITS equipment and the Purchaser's ITS equipment providers and avoid interference with the vehicles main wiring systems, a readily accessible, but "concealed" cable trunking / cable carriers for the ITS cabling is required.

- a. The cable trunking / cable carriers is it to be fitted by the bus Supplier around the perimeter of the passenger cabin at high level to link into both the power supply point and the third-party equipment housings.
- b. The trunking may be shared with the original vehicle wiring if there is protection against unwanted electromagnetic emissions / interference by other on-board electronic systems / electrical loads.
- c. Provision is to be made for the installation of additional equipment over and above that listed in the Specification.
- d. At all passenger doors, the trunking is to facilitate connections at the bottom as well as at the top of the doors.
- e. All cables shall be clearly identified and preferably segregated in some way. Ideally cables shall be colour-coded and/or labelled. All connectors / terminal blocks shall be labelled for ease of identification, fault tracing, repair and maintenance.

The Supplier shall be required to liaise with the Purchaser's ITS equipment providers in determining their specific cabling requirements when designing and manufacturing the bus.

- a. All cabling shall conform to automotive wiring and cable standards.
- b. No cable in an electrical circuit shall carry a current more than that for which the cable is designed.
- c. The cables shall be suitable for the conditions in the vehicle, such as the temperature range as such where they are intended to be used.
- d. Cables shall be securely fastened and positioned to be protected against mechanical and thermal stresses.
- e. Cabling shall be adequately secured and protected from any wear such as chafing and excessive flexure.
- f. All cable routing shall be designed, and trunking manufactured, to ensure the cabling installation standards are met. There shall be sufficient play to ensure that at any point cabling is not subject to tensional stress.

3.2 Communication protocols: ITS, CAN-bus and Bus-FMS interface

The Supplier shall liaise with all ITS equipment supplier to ensure that a standard communication protocol for all equipment is used.

To achieve functionality installed ITS equipment will need to communicate with the vehicles data systems e.g. CAN bus and Bus-FMS interface. The Supplier shall provide the required data / signal interface and connectors at the ITS equipment enclosures or directly to the ITS equipment where this is not placed in an equipment enclosure.

The ITS equipment suppliers' defined signal requirements from the vehicle may inter alia include the following:

- a. Ignition signal (on/off)
- b. Stop request signal!
- c. Reverse gear signal

- d. Door open status (left and right)
- e. Odometer pulses with minimum 4 pulses per second at 60km/h (about 4m per pulse)
- f. Driver panic alarm Other.... to be conformed with the equipment suppliers

To provide for vehicle performance monitoring the monitoring system must comply with an open interface standard for information exchange typically used for Fleet Management Systems (FMS). For these purposes the system must comply with Bus-FMS-Standards (www.bus-fms-standard.com). The Supplier shall, if required, give third parties access to vehicle data that have designed a common interface as an open standard based on the FMS-standard for trucks in accordance with SAE J 1939.

The Supplier shall confirm the Purchaser's ITS equipment providers / 3rd party's signal requirements from the CAN bus and/or BUS-FMS and confirm that the 3rd party interface will not interfere with the bus performance and safety when operated, nor shall it void any warranty.

3.3 Electromagnetic Compatibility (EMC) and Protection

Both the Supplier and the ITS equipment suppliers shall liaise to consider EMC (electromagnetic compatibility) issues at all stages of the ITS design and installation process and measures are taken to:

- a. provided protection against unwanted electromagnetic emissions by other on-board electronic systems / electrical loads.
- b. protect on-board electronics from the automotive environment that can cause transients or interference.
- c. protect or harden on-board electronics against EMI produced by sources external to the vehicle.

3.4 On-board fare validator mounting installation.

The Supplier shall provide mounting brackets and support posts for the AFC ticket validators.

- a. At each validation station provision to mount two validators adjacent to each other shall be made to accommodate separate boarding and alighting validation.
- b. The primary validation position shall be adjacent to the front left-hand-side passenger door, on the left-hand side when entering the bus.

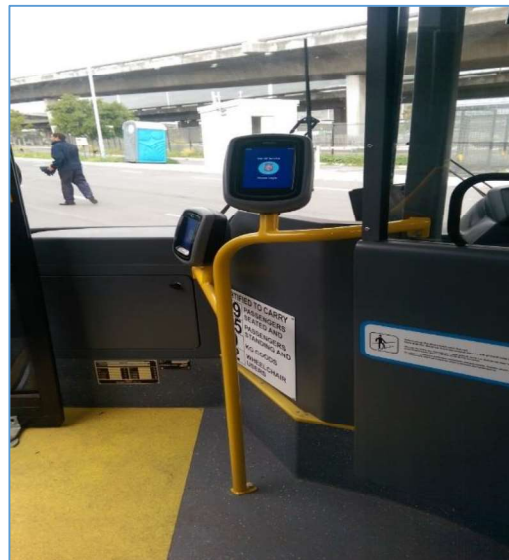


Figure 229: Example of Fare Validator installation.

- c. Should additional validator stations be required these will be listed in the Project Specification.
- d. The Supplier shall install the cabling to provide power and communications (i.e. ignition signal) to the AFC Bus Computer installed in the AFC equipment enclosure. The AFC equipment provider shall provide the cabling between the AFC computer and the validator units as well as any integration cabling with the APTMS vehicle logic unit while the Supplier shall provide the trunking or cable carriers.
- e. The Supplier and the AFC contractor shall liaise during the design phase to ensure ease of installation and on-going ease of maintenance.

3.5 Independent ITS Power Supply System (as part of the STANDARD BUS)

It is essential that a continuous clean power supply is provided to the on-board ITS equipment while the bus is in an operational mode and while the bus is temporary staged on-route. Further when staged at a depot for overnight parking, a continuous power supply to specific ITS equipment shall be provided for sufficient time to enable the wireless download of data from specific ITS equipment to the Purchaser's servers situated at selected staging points and depots.

Where a bus is powered by a diesel engine the Supplier shall provide a stable power supply to power ITS equipment that is independent from the bus main battery.

Actual power requirements are discussed with and agreed to with the respective ITS equipment suppliers who will rely on the correct functioning of the auxiliary power unit.

The following requirements for the auxiliary power supply requirements are listed below.

- a. The Supplier shall provide a clean stable 24VDC power supply point for third party electronic (ITS) equipment installations.
- b. All connections shall be clearly marked as to function.
- c. The positive and ground power rails in a clearly marked housing, linked to the cable trunking, with facility for multiple connections so that different Supplier and third-party provided ITS equipment may be connected or disconnected without interference with any other equipment. Separate power connection points shall be available in each ITS enclosure.
- d. The Supplier shall take care to size the bus alternator to have sufficient capacity to charge both primary and auxiliary batteries.
- e. The overall requirements of the power supply shall be based on one designed by an electrical design authority, who is knowledgeable in respect of alternator sizing and all the bus electrical subsystem that will be connected to the power supply and auxiliary power backup source.
- f. A continuous clean power supply is provided while the bus is in operational mode and while the bus is temporary staged on-route. Further when staged at a depot for overnight parking, a continuous power supply to specific ITS equipment shall be provided for sufficient time to enable the download of data from specific ITS equipment to the Purchaser's servers situated at selected staging points and depots.
- g. To achieve a continuous clean power supply to the ITS equipment the Supplier shall install a separate auxiliary (nominally 24VDC, deep cell gel or AGM, 120 Ah, or larger) battery system that is isolated from the main batteries of the bus and charged from the vehicle alternator via an alternative charging system e.g. DC-DC charger.
- h. The Supplier shall determine the capacity of the auxiliary power source (battery) in consultation with all ITS equipment suppliers and the Purchaser.
- i. The charging must be appropriate for the provided batteries. It is important that the auxiliary battery always gets charged sufficiently and that a battery management system is installed that prevents the battery from excessive drawdown, thus protecting the battery.
- j. The systems requiring continuous power for at least 45 minutes after the operational shut down of the bus for the purpose of downloading of data include:

- i. Network video recorder / CCTV system.
- ii. Automatic Fare Collection (AFC) system, which includes On-board computer and antenna, and validators.
- iii. Vehicle Logic Unit (VLU) system
- k. It is therefore critically important that the Supplier carefully analyze the capacity requirements for the post operation shut down power supply and size the auxiliary power supply accordingly and further that the power and voltage outputs throughout the continuous power period remain within the required tolerances required for the correct functioning of the equipment.
- l. The Supplier will be required to liaise with all equipment suppliers to ensure that the auxiliary power system will function correctly.
- m. The following typical requirements for the auxiliary power unit are suggested but the actual requirements will need to be determined by the Supplier in consultation with the 3rd party equipment suppliers.
- n. The charging of the auxiliary battery must be controlled by means of a delayed charging system so that the bus starter batteries are charged for at least 5 minutes prior to diverting power to the auxiliary batteries unless these are charged independent of the vehicle alternator.
- o. The clean power supply shall be capable of supplying 1000 Watts on a continuous basis while the vehicle's engine is running. The system shall further be able to supply 24 Ah for a period of at least 45 min without degradation of the supply voltage while the vehicle engine is not running. This supply shall operate within a tolerance of $\pm 3\%$ of nominal voltage, and transients shall be clamped at no more than 1V above nominal voltage (26V max).
- p. The Supplier must provide power from the auxiliary batteries as described in paragraph ITS Equipment enclosure: Power supply Once the auxiliary battery voltage level drops below a certain threshold (typically 21 to 22V) for longer than 15 to 30 seconds (to be agreed in writing) the ignition signal and switched power supply must cut out. This avoids intermittent switching due to transients and allows the VLU and NVR units (with integrated power management) to go through a managed shut down procedure while disconnecting other devices immediately.
- q. Once the auxiliary power supply recovers to above the threshold value (e.g. 21V) for longer than 5 minutes (i.e. stable supply) the ignition signal and switched power supply must be switched back on.
- r. The auxiliary power supply shall have an independent battery isolator and not be linked to the vehicle ignition.
- s. The driver console shall provide an alarm light that indicates if the auxiliary battery voltage is low.
- t. All connections shall be clearly marked as to function. The preferred arrangement will be positive and ground power rails in a clearly marked housing, linked to the cable trunking, with facility for multiple connections so that different third-party equipment may be connected or disconnected without interference with any other equipment.
- u. The overall requirements of the power supply and batteries shall be based on one designed by an electrical design authority, who is knowledgeable in respect of the ITS power requirements and all the bus electrical subsystems that will be connected to the main power supply and auxiliary ITS power system.

3.6 Supplier's attendance to Purchaser's ITS equipment providers

The Supplier shall assist all Purchaser's ITS equipment providers and 3rd party equipment suppliers, with the installation of their respective equipment. This shall include inter alia the placement of equipment such as CCTV cameras, provision of mounting rails, support brackets, trunking and cabling (power and data), etc. as set out elsewhere in the specifications.

The Supplier shall be responsible for ensuring that all fixtures mounted in the interior and/or to the exterior of the bus and/or chassis. The physical installation (fixture) of ITS equipment shall be done by the bus Supplier or under the supervision and approval of the bus Supplier such that it is done in a manner that maintains the integrity of the bus, is both robust and prevents water ingress i.e. antenna fixtures. The responsibility for ensuring the

functionality of this equipment will however remain the responsibility of the respective its equipment supplier.

3.7 Payment for Attendance to Purchaser's ITS equipment providers

An item for "Attendance" to the Purchaser's ITS equipment providers will be provided for in the Pricing Schedule. This shall cover the bus Supplier's cost of all liaison and coordination with the Purchaser's equipment providers during the design, installation and testing of their installed equipment.

This item shall exclude the cost of all power and data cabling, connectors, mounting fixtures and other hardware including the auxiliary power supply system/unit that the bus Supplier is required to install as part of the **Standard bus**.

3.8 Testing of ITS installations

ITS installations shall be tested, and ITS test documentation shall be provided together with the bus acceptance documentation at time of bus delivery.

Together with the test documentation operating and maintenance information including maintenance wiring schematics for the ITS equipment shall be secured and provided to the Purchaser.

The Supplier is referred to the Scope of Work for further information on acceptance testing requirements.

4. SUPPLIER INSTALLED ITS EQUIPMENT

4.1 General requirements

The Supplier and / or the Supplier's domestic sub-contractors shall provide and install the following ITS equipment. Equipment details and installation requirements is set out in the following sections.

4.2 Schedule of Supplier ITS Installations

The following items shall be provided and installed by the Supplier or by the Suppliers domestic subcontractors and shall be considered part of the Standard bus.

- a. External variable messaging displays
- b. Internal variable messaging display
- c. Electronic Destination Display (EDD) Controller
- d. Audio system – saloon speakers (Note: Driver microphone and associated cabling to be provided by the Purchaser's ITS equipment providers.)
- e. Stop request system.
- f. Driver panic alarm
- g. Auxiliary power supply
- h. Vehicle monitoring system interface i.e. Bus-FMS access.

4.3 Schedule of Optional Supplier ITS Installations

The following items are considered optional, and the Supplier shall refer to the Scope of Work to confirm if these items are to be installed.

- a. Telematics Unit and activation license
- b. Internal infotainment displays mounting point(s)
- c. Infotainment displays and controller units.

Where this equipment is installed, the Supplier shall install all power and data cabling, connectors, fuses, control panels and mounting points etc. required for the installation and operation of this equipment.

4.3.1 External and Internal Variable Message Displays

The Supplier shall install external and audible internal variable message displays as set out in Table 13: Variable Message Display Requirements.

The audible variable message signs (Electronic Destination Displays or EDD) shall be displayed using LEDs which shall have a minimum projected service life of 80 000 hours in their installed configuration. The system shall be designed for continuous operation without the need to manually “reboot” computers or devices. Visible messages shall begin playing within one (1) second of being triggered.

Messages on the signs shall be legible during any time of day and from any passenger position on the bus or from a bus stop as appropriate. LED brightness shall be controlled by photocells installed as part of the sign.

The signs shall be capable of displaying not less than 18 upper-case or lower-case characters with proportional fonts. Characters shall be between three (3) and five (5) dot-width, with an average (mode) of four (4) dot-widths. The sign shall be capable of displaying double stroke width (bold) fonts. The front face of the sign shall be designed to minimize glare.

The signs shall have the functionality to display messages in the following modes, set through configuration data:

- a. A single, non-scrolling or changing message.
- b. A right to left scrolling message.
- c. An alternating (between two states) message.

Table 13: Variable Message Display Requirements

Variable Message Display locations per bus
• 1 outside front of vehicle, facing forward. • 1 inside front of vehicle facing towards passengers. • 1 inside of trailer section, facing backwards towards passengers (18m bus). • 1 facing the left curb side (adjacent to LHS door)

Each sign shall be provided with its own integrated controller, (or a separate controller linked to all EDDS) which will interface with and be controlled by a Vehicle Logic Unit (VLU) which will be provided by others. Therefore, the interface provided to/from the sign is essential to ensure integration.

To this effect the display shall provide a communications interface standardised to VDV300 and typically through RS485 which shall receive instructions from the VLU. It shall also be possible to override messages directly from the control centre under emergency conditions.

Suppliers must provide details of the proposed displays. The Purchaser reserves the right to request changes from that offered prior to Supply Contract finalisation.

4.3.2 External Variable Messaging Information

The external variable messaging display on the front of the bus will alternately indicate two items of information:

- a. Route destination; and

- b. Name of route.
- c. Characters shall be a minimum of 200 mm high, taking into consideration both upper- and lower-case characters.

4.3.3 Internal variable messaging display

The internal variable messaging display will alternately provide the following information:

- a. Name of next station
- b. Route name
- c. Route destination and
- d. Will continuously display the time.

Characters shall be a minimum of 85 mm high, taking into consideration both upper- and lower-case characters.

The time display shall be outside of the message display area and may be provided either through additional dot-width on the display or through a separate display module integrated into the sign housing.

The background shall be black, and the sign housing shall include a black border. The mounting position of the sign shall not block the viewing area of the on-board video cameras or compromise passenger safety in any way.

4.3.4 Audio System

The Supplier shall together with the APTMS equipment supplier install a sound system with speakers, auxiliary inputs and an output that will be clearly heard, without distortion or excessive volume levels, at all points in a full bus at its noisiest operating condition.

The default position is that speakers and associated wiring will be supplied and installed by the bus Supplier and that balance of the audio equipment i.e. the driver microphone, the Vehicle Logic Unit (VLU) and specific interface cabling shall be provided by the APTMS supplier. The APTMS supplier shall be required to liaise closely with the bus Supplier during the installation and shall remain responsible for the testing and correct functioning thereof.

- a. The input shall default to the auxiliary input, requiring active pressure on a microphone switch to engage the microphone.
- b. The auxiliary input shall be derived from the Vehicle Logic Unit (VLU) which will require certain inputs from the vehicle controls to initiate key messages. The signals are to be made available to the VLU as per the VLU specification requirements.
- c. Automated internal announcements shall be triggered by the Automatic Vehicle Location (AVL) system (through the VLU). The audio system will be controlled by the VLU, and the input ports must therefore be able to interface with the VLU.
- d. Audio messages from the driver to the passengers on the public address system will only occur to announce special messages or situations, such as reasons for delays or emergency instructions. Any required digitally recorded messages will be the responsibility of the Purchaser.
- e. The volume of the announcements shall be adjustable to a standard level through configuration data. The system shall include a minimum of three volume level settings that can be selected by the vehicle operator through the driver data terminal.
- f. The volume setting shall revert to its default value when the Automatic Voice Annunciation (AVA) is logged off or logged on. The system shall include an automatic gain control to automatically, and independently adjust interior and exterior volumes depending on the interior and exterior ambient noise levels.
- g. The AVA shall provide maintenance technicians with a means of testing and setting both the internal and external audio default volumes and ambient noise sensor circuits.

- h. The system shall be designed for continuous operation without the need to manually “reboot” computers or devices. Audible messages shall begin playing within one (1) second of being triggered.
- i. It is suggested that the microphone be on a flexible mounting near the driver’s head and that the microphone control switch be integral to the steering column controls or steering wheel. It is essential that the use of the microphone and its switch allow for the driver to continue to drive with a heads-up stance, so the driver is not distracted from the road.
- j. The Microphone switch shall be such as to prevent accidental switching when in its housing in the driver compartment but should always be readily accessible to the driver.
- k. Critical attention shall be given to the type of microphone fixture and placement so that it is not damaged through accidental or unintended use. The Purchaser’s preference is that the microphone be mounted on the dashboard and not mounted on the side of the driver cabin.
- l. The Supplier shall provide all wiring and cables to make these functions possible. The audio system speakers shall be mounted in the roof lining along the length of the passenger compartment with not less than one speaker per 3m of passenger compartment length to prevent excessive volumes in some areas and inaudible messages in others.

4.3.5 Stop-Request System

The Supplier shall provide stop-request buttons on the stanchions along the aisle way of the vehicle. The stop-request buttons shall be located on both sides of the aisle way and at least one such button shall be accessible to each passenger using a wheelchair in the designated wheelchair bay(s).

Upon the activation of a stop-request button, a visual and audio message is sent to the driver console. This informs the driver that a stop request has been made. The activation of the stop-request button shall also send a message to the VLU, which will initiate an audio message as well as a message on the internal display unit indicating that the vehicle will make a stop at the selected station.

The Supplier shall provide the stop-request button and all wiring for the connections to the driver indicator light and to the VLU. However, the software required to activate the audio message and the message on the internal display will be the responsibility of others and will be procured directly by the Purchaser.

4.3.6 Driver Panic Alarm

Emergency situations may arise in which the driver must be able to send a distress message to the control centre. The panic alarm will be utilised in circumstances in which the driver is not able to utilise the normal communications system.

The panic alarm shall be located discretely in the driver’s compartment. The location should be such that it is known to the driver but not evident to passengers. A foot activated control may be most appropriate.

The Supplier shall provide the button and the wiring required to connect it to the VLU. The Supplier shall also be responsible for fitting the device.

4.3.7 On-Board CCTV Cameras and Display installation support

The default position is that all CCTV equipment and the Driver Display terminal, network video recorder, modem and any other associated equipment shall be provided by the APTMS supplier. This will include installation of the CCTV cameras, PoE ports and Ethernet cables etc. The APTMS supplier shall liaise closely with the bus Supplier during the installation.

The bus Supplier shall provide the necessary mounting to adequately support this equipment and trunking to facilitate the installation of the cabling. The APTMS equipment supplier shall remain responsible for the testing and correct functioning of their installed equipment. The bus supplier shall remain responsible for the correct installation of their own installation work.

4.3.8 Vehicle Performance Monitoring System

Vehicle performance monitoring is an essential element for effective fleet management and driver control. The Supplier’ performance monitoring system shall monitor and record the most pertinent performance statistics of

the major mechanical and electrical components.

The Supplier shall ensure that the bus can communicate performance monitoring data comply via an open interface standard for information exchange typically used for Fleet Management Systems (FMS). For these purposes the system must comply with Bus-FMS-Standards (www.bus-fms-standard.com).

The Supplier shall, if required, give the Purchaser and other third parties access to vehicle data that have designed a common interface as an open standard based on the Bus-FMS standard.

Standard status displays for the monitoring of the vehicle performance and systems shall be in the driver's console to ensure safe operation of the vehicle. In addition, a visual display indication of the status of doors and boarding bridges position (LED) shall be provided.

4.3.9 Telematics Unit (Optional)

The Purchaser may require that the Supplier install vehicle telematics units on the buses being procured (This will be an optional item that if required will be listed in the Scope of Works.)

The telematics unit shall, receive store and transmit information from vehicle monitoring system over a protected network to a web-based application accessible by the Purchaser and/or by the Purchaser's nominee.

If installed the information to be provided shall include vehicle performance, driver performance and vehicle state (fault reporting) unless specified otherwise in the Project Specification.

Telematics unit(s), if specified, shall be priced in the Pricing Schedule as a separate item. Pricing shall make the licence/subscription fee (if applicable) to access the vehicle information for a period specified in the Scope of Work but shall not be less than one-year. The Purchaser may request details of the information provided by the system as well as any optional subscription offers.

4.3.10 Internal Infotainment Display connection point (Optional)

If specified in the Scope of Work the Supplier shall fit on all or on selected vehicles one infotainment display mounting point located near the front of the bus so that a suitable flat panel monitor will be viewable from most designated passenger positions on the vehicle.

If installed, the unit(s) will be used to display full colour video entertainment, news, public service announcements, and advertisements.

The infotainment display(s) will be provided and controlled by others. The size of the actual display will depend on the location of fitment and the technology proposed. The Supplier shall propose the optimum size and location for the display(s) based on the layout and design of the interior of the vehicle.

Provision is to be made for a digital control unit either with the infotainment display unit or accessible via cable trunking. The digital control unit, with a USB or SD card reader or similar, may be mounted in the VLU or NVR equipment enclosure.

4.3.11 Integration of the Bus-Platform Station Door (Bus-PSD) Control System

The supplied vehicles are required to be fitted with a driver activated control system that will activate the opening and closing of the station doors at stations in synchronisation with the opening and closing of the right-hand side vehicle doors and the deployment and stowing of the boarding ramps. The sequencing is to be achieved of the doors **through the activation of a single switch**.

The automated synchronization shall be achieved through triggering of a **“door management system”** designed and installed on the bus which shall provide the requisite signals to the bus door actuators, bus ramp actuators and a **remote activation device (RAD)** installed on the bus.

The RAD activation equipment shall be provided to the Supplier by the Purchaser's equipment supplier.

The supply and installation of the Bus-PSD Control System for the stations shall be undertaken by the Purchaser's equipment provider.

4.3.12 The bus Supplier shall be responsible for:

- a. engaging with the supplier of the Bus-PSD system to ensure the effective design and integration of the Bus-PSD systems with the bus systems without compromising the bus system nor affecting the bus warranty.
- b. undertake the design of a “door management system” so that the on the triggering of a switch by in the driver’s cabin sequencing signals are sent to the bus ramps, doors and the RAD to either.
- c. deploy the bus ramps then open the bus doors and then the station doors, or
- d. close the station and bus doors and then stow the bus ramps.
- e. provide and install the “door management system” and control switch and integrate the bus systems and remote activation device (**RAD**) to ensure the correct sequencing of the opening and closing of the doors and deploying and stowing of ramps occurs.
- f. ensuring the installation of a **control switch** (as part of the “door management system”) is securely mounted in a suitable location in the driver’s cabin so that it may be easily operated by a seated driver and ensuring that the units can easily be removed and replaced to effect rapid repair of the controller switch unit if necessary.
- g. Design the door management system to satisfy the following general functions.
 - i. Performs the opening or closing sequencing of the ramps, station doors and activating the RAD with a single trigger of the control switch.
 - ii. Provides an Indication of the door and ramp deployment status via an LED panel with relevant graphics for ease of reference.
 - iii. Provides an electronic override system which deactivates the overall sequencing functions and allows for the independent opening and closing of each of the passenger doors and the independent deploying and stowing of each of the automated boarding ramps. The override system shall provide the following.
 - an over-ride status indicator. The override system and status panel must be visible to the driver and easily reachable when the bus is docked at a station or stop.
 - override switches (or buttons) shall be protected against accidental activation.
 - On override activation the RAD shall be disconnected and only reactivated on the triggering of a reset switch.
 - On start-up of the bus the automated Bus-PSD Control System and door management system shall be activated for the door and ramp sequencing functions. (To be set as the default position.)
 - A manual override system which may deactivate of the buses automated control system shall be provided as an emergency backup or for use as servicing requirement.

The Supplier shall provide a door management system of their own design that best suits the installation in the driver’s cabin and best satisfies the intended functions described herein.

4.3.13 Door synchronization requirements

The following section describes the intended sequencing of the opening and closing of the station and bus doors and deploying and stowing of the bus boarding ramps. Depending on the Bus-PSD Control System to installed it may be necessary to adjust this sequence.

To affect the synchronization of all RHS bus doors and appropriately aligned station doors under normal operating conditions the opening and closing sequencing shall be achieved by the actuation by the driver of a single switch conveniently placed in the driver’s cabin.

A status panel shall indicate that the bus is in communication with the station Bus-PSD controller and indicate that the bus is positioned correctly for the actuation of the door opening sequencing.

A panel indicating the status of the activation shall be located adjacent to the activation switch and shall be clearly visible to the driver. The status may be of the form of LED lights which indicate the open or closed state of the bus door and ramps.

The system shall interface with the bus door and ramp controls and shall not introduce the need for any further driver-operated control other than triggering a single activating switch.

The following section sets out briefly the typical sequencing of events that should occur when the door opening signal is activated.

- a. On the arrival of a bus at station and its correct positioning (docking) by the driver using visual cues, (and confirmed by the BUS-PDS status indicator) the driver shall activate the bus and station door sequence. This action shall:
 - i. activate a visual (red light) and audible alarm (see note below) in the bus and in the station indicating that the doors on the bus and the station are about to open.
 - ii. Deploy the bus boarding ramp, and then open the bus door.
 - iii. Immediately the bus door is opened, and the status of the ramp and door have been confirmed, signal the station control box in the station to activate the station door opening. (This signal to be sustained until door closure.)
 - iv. Two seconds after activating the opening sequence the visual (red light) and audible alarms shall deactivate. This delay should be adjustable between zero and five seconds.
- b. In anticipation of vehicle departure and door closing sequence is activated by the driver, this action shall:
 - i. Activate the visual (red light) and audible alarm (see note below) indicating that the bus and station doors are about to be closed.
 - ii. 2 seconds later release the signal to the station door controller to close the station doors. (This delay should be adjustable between zero and five seconds.)
 - iii. To immediately close the bus door and raise/stow the ramp.
 - iv. Upon closure of the bus door, deactivate the visual (red light) and audible alarms.
 - v. Provide visual status signals for each of the bus doors, bus ramps and station door signal to the driver.
- c. The audible alarm, when activated during the door opening and closing sequences shall be preceded by a chime, followed by a softer melodic motive in preference to a continuous buzz or ring.
- d. The time taken to complete a door opening/ ramp deployment sequence, or a door closing/ramp stowing sequence should not be more than 2,5 sec for triggering the event.

4.3.14 The Supplier shall

- a. allow sufficient time in the build and delivery programme to facilitate liaison with the Bus-PSD Control System supplier in the design of the interface and for the installation of the RAD on the bus by the Bus-PSD equipment supplier.
- b. managing the installation on the bus of the **(RAD)** by the equipment supplier and confirming the system functions as required.
- c. the co-ordination of the on-road acceptance testing and commissioning of the Bus-PSD Controller systems by the Bus-PSD supplier which would be done together with the on-road bus testing of door and boarding ramp operations.

- d. providing the Purchaser with detailed wiring diagrams for the door and ramp control actuator systems on the bus as well as operating and maintenance information to enable ongoing servicing and repair of all components.

4.3.15 The supplier shall not be responsible for:

- a. The design and functional performance of the Bus-PSC Control System equipment / RAD.
- b. the installation of the Bus-PSD control system equipment on the stations i.e., the station door controller and processer units.
- c. The warranty, servicing, and maintenance of the Bus-PSD Control System equipment/RAD.
- d. Managing / coordinating the installation of equipment at bus stations.

4.3.16 Remote Activation Device (RAD): RFID/NFC (RF) System

The activation commands from the bus installed RAD to the station controller is to be sent via an industry proven system that uses radio frequency identification (RFID) / near-field communication (NFC) secure data exchange.

(The use of an optical infra-red secure data exchange of the type installed in Phase 1 area of the MyCiti BRT system will not be used.)

4.3.17 Bus-PSD Control System Self-Test

Where the Bus-PSD is fitted with a self-test / diagnostic system, the controls and system indicators shall be conveniently placed in the driver's cabin to enable the testing of the system by the driver while seated.

4.4 Details of ITS equipment to be provided.

The Supplier shall provide details of the ITS equipment the Supplier intends to install on the buses. The information provided shall include make and model of the equipment, sufficient information to confirm specifications and any related warranty information.

4.5 Payment for Supplier installed ITS equipment.

The Supplier installed ITS equipment, equipment bays, Supplier provided cabling, auxiliary power system and support fixtures for validators, display screens etc. shall be considered part of the **STANDARD BUS** and payment for these items shall be included in the price thereof.

The exceptions shall be for any optional equipment that the Supplier is requested to install where either the Supplier shall price these optional items separately or alternatively a Provisional Sum allowance will be provided.

5. COMPONENTS TO BE INSTALLED BY PURCHASER'S ITS EQUIPMENT

5.1 Purchaser's equipment provider requirements.

- a. The APTMS and AFC components listed below are to be supplied and installed by the Purchaser's ITS equipment providers.
 - i. Advance public Transport Management Systems (APTMS) Equipment
 - ii. Vehicle Logic Unit (VLU)
 - iii. Automated Vehicle Location (AVL)
 - iv. Communications unit (GPS/Fixed mobile e.g. 3G, 4G, LTE, 5G/WIFI, Wireless LAN modem, antennas)
 - v. Driver Data Terminal (DDT)

- vi. Network Video Recorder (NVR)
- vii. Driver camera display unit and on-board CCTV cameras
- viii. Driver microphone
- b. Automated Fare Collection (AFC) Equipment
 - i. Fare Validator Unit (FVU) and On-Board Computer (OBC)
 - ii. A separate GPS/Fixed mobile e.g. 3G, 4G, LTE, 5G/WIFI antenna for the fare system, not connected to the VLU. (Note: The VLU and FVU system have independent communications requirements)
 - iii. Fare Cash Box (FCB) (This is an optional item and the FCB, mounting and power provision shall only be provided if this is specified in the Project Specification.)
- c. Wi-Fi & USB Installation
 - i. On-board Wi-Fi unit – (Optional item which may be installed by the post-delivery of the bus.)
 - ii. On-Board USB Charging ports (Optional item)
- d. Bus-Platform Screen Door (Bus-PSD) Control System remote activation device (RAD).

The Purchaser may procure certain components directly or request that the Supplier to procure the components from a Supplier through an open tender process that is in line with the Purchaser's Supply Chain Management Policy. Where this alternative procurement method is required detailed procurement requirements will be set out in the Project Specification.

6. PAYMENT FOR INSTALLATIONS BY THE PURCHASER'S ITS EQUIPMENT PROVIDERS

An amount for the bus Supplier's ATTENDANCE in liaising, managing and coordinating the design and installation of ITS equipment will be provided for in the PRICING SCHEDULE for each of the ITS Suppliers i.e. APTMS, AFS and Bus-PSD etc.

The cost of the supply and installation of the ITS equipment provided by the Purchaser's equipment providers shall be paid directly to these suppliers by the Purchaser.

The cost for the supply and installation of all trunking, cabling and connectors to allow for all connections to be made at equipment mounting points i.e. all data, electronic and electrical interfaces as required connecting to the vehicle's data, electronic and electrical systems to support the ITS installations as detailed in the Specifications shall be included in the price of the Standard bus.(i.e. not to be included in the item for ATTENDANCE).

7. THIRD PARTY EQUIPMENT AND BUS SUPPLIER'S WARRANTY

Third party equipment suppliers / Purchaser ITS equipment suppliers may only connect their equipment to the connection points specified by the bus Supplier, the requirements of each item having been agreed in advance with the Supplier.

The bus Supplier shall confirm that the bus warranty shall not be affected by the installation of equipment by third parties/ ITS suppliers if connected correctly at the designated connection points. Where unauthorised equipment fitment results in a bus system failure, the warranty shall be restored once the necessary repairs have been made by the Supplier at the expense of the defaulting party.

8. ITS EQUIPMENT INSTALLATIONS

To assist the bus Supplier with the planning for the installation of the ITS equipment and pricing of the tender the following information is provided. This information is based on equipment currently installed on the MyCiti bus fleet and may change. Note that the Purchaser does not endorse the use of a particular manufacturer, supplier or product.

8.1 On-Board CCTV Cameras and Display installation

The default position is that the supply and installation of the CCTV cameras, PoE ports, Ethernet cables Driver Display terminal, network video recorder, modem and any other associated equipment shall be provided by the APTMS supplier, who shall liaise closely with the bus Supplier during the installation. The APTM equipment supplier shall remain responsible for the testing and correct functioning thereof.

To facilitate correct placement and installation of the CCTV cameras and Driver Display Terminal, the Supplier (and bus body builder) shall manage the physical installation the CCTV cameras, POE port switches, Ethernet cables and the Driver Display terminal.

The CCTV system shall be protected from electrical fluctuations typically present in public transport vehicles, including, but not limited to, over voltage, under voltage, transient, power dip/surge during engine or other vehicle equipment start up, alternator noise, etc. All CCTV cameras will be vibration and shock resistant and will be rated as vandal resistant.

The precise location of the cameras and displays will be determined in the pre-production phase with approval from the Purchaser. All the on-board CCTV cabling shall be located out of sight.

The Supplier shall be responsible for the coordination of the installation with the APTMS equipment.

8.2 CCTV Camera Installation

All vehicles will incorporate closed circuit television monitoring, with IP H.264 POE CCTV dome cameras installed inside the vehicles. All cameras shall be adjustable cameras configured and installed to achieve optimum coverage for passenger, driver, and vehicle safety. The cameras shall be wide dynamic range with a minimum resolution of 1080p. The video footage from the cameras will be stored, on-board, on the network video recorder provided by others.

The camera locations are vehicle type dependent. The following sections set out the preliminary requirements for the placement of the CCTV cameras. The Supplier together with the suppliers of the APTMS and CCTV installations shall agree the final placement with the Purchaser during the assembly of the prototype / first production bus.

All internal cameras shall be integrated into the interior layout of the vehicle in a visually appealing manner.

The camera locations are vehicle type dependent.

8.2.1 18 m Vehicle Camera requirements

At least seven (7) CCTV cameras are to be installed in the 18m vehicles as follows:

- a. One (1) camera shall focus upon each of the three right-side door entry area. (3 cameras) and one (1) camera shall focus on the left-side door entry area. [4 cameras.] The driver shall have a digital video display on or near the dashboard to ensure the doors do not close upon an entering or exiting passenger. This display will be activated whenever the door control is pressed.
- b. One (1) camera shall focus on the road behind the vehicle. This camera will be utilised whenever the driver must reverse. Camera output on the driver's video display unit whenever the vehicle is in reverse gear.
- c. Two (2) cameras shall focus on the interior of the vehicle to provide a security record for the passengers, one camera for each main section of the vehicle.
- d. One (1) forward facing camera shall focus on the road ahead of the vehicle.

8.2.2 Driver Display Unit (CCTV)

The APTMS equipment suppliers shall provide and install the video display unit and camera selection controls for the driver on the Driver panel. Installation shall be such that the displays and controls do not cause any obstruction to the driver, nor interfere with the driving task.

The video display unit will be conveniently located on the driver panel. The display will be a full colour 10" LCD SVGA monitor, which will enable the driver to adequately interpret the displayed information. The operational power supply of these types of monitors is typically 750mA.

8.2.3 Passenger Area CCTV Display Unit (CCTV)

The supplier will install a video display unit allowing the output from the passenger area camera to be visible to the passengers. The main objective is alerting passengers that the cabin is being monitored for undesirable behaviour. This display shall be placed in a highly visible position which shall be agreed with the Purchaser.

8.2.4 Network Video Recorder (NVR)

All CCTV footage shall be recorded on-board by a Network Video Recorder (NVR). Video footage on the NVR will be downloadable over a wireless network at the depot if required.

Cabling from the cameras to the Network Video Recorder (NVR) must be provided and installed to allow the transfer of data to the NVR. Data shall be capable of being downloaded from the NVR via a solid-state memory device.

A router to enable wireless data transfer from the CCTV system to an external backup device may installed in the NVR equipment enclosure or elsewhere on the bus. The APTMS equipment provider shall be responsible this installation.

8.2.5 Vehicle CCTV Camera Specifications

The cameras shall be provided and installed by the Purchaser's APTMS supplier. The cameras shall have the characteristics set out in Table 14: Vehicle CCTV Camera Specifications.

Table 14: Vehicle CCTV Camera Specifications

Characteristic	Minimum Specification
Resolution	1080p
Light Sensitivity	0.3– 200000 lux
Shutter time	1/24500 s to 1/6 s
Camera Adjustment Angle	Pan $\pm 30^\circ$, Tilt 0-90°, Rotation $\pm 180^\circ$ (manual adjustment)
Intelligent Video	Video motion detection and active tampering alarm capabilities

Note: The actual specifications of the camera that are installed may differ from those set out in Table 14 subject to agreement between the Purchaser and the APTMS equipment supplier.

9. REPRESENTATIVE ITS EQUIPMENT INSTALLATIONS

To assist the bus Supplier with the planning for the installation of the ITS equipment the following information is provided. This information is based on equipment currently installed on the MyCiti bus fleet and may change. Note that the Purchaser does not endorse the use of a particular manufacturer, supplier or product.

9.1 Vehicle Logic Unit (VLU)

The Vehicle Logic Unit is the core computer server for most of the data and ITS functions on-board the vehicle. The device operates on a power supply of 17-32VDC and draws:

- 500 mA in general operations
- 3000 mA when the amplifier is running for announcements.
- 150 mA in sleep mode
- 5 mA in standby mode

The VLU shall be placed in a location that allows effective connectivity to the various ITS components but shall also ensure that the VLU is physically well-protected.

The unit is required to be installed in an accessible and secure location (equipment enclosure) where the front side is fully visible and accessible, and not underneath any cover or in a compartment. Various LED indicators on this front side allowing evaluation of operating modes and system conditions. Peripheral devices can be connected at front Ethernet connectors of the unit or via M12 Ethernet connection to the backplane on the rear side of the VLU.

The overall dimensions of the VLU, depicted in the Figure 23 below are:

- 210mm x 133mm x 260mm (WxHxD).

Additional room in front of the on-board computer unit of at least 50mm and about min 70mm on the rear side needs to be considered for handling of any Ethernet connectors in front and the entire cable management on the rear of the unit.

It also needs to be considered, that depending on the determined location for mounting the VLU in a secure, but accessible position in an equipment compartment, a suitable bracket has to be designed allowing reliable and accessible fixation of the VLU rack to the bus body or chassis.

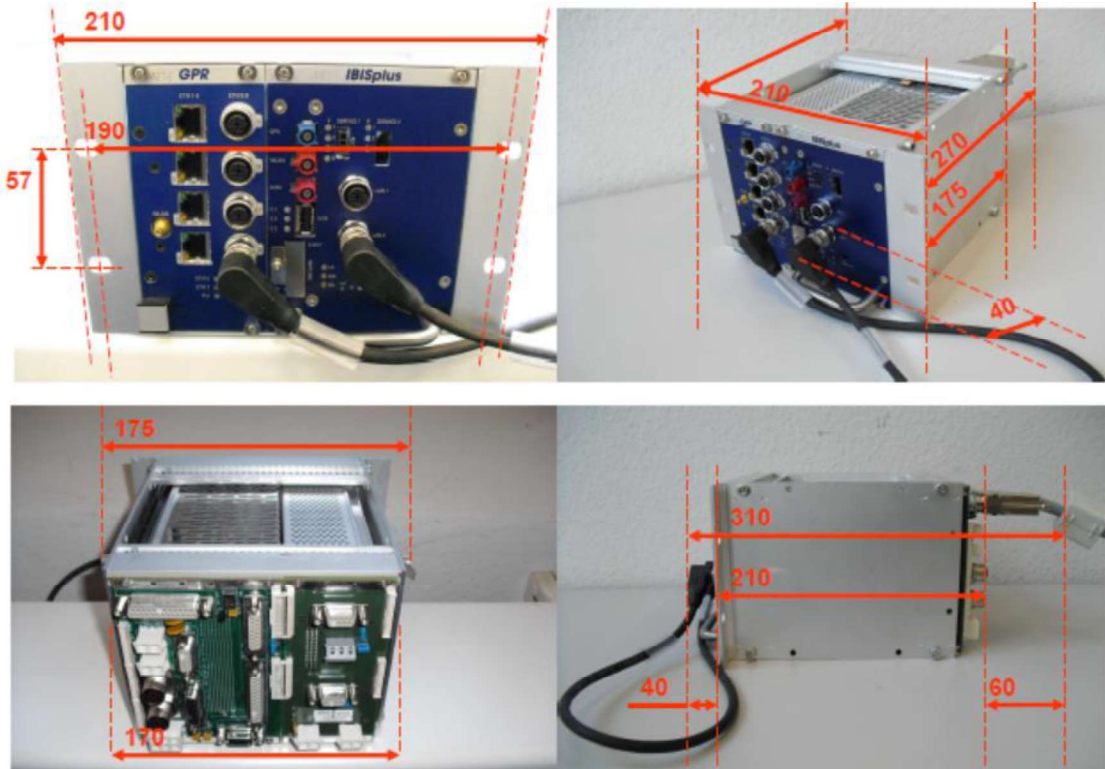


Figure 23: Vehicle Logic Unit (VLU)

9.2 Automated Vehicle Location (AVL) system

All vehicles in the Cape Town system will be tracked by an Automated Vehicle Location (AVL) system utilising GPS technology. Data from this system will form the basis of compensation to the vehicle operators, and therefore, this represents a critical data collection feature for the overall operation of the system. A GPS AVL unit will therefore be fitted to the control panel. This is part of the VLU unit.

9.3 Communications Unit (Fixed mobile/WIFI, Wireless LAN modem, antennas)

The communications unit as part of the VLU will allow and control the flow of communications and information between the vehicle and the control centre. This includes both real-time data exchange as well as stored information for later downloads at the depots.

The on-board computer unit will therefore be connected to a combined Fixed mobile e.g. 3G, 4G, LTE, 5G/WIFI/ GSM/ WLAN/ GPS antenna.

9.4 Driver Data Terminal (IPT- Internet Protocol Terminal)

A driver data terminal is to be mounted in a position readily visible to the driver whilst operating the vehicle. This unit will relay operational information to the driver as necessary.

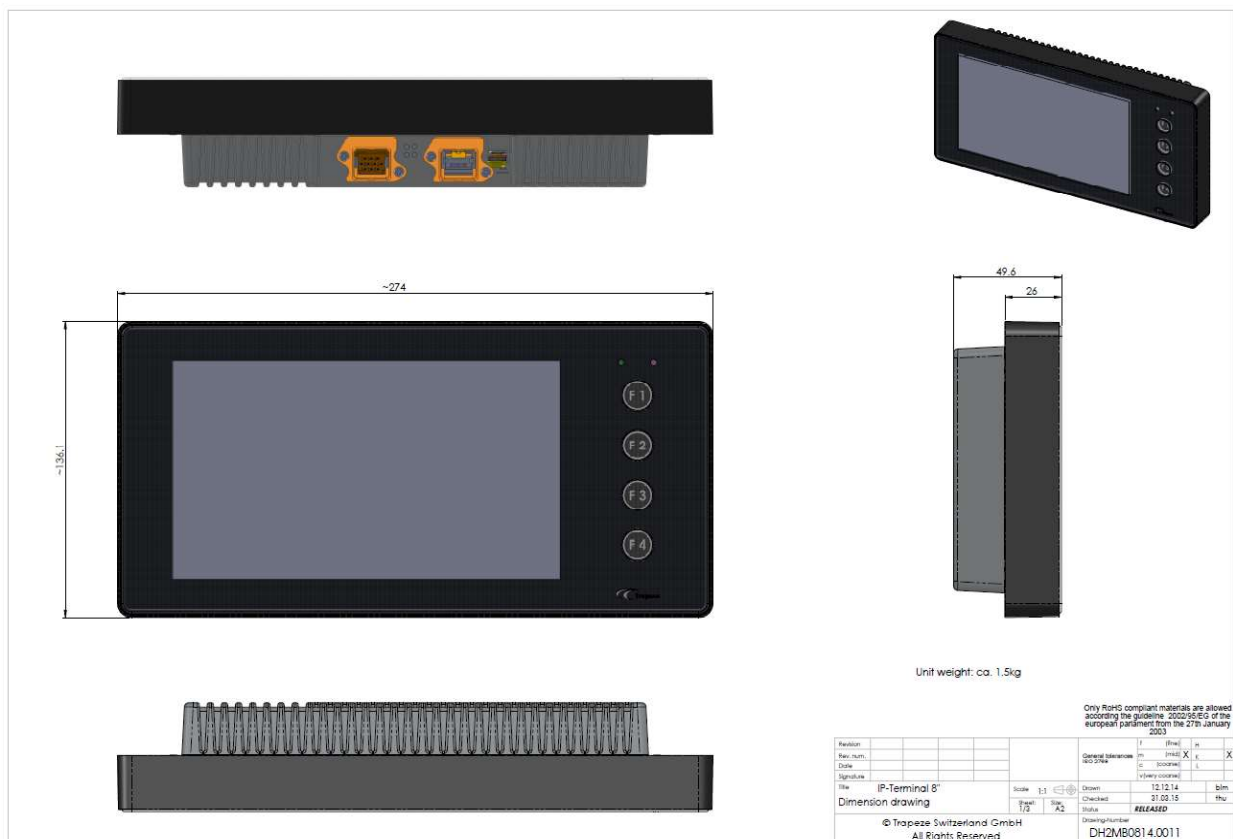
A mounting bracket / support for installing the IPT terminal at an easily accessible position, usually at the top of the dashboard on the right-hand side in front of the driver shall be provided. The Supplier shall provide the required supporting structure for the installation. If any other location in the driver cabin is determined for the positioning of the IPT, a solid mounting bracket accommodating the unit will be required. Such location can as well be at a higher-level location, such as underneath the side moulding above the driver.

The IPT unit will receive its power and data input from the Vehicle Logic Unit which requires suitably protected wiring between the IDR and the IPT.

The data terminal dimensions are shown in the following figures as 274mm x 136mm x 49.6mm (WxHxD).



Figure 24: The Driver Data Terminal IPT



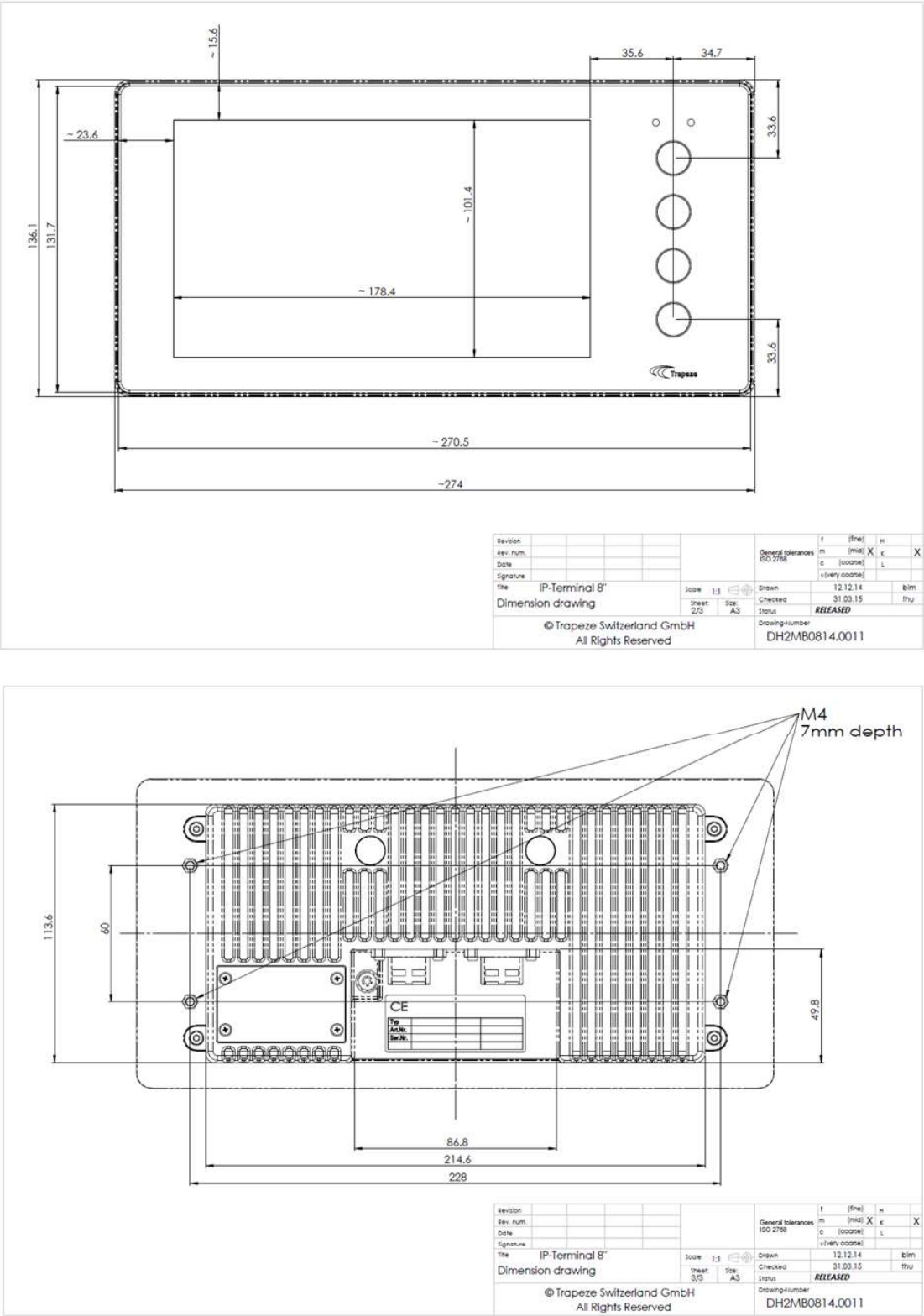


Figure 25: IPT Drawing with Dimensions

General properties

Driver terminal in buses

Use in conjunction with the IDR

▲ General technical properties

Power supply 16.8 V to 32 V

Typical power consumption in operation: 500 mA at 24VDC

ARM Cortex A5

256 MB RAM, 512 MB flash memory, 2 GB micro SD card (upgradeable)

8" colour display, 800 x 480 pixels, adjustable backlighting

Capacitive touchscreen

4 short-stroke keys (coloured backlighting, dimmed with display brightness control)

3mm front glass (single pane toughened glass)

Brightness sensor and status LED

Operating system: embedded Linux

Start-up time: max. 15 seconds

▲ Interfaces

Ethernet 10/100 MBit/s (push/pull RJ45)

4 digital inputs, 2 of which freely available

2 digital outputs, freely available; these can be used for backup operation (e.g. for radio fall-back)

▲ Acoustics

Integrated beeper

▲ Mechanical properties

Dimensions 274 x 137 x 50mm

Weight: 1.6 kg

▲ Ambient conditions

RoHS compliant

Electrically isolated inputs / outputs

Operating temperature: -25°C to +70°C

Storage temperature: -30°C to +85°C

Relative humidity: up to 95% without condensation

Protection rating: IP54 (EN60529)

Temperature, vibration, UV and humidity tested as per

EN 60068-2-1

EN 60068-2-2

EN 60068-2-14

EN 60068-2-30

IEC 60068-2-5

ASTM D4169, chapter A1.7

EN61373

▲ EMC specifications

CE 2004/108/EC

E1 UN ECE R10

▲ Safety

EN60950-1

EN 45545-1/2

EN50155,

9.5 Fare validator unit.

Unless stated otherwise in the Project Specification, the bus shall be fitted with two fare validator units near the driver across from the left-hand door of the vehicle. (One unit is required to validate entry and the other exit from the vehicle). The location shall be readily accessible to boarding and alighting passengers but also allow the driver ease of ensuring that each passenger has validated their fare card.

Where validation units are required, the Supplier shall provide the base and placement support for the fare validator unit. The mounting mechanism supports pole diameters of 32mm to 40.5mm.

Typical device requirements per device as shown in

Table 15: Validator Power Supply **Specification** below.

Maximum current 0.5A @ 24V fully operational with audio on, Viper reader activated and WLAN transmitting.

Table 15: Validator Power Supply Specification

Typical current is 0.25A @ 24V, and standby current is 8mA. Parameter	Min.	Typ.	Max.	Unit
Input Supply Voltage	9	24	38	V
Input Supply Current (@24V)	8mA Stby	0.5	0.6 (15W)	A
Specified Input Maximum Current (@9V)			2	A
Reverse Voltage Protection	-	-	-400	V



Figure 26: Fare validator units

9.6 On board Computer (OBC): Fare Validation

Each vehicle will be fitted with one On Board Computer (OBC) which is a communications hub to allow for

integration of on-board systems as well as providing a communications path to the Site Computer.

The communication cabling that is required between the validators and the OBC and the OBC and the VLU shall be provided by the supplier of the OBC.

A separate GPS/3G/Wi-Fi antenna used for the fare system, not connected to the VLU shall be installed. (Note: The VLU and fare system have independent communication systems at the depots.)



Figure 27: The On-Board Computer

The OBC can operate between 9V to 39V. The maximum current is 2A @ 24V fully operating with Audio on, Viper reader activated, WLAN transmitting. Typical current is 0.5A @ 24V and the standby current is 8mA.

The OBC weighs 0.83 kg and is hard mounted to bus cabinet via two dedicated mounting plates as shown in the accompanying figures.

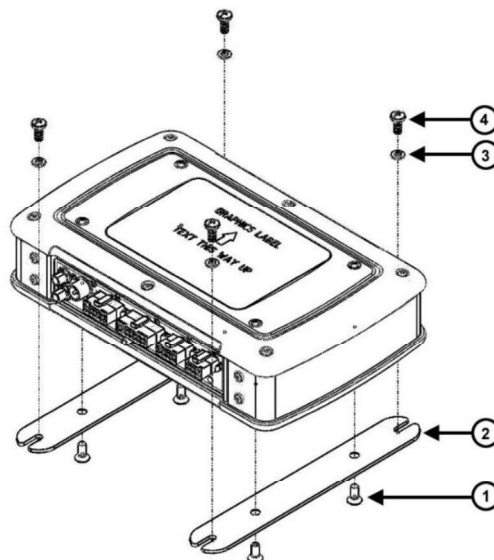


Figure 28: OBC Mounting Diagram

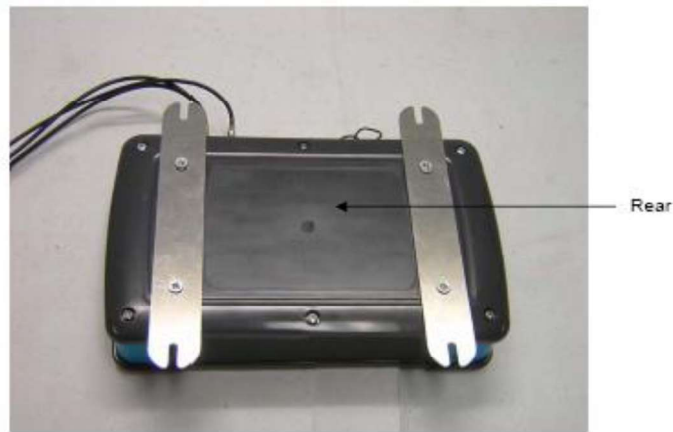


Figure 29: OBC Mounting Diagram

9.7 Network Video Recorder (NVR)

All CCTV footage shall be recorded on-board by a Network Video Recorder (NVR). Video footage on the NVR will be downloadable over a wireless network at the depot if required.

The NVR, shown in the figure below has dimensions:

288mm (W) x 238mm (D) x 87mm (H) (including mounting plate) and weight 6.9kg.

The NVR will receive its power from the “clean” power supply. (Provided to the NVR equipment enclosure by the bus Supplier)

The NVR will have 8 x On-Board IP POE ports to be used for connecting IP cameras.

The operational power consumption of the NVR is 2A (without any cameras connected) and 4A (with 8 x 4W IP Cameras connected).

The equipment provider shall be responsible for the supplying and installing cabling (ethernet) to connect the IP cameras to the NVR. (Cable trunking to be provided by the bus Supplier)





Figure 30: Network Video Recorder (NVR)

9.8 On-board Public Wi-Fi (Optional – Refer to Project Specification)

The Supplier shall make provision for the installation of equipment to enable the provision of Wi-Fi access points on the vehicle to allow for internet connectivity i.e. power, mounting racks, equipment cabinet space etc. No details are available at this stage regarding a specific Wi-Fi service provider.

9.9 On-board public USB Charging (Optional – Refer to Project Specification)

The Supplier shall make provision for the installation of USB charging facilities. One charging port per row of seats per side of the bus shall be provided. The USB ports shall be in the side panelling approximately 10 cm below the windowsill and 15 cm from the backrest of the forward seat.

The USB ports shall be configured so that most of the USB ports will continue to charge if one or more ports are damaged.

10. THEFT PROOFING

As far as possible, all equipment, equipment housings and equipment mountings shall be designed to inhibit theft.

This is particularly applicable to electrical and electronic equipment.

Theft proofing may be achieved using special keys or fasteners as well as through making use of tamper proof housings which are difficult to access for forcible entry.

PLEASE NOTE THAT WHEREVER THIS DOCUMENT REFERS TO ANY PARTICULAR TRADEMARK, NAME, PATENT, DESIGN, TYPE, SPECIFIC ORIGIN OR PRODUCER, SUCH REFERENCE SHALL BE DEEMED TO BE ACCOMPANIED BY THE WORDS 'OR EQUIVALENT'

SPECIFICATION ANNEXURES

- Annexure A** Routes and the location of depots and staging areas
- Annexure B** MyCiTi bus livery
- Annexure C** MyCiTi bus internal notices and signs
- Annexure D** Typical speed bump profile
- Annexure E** Station layouts (plan view)

ANNEXURE A ROUTES AND THE LOCATION OF DEPOTS AND STAGING AREAS

Annexure A – Routes, Location of Depots and Staging Areas

1. Trunk bus stations and stops

There are 46 station locations planned along the Phase 2A trunk corridor as shown in Figure 1. The direct service routes will have kerbside stops spread evenly along the portion of the routes that are not in the dedicated busway.

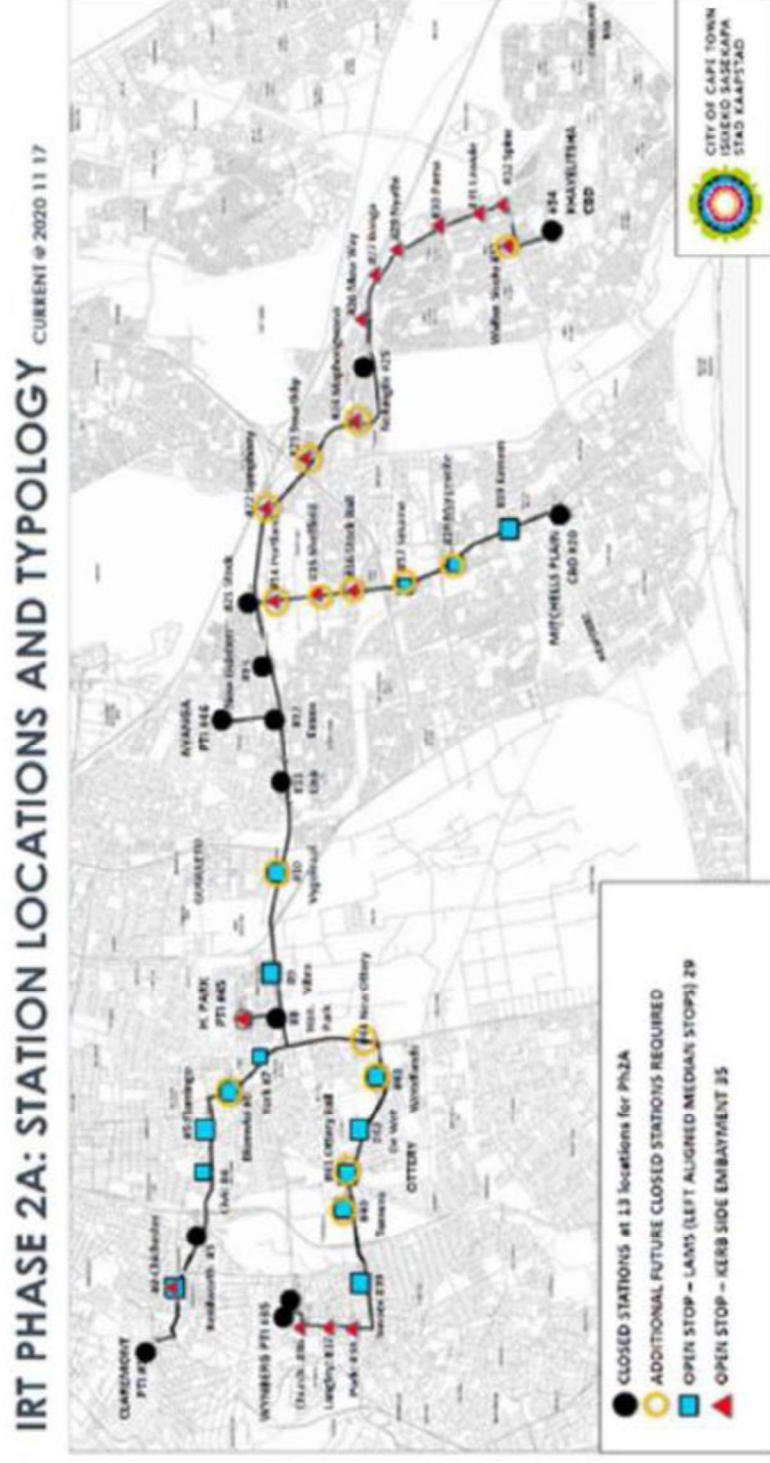


Figure 1: Phase 2A Trunk bus stations and stops

ANNEXURE B MYCITI BUS LIVERY



18m – Low Floor

Pantone Solid Coated

Dark Blue



CMYK: C100 M48 Y6 K30
RGB: R0 G85 B140
HTML/HEX: #00558C

Light Blue



CMYK: C86 M8 Y0 K0
RGB: R0 G163 B224
HTML/HEX: #00A3E0

Red



CMYK: C2 M100 Y85 K6
RGB: R200 G16 B46
HTML/HEX: #C8102E

Grey – Swoosh



CMYK: C10 M4 Y4 K14
RGB: R193 G198 B200
HTML/HEX: #C1C6C8

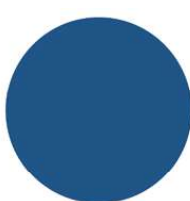
Grey – Base



CMYK: C7 M3 Y5 K8
RGB: R208 G211 B212
HTML/HEX: #D0D3D4

Standex Ral Vinyl System

Dark Blue



Light Blue



Red



Grey – Swoosh



Bus Paint Colour



Bus Livery Colours

MyCiTi

ANNEXURE C MYCITI BUS INTERNAL NOTICES AND SIGNS

MyCiti Bus Decals (18m solo bus)
Information to be used for tender purposes. Final decal text / content and placement to be agreed with Purchaser before installation.

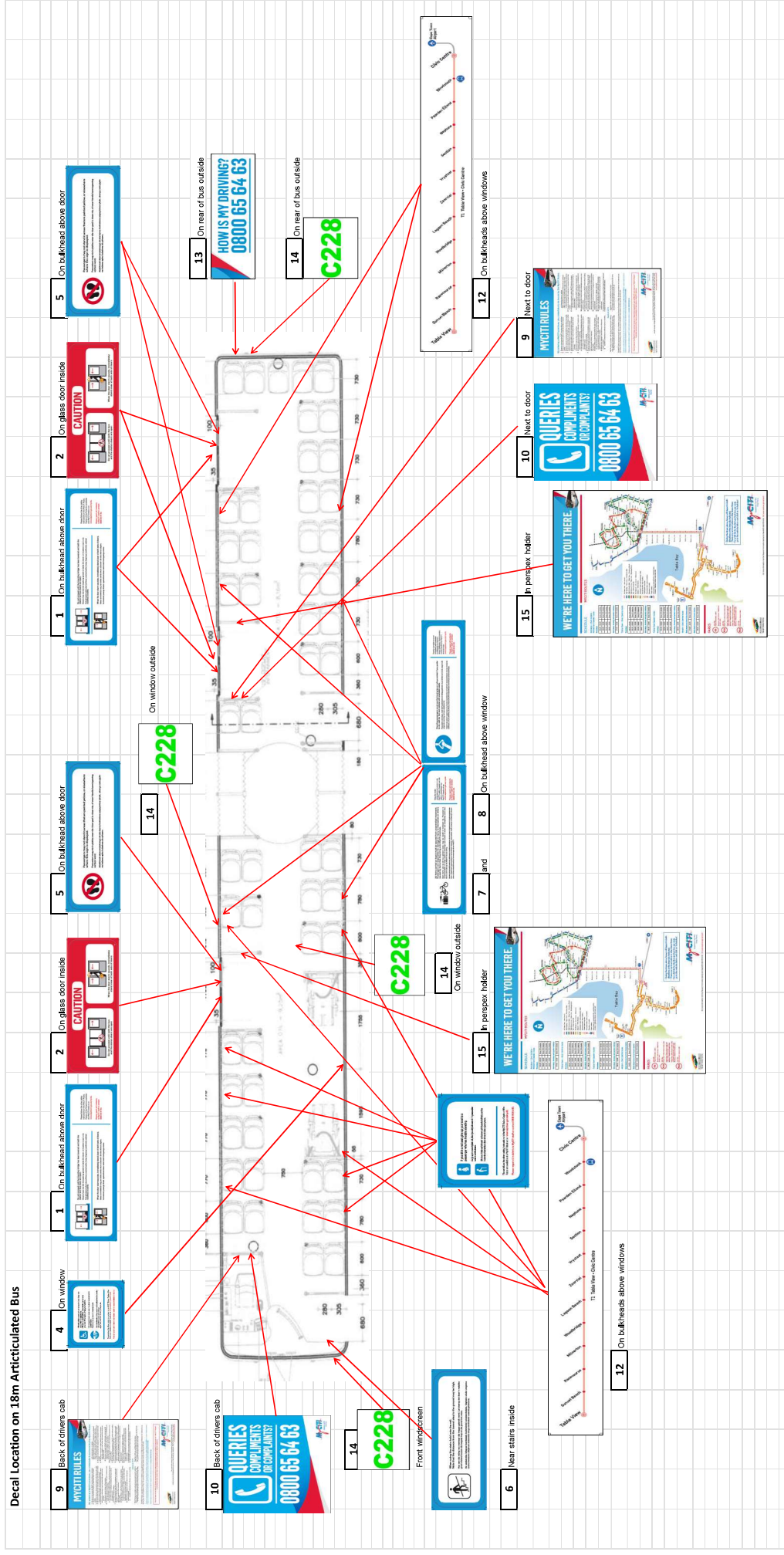


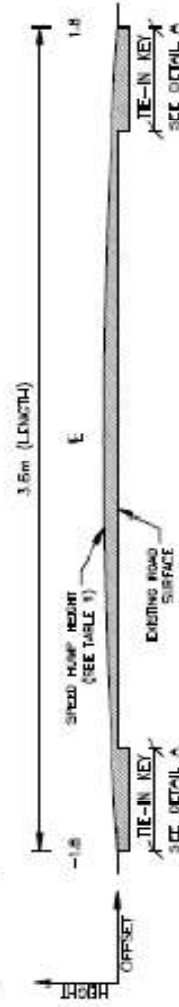


TABLE 1. SPEED LIMIT DATA

SPEED	KEY WIDTH (mm)
30 km/h	450
40 km/h	500
50 km/h	650

HEIGHT (mm)	30mm/h	0	15	28	39	49	56	62	67	69	70	69	67	62	56	49	39	28	15	0
40mm/h	0	13	25	34	42	46	53	57	59	60	59	57	55	48	42	34	25	13	0	0
50mm/h	0	11	20	28	35	40	44	46	48	49	50	49	48	44	40	35	28	20	11	0
OFFSET (m)	-1.6	-1.6	-1.4	-1.2	-1.0	-0.8	-0.6	-0.4	-0.2	0	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.6	1.6

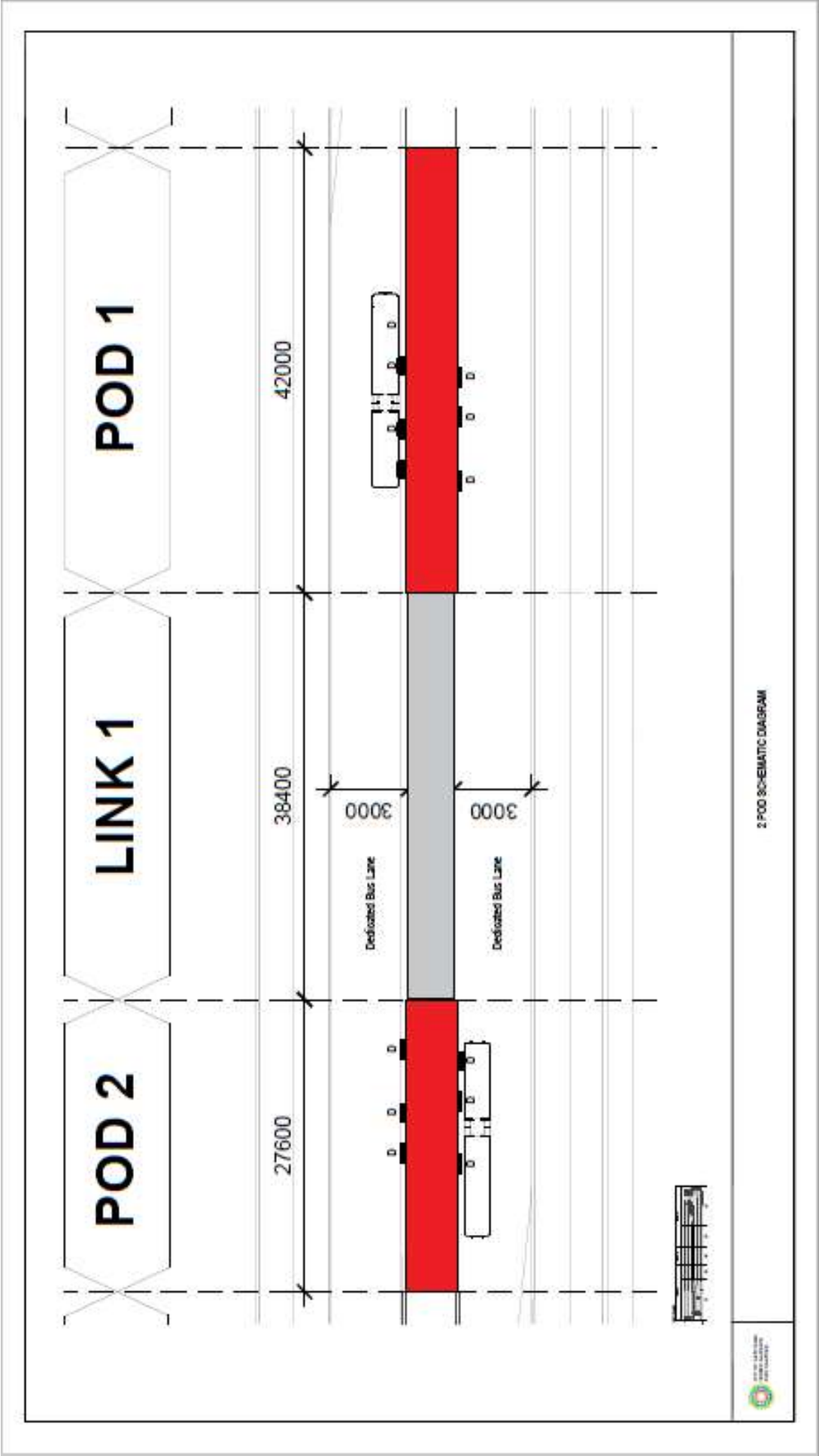
1. SPEED HUMPS SHOULD NOT BE PLACED AT DRIVEWAYS OR STORMWATER CATCHMENTS OR LOCATED ON EXISTING WALLS/STRUCTURES.
2. ROAD MARKINGS AND SIGNS TO COMPLY WITH "SAFETY-SPRINKLER" & "SAFETY-WALL".
3. ALL ROAD SIGNS MUST HAVE CLASS 3 RETRO-REFLECTIVE BACKGROUND MATERIAL.
4. ROAD MARKINGS TO BE PAINTED WITH RETRO-REFLECTIVE ROAD MARKING PAINT.
5. THE W332 AND INT 1.1 SIGNS SHOULD PREFERABLY BE LOCATED WITHIN 30m AHEAD OF THE SPEED HUMPS.
6. SIGNS SHOULD NOT BE INSTALLED IN FRONT OF DRIVEWAYS AND SHALL NOT BE OBSTRUCTED BY LANDSCAPING OR OTHER SIGNS/STRUCTURES.
7. SIGNS MUST BE ERRECTED BEFORE THE SPEED HUMP IS CONSTRUCTED. ROAD MARKINGS TO BE PAINTED AFTER CONSTRUCTION IS COMPLETE, ALLOWING ENOUGH TIME FOR ASPHALT TO CURE.
8. SPEED HUMP TO BE CONSTRUCTED FROM ASPHALT. THE ASPHALT TYPE TO BE SPECIFIED BY THE SPECIAL AUTHORITY.
9. ALL TIE-IN KEYS TO BE MECHANICALLY (Saw) CUT.
10. REFER TO DRAWING RMA FOR ROAD SIGN SUPPORT INSTALLATION DETAILS.
11. CORNERS OF THE W401 SIGNS TO BE ROUNDED AT 20mm RADIUS. IN ORDER TO IMPROVE PESTERMAN SAFETY.
12. ROAD STUDS SHALL BE IN ACCORDANCE WITH THE LATEST VERSIONS OF SABS 11442, 11403-1 AND 1403-2. REFER TO SECTION 9.4 FOR FURTHER DETAILS.
13. W401 ROAD MARKINGS SHALL BE PAINTED IMMEDIATELY AFTER CONSTRUCTION AND MAY REQUIRE REPAINTING IF "BROWNING EFFECT" OCCURS.
14. RM12 "NO STOPPING LINES" SHALL BE PROVIDED. F REQUIRED BY APPROVAL AUTHORITY.

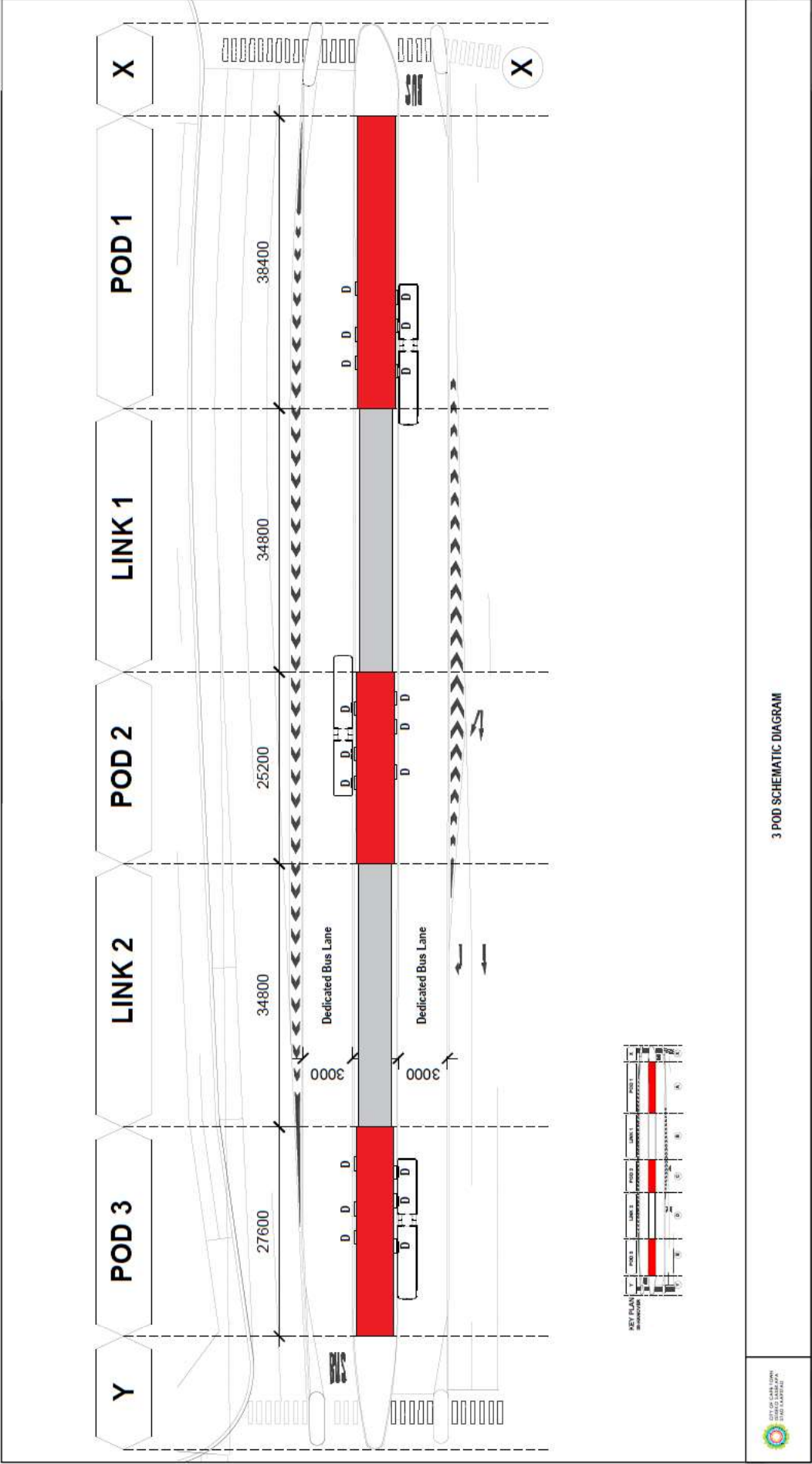


LONGITUDINAL SECTION: SPEED HUMP (PROFILE)

 CITY OF CAPE TOWN ISIBOZO SAKHAKA isiXhosa kaMqand CITY OF CAPE TOWN URBAN MOBILITY	TITLE SPEED HUMP STANDARDS AND GUIDELINES DETAILS		SCALE N.T.S.	PAPER A4
			DRAWING No. RD10	REV C

ANNEXURE E STATION LAYOUTS (PLAN VIEW)





C.6 SPECIAL CONDITIONS OF CONTRACT

The following Special Conditions of Contract, referring to the National Treasury – Conditions of Contract (revised July 2010), are applicable to this agreement.

1. Definitions

Insert new clause 1.1A with the following:

- 1.1A “Commencement Date” means the date the Supplier confirms receipt from the Purchaser of 1 (one) complete, signed copy of the Contract, the *Schedule of Deviations* (if any).
- 1.1B “Conditions of Contract” means the general conditions of contract and special conditions of contract including all other contract data incorporated by reference.

Delete Clause 1.15 and substitute with the following

- 1.15 The word ‘Goods’ is to be replaced everywhere it occurs in the GCC with the phrase ‘Goods and / or Services’ which means all of the equipment, machinery, materials, services, products, consumables, etc. that the Supplier is required to deliver to the Purchaser under the agreement. This definition shall also be applicable, as the context requires, anywhere where the words “supplies” and “services” occurs in the GCC.

Delete Clause 1.19 and substitute with the following

- 1.19 The word ‘Order’ is to be replaced everywhere it occurs in the GCC with the words ‘Purchase Order’ which means the official purchase order authorised and released on the Purchaser’s SAP System.

Delete Clause 1.21 and substitute with the following:

- 1.21 ‘Purchaser’ means the City of Cape Town. The address of the Purchaser is 12 Hertzog Boulevard, Cape Town, 8001 (chosen domicilium citandi et executandi).

Add the following after Clause 1.25:

- 1.26 ‘Supplier’ means the provider of Goods and / or Services with whom the Contract is concluded also referred to as “contractor” in the GCC.
- 1.27 "Intellectual Property" means any and all intellectual property rights of any nature anywhere in the world whether registered, registerable or otherwise, including patents, trademarks, registered designs and domain names, applications for any of the foregoing, trade or business names, copyright and rights in the nature of copyright, design rights, rights in databases, know-how, trade secrets and any other intellectual property rights which subsist in computer software, computer programs, websites, documents, information, techniques, business methods, drawings, logos, instruction manuals, lists and procedures and particulars of customers, marketing methods and procedures and advertising literature, including the "look and feel" of any websites
- 1.28 “Working Day” means Monday to Friday excluding weekends and Public Holidays (in the Republic of Sotuh Africa).

3. General Obligations

Delete Clause 3.2 in its entirety and replace with the following clauses.

- 3.2 The Parties will be liable to each other arising out of or in connection with any breach of the obligations detailed or implied in this contract, subject to clause 28.
- 3.3 If the Supplier is a joint venture, all parties in a joint venture or consortium shall be jointly and severally liable to the Purchaser in terms of the Contract and shall carry individually the minimum levels of insurance stated in the Contract, if any.

- 3.4 The Parties shall comply with all laws, regulations and bylaws of local or other authorities having jurisdiction regarding the Delivery of the Goods and/or Services and give all notices and pay all charges required by such authorities.
- 3.4.1 The Parties agree that this Contract shall also be subject to the CCT's Supply Chain Management Policy ("SCM Policy") that was applicable on the date the bid was advertised as amended from time to time. If the Purchaser adopts a new SCM Policy which contemplates that any clause therein would apply to the Contract emanating from this tender, such clause shall also be applicable to the Contract. Please refer to this document contained on the CCT's website.
- 3.4.2 Abuse of the supply chain management system is not permitted and may result in termination of the Contract, restriction of the Supplier, and/or the exercise by the CCT of any other remedies available to it as described in the SCM Policy or in law.
- 3.5 The Supplier shall:
- 3.5.1 Arrange for the documents listed below to be provided to the Purchaser prior to the issuing of the Purchase Order by the Purchaser and no later than the periods as set out in the Contract:
- a) Proof of Insurance (Refer to Clause 11) or Insurance Broker's Warrantee,
 - b) Letter of good standing from the Compensation Commissioner, or a licensed compensation insurer (Refer to Clause 11),
 - c) Initial delivery programme, and
 - d) Other requirements as detailed in the Contract.
- 3.5.2 Only when notified of the acceptance of the bid on the Date of Commencement of Contract, the Supplier shall commence with and carry out the Delivery of the Goods and/or Services in accordance with the Contract, to the satisfaction, of the Purchaser.
- 3.5.3 Provide all of the necessary materials, labour, plant and equipment required for the delivery of the Goods and/or Services including any temporary services that may be required.
- 3.5.4 Insure his workmen and employees against death or injury arising out of the delivery of the Goods.
- 3.5.5 Be continuously represented during the Delivery of the Goods and/or Services by a competent representative duly authorised to execute instructions.
- 3.5.6 In the event of a loss resulting in a claim against the insurance policies stated in clause 11, pay the first amount (excess) as required by the insurance policy.
- 3.5.7 Comply with all written instructions from the Purchaser subject to clause 18.
- 3.5.8 Complete and Deliver the goods within the period stated in clause 10, or any extensions thereof in terms of clause 21.
- 3.5.9 Make good at his own expense, all incomplete and defective Goods during the warranty period.
- 3.5.10 Pay to the Purchaser any penalty for delay as due on demand by the Purchaser. The Supplier hereby consents to such amounts being deducted from any payment due to the Supplier.
- 3.5.11 Comply with the provisions of the OHAS Act & all relevant regulations.
- 3.5.12 Comply with all laws relating to wages and conditions generally governing the employment of labour in the Cape Town area and any applicable Bargaining Council agreements.
- 3.5.13 Deliver the Goods in accordance with the Contract and with all reasonable care, diligence and skill in accordance with generally accepted professional techniques and standards.
- 3.6 The Purchaser shall:
- 3.6.1 Issue Purchaser Orders for the Goods and/or Services required under this Contract. No liability for payment will ensue for arising out of the Delivery of the Goods and/or Services, unless a Purchase Order has been issued to the Supplier.

- 3.6.2 Make payment to the Supplier for the Goods and/or Services as set out herein.
- 3.6.3 Take possession of the Goods and /or Services upon Delivery by the Supplier.
- 3.6.4 Regularly inspect the Goods to establish that it is being delivered in compliance with the Contract.
- 3.6.5 Give any instructions and/or explanations and/or variations to the Supplier including any relevant advice to assist the Supplier to understand the Contract.
- 3.6.6 Grant or refuse any extension of time requested by the Supplier of the period stated in clause 10.
- 3.6.7 Inspect the Goods and/or Services to determine if, in the opinion of the Purchaser, it has been delivered in compliance with the Contract, alternatively in such a state that it can be properly used for the purpose for which it was intended.
- 3.6.8 Brief the Supplier and issue all documents, information, etc. in accordance with the contract.

5. Use of contract documents and information; inspection, copyright, confidentiality, etc.

Add the following after clause 5.4:

- 5.5 Copyright of all documents prepared by the Supplier in accordance with the relevant provisions of the Copyright Act (Act 98 of 1978) relating to the Contract shall be vested in the Purchaser. Where copyright is vested in the Supplier, the Purchaser shall be entitled to use the documents or copy them only for the purposes for which they are intended in regard to the agreement and need not obtain the Supplier's permission to copy it for such use. Where copyright is vested in the Purchaser, the Supplier shall not be liable in any way for the use of any of the information other than as originally intended in terms of the agreement and the Purchaser hereby indemnifies the Supplier against any claim which may be made against it by any person / entity, arising from the use of such documentation for other purposes.

The ownership of data and factual information collected by the Supplier and paid for by the Purchaser shall, after payment, vest with the Purchaser.

- 5.6 **Publicity and publication**
The Supplier shall not release public or media statements or publish material related to the services or agreement within two (2) years of Delivery of the Goods, without the written approval of the Purchaser, which approval shall not be unreasonably withheld.
- 5.7 **Confidentiality**
Both Parties shall keep all information obtained by them in the context of the agreement, confidential and shall not divulge it without the written approval of the other Party.
- 5.8 **Intellectual Property**
 - 5.8.1 The Supplier acknowledges that it shall not acquire any right, title or interest in or to the Intellectual Property of the Purchaser.
 - 5.8.2 The Supplier hereby assigns to the Purchaser, all Intellectual Property created, developed or otherwise brought into existence by it for the purposes of the agreement, unless the Parties expressly agree otherwise in writing.
 - 5.8.3 The Supplier shall, and warrants that it shall:
 - 5.8.3.1 Not be entitled to use the Purchaser's Intellectual Property for any purpose other than as contemplated in the agreement;
 - 5.8.3.2 not modify, add to, change or alter the Purchaser's Intellectual Property, or any information or data related thereto, nor may the Supplier produce any product as a result of, including and/or arising from any such information, data and Intellectual Property, and in the event that it does produce any such product, the product shall be, and be deemed in law to be, owned by the Purchaser;

- 5.8.3.3 Not apply for or obtain registration of any domain name, trademark or design which is similar to any Intellectual Property of the Purchaser;
- 5.8.3.4 Comply with all reasonable directions or instructions given to it by the Purchaser in relation to the form and manner of use of the CCT Intellectual Property, including without limitation, any brand guidelines which the Purchaser may provide to the Supplier from time to time;
- 5.8.3.5 Ensure that its employees, directors, members and contractors comply strictly with the provisions of this Clause 5.5.8.4 above unless the Purchaser expressly agrees to the contrary, in writing and only after obtaining due internal authority for such agreement.
- 5.8.4 The Supplier represents and warrants to the Purchaser that, in providing Goods and/or Services for the duration of the agreement it will not infringe or make unauthorised use of the Intellectual Property rights of any third party and hereby indemnifies the Purchaser from any claims, liability, loss, damages, costs, and expenses arising from the infringement or unauthorised use by the Supplier of any third party's Intellectual Property rights.
- 5.8.5 Upon expiry of the contract period and in the event that the Contract is terminated, ended or is declared void, any and all of the Purchaser's Intellectual Property, and any and all information and data related thereto, shall be immediately handed over to the Purchaser by the Supplier and no copies thereof shall be retained by the Supplier unless the Purchaser expressly and in writing, after obtaining due internal authority, agrees otherwise.

Add the following after clause 5.8:

5.9 Protection of Personal Information Act of 2013

By submitting a tender to the Purchaser, (and by concluding any ensuing related agreement with the City of Cape Town, if applicable), the Tenderer thereby acknowledges and unconditionally agrees:

- 5.9.1 that the tenderer has been informed of the purpose of the collection and processing of its personal information as defined in the Protection of Personal Information Act of 2013 ("POPIA"), which, for the avoidance of doubt is for, and in relation to, the tender process and the negotiation, conclusion, performance and enforcement of the ensuing agreement, if applicable, as well as for the City of Cape Town's reporting purposes;
- 5.9.2 to the collection and processing of the tenderer's personal information by the City of Cape Town and agrees to make available to the City of Cape Town, all information reasonably required by the City of Cape Town for the above purposes;
- 5.9.3 that the personal information the City of Cape Town collects from the tenderer or about the tenderer may be further processed for other activities and/or purposes which are lawful, reasonable, relevant and not excessive in relation to the purposes set out above, for which it was originally collected;
- 5.9.4 that, the tenderer indemnifies the City of Cape Town and its officials, employees, and directors and undertakes to keep the City of Cape Town and its officials, employees, and directors indemnified in respect of any claim, loss, demands, liability, costs and expenses of whatsoever nature which may be made against the City of Cape Town (including the costs incurred in defending or contesting any such claim) in relation to the tenderer or the tenderer's employees', representatives' and/or sub-Suppliers' non-compliance with POPIA and/or the City of Cape Town's failure to obtain the tenderer's consent or to notify the tenderer of the reason for the processing of the tenderer's personal information;
- 5.9.5 to the disclosure of the tenderer's personal information by the City of Cape Town to any third party, where the City of Cape Town has a legal or contractual obligation to disclose such personal information to the third party (or a legitimate interest exists therein);
- 5.9.6 that, under POPIA, the tenderer may request to access, confirm, request the correction, destruction, or deletion of, or request a description of, personal information held by the City of Cape Town in relation to you, subject to applicable law; and

that under POPIA, subject to applicable law, the tenderer also has the right to be notified of a personal information breach and the right to object to, or restrict, the City of Cape Town's processing of its personal

information.

5.10 **Performance Monitoring**

- 5.10.1 As required by section 116(2)(b) of the Local Government: Municipal Financial Management Act 56 of 2003, the CCT shall monitor the performance of the Supplier on at least a monthly basis, and the Supplier agrees to provide the CCT with its full cooperation in this regard.

7. **Performance Security**

Delete clause 7.1 to 7.4 and replace with the following:

Not Applicable. Tenderers must disregard the **Pro Forma Performance Security/ Guarantee** and are not required to furnish same.

8. **Inspections, tests and analyses**

Delete Clause 8.2 and substitute with the following:

- 8.2 If it is a bid condition that Goods and/or Services to be produced or services to be rendered should at any stage during production or execution or on completion be subject to inspection, the premises of the bidder or Supplier shall be open, at all reasonable hours, for inspection by a representative of the Purchaser or an organisation acting on behalf of the Purchaser.

10. **Delivery and documents**

Delete clauses 10.1 and 10.2 and replace with the following:

- 10.1 Delivery of the goods shall be made by the Supplier in accordance with the terms specified in the contract. The time for Delivery of the goods shall be the date as stated on the Purchase Order. In the case of agreements for Delivery of goods in terms of framework or panel agreements, Purchase Orders for the supply and delivery of goods may be raised up until the expiry of a framework or panel agreement, provided that the goods can be delivered within 30 (thirty) days of expiry of the framework or panel agreement. In this context, the "goods" does not include services and carries its ordinary meaning. All Purchase Orders other than for the supply and Delivery of goods (i.e. supply of services, professional services or constructions works), must be completed prior to the expiry of the contract period.
- 10.2 The Purchaser shall determine, in its sole discretion, whether the Goods and/or Services have been delivered in compliance with the Contract, alternatively in such a state that it can be properly used for the purpose for which it was intended. When the Purchaser determines that the Goods and/or Services have been satisfactorily delivered, the Purchaser must issue an appropriate certification, or written approval, to that effect. Invoicing may only occur, and must be dated, on or after the date of such written acceptance of the Goods.

11. **Insurance**

Add the following after clause 11.1:

- 11.2 Without limiting the obligations of the Supplier in terms of this Contract, the Supplier shall effect and maintain the following additional insurances:
- 11.2.1 Public liability insurances, in the name of the Supplier, covering the Supplier and the Purchaser against liability for the death of or injury to any person, or loss of or damage to any property, arising out of or in the course of this Contract, in an amount not less than **R20 million** for any single claim;
- 11.2.2 Motor Vehicle Liability Insurance, in respect of all vehicles owned and / or leased by the Supplier, comprising (as a minimum) "Balance of Third Party" Risks including Passenger Liability Indemnity;
- 11.2.3 Registration / insurance in terms of the Compensation for Occupational Injuries and Disease Act, Act 130 of 1993. This can either take the form of a certified copy of a valid Letter of Good Standing issued by the Compensation Commissioner, or proof of insurance with a licenced compensation insurer, from either the Supplier's broker or the insurance company itself (see the Pro Forma Insurance Broker's Warranty).
- 11.2.4 Comprehensive insurance but not limited to the following:

- Political Riot and Malicious Damage Insurance: to cover such risks as are insurable by the South African Special Risks Association (SASRIA) in respect of the contract.

11.2.5 In the event of under insurance or the insurer's repudiation of any claim for whatever reason, the Purchaser will retain its right of recourse against the Supplier.

11.3 The Supplier shall be obliged to furnish the Purchaser with proof of such insurance as the Purchaser may require from time to time for the duration of this Contract. Evidence that the insurances have been effected in terms of this clause, shall be either in the form of an insurance broker's warranty worded precisely as per the pro forma version contained in the Pro forma Insurance Broker's Warranty or copies of the insurance policies.

15. Warranty

Add to Clause 15.2:

- 15.2 Each bus shall carry a Standard Warranty which shall comprise of the Suppliers own warranty which shall be a bumper-to-bumper warranty subject to the following:
- A minimum period of 12 (twelve) months commencing on 01 May 2027 or a mutually agreed later date or a minimum of 80 000km travelled distance from date of acceptance of bus whichever come first.

16. Payment

Delete Clause 16.1 in its entirety and replace with the following:

16.1 Payment of invoices will be made:

16.1.1 Within 30 (thirty) days of receiving the relevant invoice or statement from the Supplier, unless otherwise prescribed for certain categories of expenditure or specific contractual requirements in accordance with any other applicable policies of the Purchaser.

16.1.2 Notwithstanding anything contained above, the Purchaser shall not be liable for payment of any invoice that pre-dates the date of delivery of any Goods and/or Services.

Delete Clause 16.2 in its entirety and replace with the following:

16.2 The Supplier shall furnish the purchaser's Accounts Payable Department with an original tax invoice, clearly showing the amount due in respect of each and every claim for payment.

Add the following after clause 16.4

16.5 Notwithstanding any amount stated on the Purchase Order, the Supplier shall only be entitled to payment for Goods and/or Services actually delivered in terms of the Specification and Drawings, or any variations thereof made in accordance with clause 18. Any contingency sum included shall be for the sole use, and at the discretion, of the Purchaser.

16.6 The Purchaser will only make advanced payments to the Supplier in strict compliance with the terms and conditions as contained in the Pro forma Advanced Payment Guarantee and only once the authenticity of such guarantee has been verified by the Purchaser's Treasury Department.

16.6.1 The Advance Payment Schedule applicable to this Contract is set out below. The items of plant and materials which have been identified by the Purchaser as being suitable for advance payment in terms of this Contract are listed in the table below, and for which the Purchaser is prepared to make advance payment to the Supplier, subject to the conditions below. Should an item or items be added to the list at tender stage by a tenderer, no obligation to advance payment shall be incurred by the Purchaser, for such items added by the tenderer except as provided for herein.

Plant and materials which have been manufactured and are stored by the supplier	Plant and materials yet to be manufactured and for which a deposit with order is required from the supplier by a third party manufacturer/supplier, and which may be stored by the supplier:
---	--

Not Applicable	Not Applicable

- 16.6.2 The Supplier can only rely on advance payment being permitted by the Purchaser in respect of the plant and materials listed in the table above. The Purchaser may, however, permit advance payment for other plant and materials in exceptional circumstances and at its sole discretion, during the course of the Contract, and upon reasonable request from the Supplier.
- 16.6.3 Advance payment for the purposes of deposits will only be provided up to a limit of **25%** of the estimated contract value.
- 16.6.4 The Supplier shall provide the Purchaser with documentary evidence of the terms and conditions for which a deposit with order is required by a third party manufacturer/supplier, together with the advance payment guarantee.
- 16.6.5 The Supplier will also be permitted to obtain advance payment for the balance of the value of the plant and materials in respect of which he has paid a deposit, for an item which after manufacture is stored by the Supplier. The Supplier shall, in respect of such payment, provide an advance payment guarantee, either for such balance or, if the advance payment guarantee in respect of the deposit is to be returned by the Purchaser upon request, for the whole value of the item.

17. Prices

Add the following after clause 17.1

- 17.2 If as a result of an award of a contract beyond the original tender validity period, the contract execution will be completed beyond a period of twelve (12) months from the expiry of the original tender validity period, then the contract may be subject to contract price adjustment for that period beyond such twelve (12) months. An appropriate contract price adjustment formula will be determined by the Purchaser delegated authority if such was not included in the bid documents.
- 17.3 If as a result of any extension of time granted, the contract execution will be completed beyond a period of twelve (12) months from the expiry of the original tender validity period, then contract price adjustment may apply to that period beyond such twelve (12) months. An appropriate contract price adjustment formula will be determined by the Director: Supply Chain Management if such was not included in the bid documents.
- 17.4 The prices for the goods and/or Services delivered and services performed shall be subject to contract price adjustment in terms of Schedule F.1 Contract Price Adjustment and/or Rate of Exchange Variations and the following conditions will be applicable:
- (a) The prices quoted in the "Pricing Schedule" for the supply of vehicles (buses) and for other goods and services shall be fixed for a period of 12 months from the end of the original tender validity period.
 - (b) This shall apply to all variations and/or additional orders that may be instructed by the purchaser within the abovementioned periods.
 - (c) Upon the expiry of the stated fixed price period(s), the prices of goods and services may be subject to adjustment for escalation in price as set out in the Conditions of Contract.
 - (d) Where the Supplier is the direct importer of plant and material for the manufacture / assembly of the buses, the component of the imported goods may be subject to adjustment for variations prices in the Exchange Rate and in Customs Surcharge and Duties applicable at the time the order is placed. Price adjustment will be subject to the required information being provided in **Schedule F.1: Contract Price Adjustment**.
 - (e) The prices quoted in the "Pricing Schedules" shall be deemed to have amounts included to cover the contingency of all other rises and falls on the costs not covered by the provisions above.
 - (f) Where a percentage (%) mark-up is provided in the pricing schedule the percentage (%) value shall remain fixed for the duration of the contract.

17.4.1 Price adjustment for escalation in the cost of domestic goods and services

Price adjustment for variations in the cost of manufacture, goods and for services shall be based on the

following.

17.4.1.1 Adjustment in the cost of domestic manufacturing the **Standard Bus**

The tendered rate as per contract shall remain firm for the first 12 months following the date of the original tender validity period and no claims for contract price adjustment will be considered for the first 12 months subject to the provisions in the price schedule. From the commencement of the 13th month following the expiry of the original tender validity period, Suppliers shall be entitled to claim contract price adjustment as follows:

- (a) 10% of the tendered rate will remain fixed for the duration of the contract.
- (b) 90% of the tendered rate will be subject to an adjustment on delivery, based on the monthly variation of the applicable Producer Price Index (PPI) from the “base date” to the “end date”.
- (c) The applicable index is published monthly in STATS SA: Statistical Release P0142.1 Table 1 - Producer Price Index for Final Manufactured Goods and shall be the aggregated index for “Transport Equipment”.
- (d) The “base month” for the price adjustment shall be forty-two (42) calendar days prior to the date of commencement of the 13th month following the expiry of the original tender validity period. The “end month” shall be forty-two (42) calendar days prior to the bus delivery and acceptance date.
- (e) The indices published for the “base-month” and “end-month” shall be used for the purposes of Contract Price Adjustment.
- (f) The escalation factor (F) to be applied shall be:

$$F = (\text{End month index}) / (\text{base month index})$$

- (g) The adjusted rate shall be:

$$\text{The adjusted rate} = (0.9 \times F \times \text{tendered rate}) + (0.1 \times \text{tendered rate})$$

17.4.1.2 Escalation applicable to the provision of services, warranty and goods other than the Standard Bus.

The tendered rate as per contract shall remain firm for the first 12 months following the date of the original tender validity period and no claims for contract price adjustment will be considered for the first 12 months' subject to the provisions in the price schedule. From the commencement of the 13th month following the expiry of the original tender validity period, Suppliers shall be entitled to claim contract price adjustment as follows:

- (a) 10% of the tendered rate will remain fixed for the duration of the contract.
- (b) 90% of the tendered rate will be subject to an adjustment on delivery, based on the monthly variation of the index from the “base month” to the “end month”.
- (c) The applicable index is published by monthly in STATS SA: Statistical Release P0141, Table E - Consumer Price Index for all urban areas and shall be the aggregated index for “Miscellaneous goods and services”.
- (d) The “base month” for the price adjustment shall be forty-two (42) calendar days prior to the date of commencement of the 13th month following the expiry of the original tender validity period. The “end month” shall be forty-two (42) calendar days prior to date of invoice for the respective goods and/or services.
- (e) The indices published for the “base-month” and “end-month” shall be used for the purposes of Contract Price Adjustment.
- (f) The escalation factor (F) to be applied shall be:

$$F = (\text{End month index}) / (\text{base date index})$$

(g) The adjusted rate shall be:

the adjusted rate = 0.9 x F x tendered rate + 0.1 x tendered rate

17.4.2 Escalation in Prices for imported Plant and Materials

If the prices for imported Plant and Materials are not fixed, the formula used for calculating Contract Price Adjustments (CPA) and the indices and relative proportions of labour and material on which the Tender prices are based shall be of the form.

$$P_A = P \left(0.1 + 0.9 \left[a \frac{L_n}{L_o} + b \frac{M_n}{M_o} \right] \right)$$

Where:

- P = base rate
- P_A = rate adjusted for escalation in labour and material
- The proportion of tendered rate which is not subject to adjustment and shall equal 0.1 and that subject to adjustment for escalations shall be 0.9
- a and b are coefficients representing the percentage labour and material respectfully
- Example if the percentage labour and material are 52% and 48% respectively, then a = 0.52 and b = 0.48 and a + b = 1.0
- L_o and M_o are the base month indices for Labour and Material respectfully.
- L_n and M_n are the end month indices for month of adjustment for Labour and Material respectfully.

Alternative formula

Where indices for manufacturing labour and material coefficients are not available, as an alternative to the above, an appropriate sectoral Producer Price Index (PPI) may be used with the formula of the form:

$$P_A = P \left(0.1 + 0.9 \left[\frac{PPI_n}{PPI_o} \right] \right)$$

Where:

- PPI_n and PPI_o are the end month and base month indices for the sectoral PPI index respectively.

The **base month** for the price adjustment shall be forty-two (42) calendar days prior to the date of commencement of the 13th month following the expiry of the original validity period. The end month shall be forty-two (42) calendar days prior to the bus delivery and acceptance date.

17.5 If price adjustment for variations in the cost of plant and materials imported from outside of South Africa is provided for in the contract, such adjustment shall be based on the information contained on the schedule titled "**Price Basis for Imported Resources**" and as below. For the purposes of this clause the Rand value of imported Plant and Materials inserted on the schedule titled "**Price Basis for Imported Resources**" (column (F)) shall be the value in foreign currency (column (A)) converted to South African Rand (column (C)) by using the closing spot selling rate quoted by **CCT's** main banker, NEDBANK, on the Base Date (seven calendar days before tender closing date) rounded to the second decimal place (column(B)), to which shall be added any Customs Surcharge and Customs Duty applicable at that date (columns (D) and (E)).

17.5.1 Adjustment for variations in rates of exchange:

- The value in foreign currency inserted in column (A) shall be subject to clause (h) below when recalculating the Rand value.
- The rate of exchange inserted in column (B) shall be the closing spot selling rate quoted by Council's main banker, NEDBANK, on the Base Date, rounded to the second decimal place, subject to sub-paragraph (c) below.
- If the rate of exchange inserted by the Tenderer differs from the NEDBANK rate referred to above, then the NEDBANK rate shall apply and the Rand value in columns (C) and (F) shall be recalculated accordingly, without altering the price in the Price Schedule for the relevant items.
- If a tender from a supplier or sub-contractor provides for variations in rates of exchange, the Supplier may **only** claim for variations in rates of exchange if he binds the supplier or sub-contractor to the same provision to take out forward cover as described in sub-paragraph (e) below.
- The Supplier (or sub-contractor) shall within five working days from the date of placing a firm order

on an overseas supplier, cover or recover forward by way of a contract with a bank which is an authorised foreign exchange dealer, the foreign exchange component of the cost of any imported Plant and Materials inserted by the Tenderer on the schedule titled **"Price Basis for Imported Resources"**.

- (f) When the Supplier (or sub-contractor) so obtains forward cover, the Supplier shall immediately notify the CCT of the rate obtained and furnish the CCT with a copy of the foreign exchange contract note.
- (g) Based on the evidence provided in sub-paragraph (f) above, the value in Rand inserted in column (C) of on the schedule titled **"Price Basis for Imported Resources"** shall be recalculated using the forward cover rate obtained, and any increase or decrease in the Rand value defined in this clause shall be adjusted accordingly, subject to sub-paragraph (h) below.
- (h) The adjustments shall be calculated upon the value in foreign currency in the Supplier's (or sub-contractor's) **forward cover contract**, provided that, should this value exceed the value in foreign currency inserted in column (A) of the schedule titled **"Price Basis for Imported Resources"**, then the value in column (A) shall be used.

17.5.2 Adjustment for variations in customs surcharge and customs duty

- (a) Any increase or decrease in the Rand value between the amounts of Customs Surcharge and Customs Duty inserted in on the schedule titled **"Price Basis for Imported Resources"** and those amounts actually paid to the Customs and Excise Authorities, which are due to changes in the percentage rates applicable or to the foreign exchange rate used by the authorities, shall be adjusted accordingly.
- (b) The Tenderer shall state the Customs Duty Tariff Reference applicable to each item and the Supplier shall advise the CCT's Agent of any changes which occur.

17.5.3 Adjustment for variation in labour and material Costs

If the prices for imported Plant and Materials are not fixed, the Supplier shall in his Tender specify the formula for calculating Contract Price Adjustments normally used in the country of manufacture and the indices and relative proportions of labour and material on which his Tender prices are based. Evidence of the indices applicable shall be provided with each claim. The indices applicable 42 days before contractual dispatch date from the factory will be used for the purposes of Contract Price Adjustment.

Failure to specify a formula in the Tender shall mean that the prices are fixed or shall be deemed to be fixed.

18. Contract Amendments

Delete the heading of clause 18 and replace with the following:

18. Contract Amendments and Variations

Add the following to clause 18.1:

Variations means changes to the Goods and/or Services, extension of the contract period or increases in the value of the Contract as a result of written instructions issued by the Purchaser to the Supplier. Such changes are subject to prior approval by the Purchaser's delegated authority. Should the Supplier deliver any Goods not described in a written instruction from the Purchaser, the Purchaser's liability for payment shall no arise until such time as the change has been duly approved and such approval communicated to the Purchaser.

20. Subcontracts

Add the following after clause 20.1:

- 20.2 The Supplier shall be liable for the acts, defaults and negligence of any subcontractor, his agents or employees as fully as if they were the acts, defaults or negligence of the Supplier.
- 20.3 Any appointment of a subcontractor shall not amount to a contract between the Purchaser and the

subcontractor, or a responsibility or liability on the part of the Purchaser to the subcontractor and shall not relieve the Supplier from any liability or obligation under the Contract.

21. Delays in the supplier's performance

Delete Clause 21.2 in its entirety and replace with the following:

21.2 If at any time during the performance of obligations contained in the Contract the Supplier or its subcontractors should encounter conditions beyond their reasonable control which impede the timely delivery of the Goods and/or Services, the Supplier shall notify the Purchaser in writing, within 7 (seven) days of first having become aware of these conditions, of the facts of the delay, its cause(s) and its probable duration. As soon as practicable after receipt of the Supplier's notice, the Purchaser shall evaluate the situation, and may at his discretion extend the time for Delivery.

Where additional time is granted, the Purchaser shall also determine whether or not the Supplier is entitled to payment for additional costs in respect thereof. The principle to be applied in this regard is that where the Purchaser or any of its agents are responsible for the delay, reasonable costs shall be paid. In respect of delays that were beyond the reasonable control of both the Supplier and the Purchaser, additional time only (no costs) will be granted.

The Purchaser shall notify the Supplier in writing of his decision(s) in the above regard.

21.3 No provision in this Contract shall be deemed to prohibit the obtaining of Goods and/or Services from a national department, provincial department, or a local authority.

22. Penalties

Delete clause 22.1 and replace with the following:

22.1 Subject to GCC Clause 25, if the Supplier fails to deliver any or all of the Goods and/or Services within the period(s) specified in the Contract, the Purchaser shall, without prejudice to its other remedies under the Contract, deduct from amounts payable, as a penalty, a sum as stated herein for each day of the delay until actual Delivery or performance.

The penalty for this contract shall be:

R 5 000.00 per bus per day (ex VAT) after the envisaged final delivery date of 31 March 2027.

22.2 The Purchaser shall, without prejudice to its other remedies under the contract, deduct from amounts payable, financial penalties as contained on the Preference Schedule for breaches of the conditions upon which preference points were awarded.

23. Termination for default

Delete the heading of clause 23 and replace with the following:

23. Termination

Add the following to the end of clause 23.1:

If the Supplier fails to remedy the breach in terms of such notice.

Add the following after clause 23.7:

23.8 In addition to the grounds for termination due to default by the Supplier, the Contract may also be terminated:

23.8.1 Upon the death of the Supplier who was a Sole Proprietor, or a sole member of a Close Corporation, in which case the contract will terminate forthwith.

23.8.2 If the Parties, by mutual agreement, terminate the Contract.

23.8.3 If a material irregularity vitiates the procurement process leading to the conclusion of the Contract, rendering the procurement process and the conclusion of the resulting Contract unfair, inequitable, non-transparent, uncompetitive or not cost-effective the Contract may be terminated by the Purchaser (upon conclusion of applicable processes by the City Manager as described in the Purchaser's SCM Policy).

23.8.4 Reputational risk or harm to the Purchaser

The Purchaser, without prejudice to any other remedy for breach of contract, by written notice of default sent to the Supplier, may terminate the contract if the implementation of the contract may result in reputational risk or harm to the Purchaser as a result of (inter alia):

- a) reports of poor governance and/or unethical behaviour;
- b) association with known notorious individuals and family of notorious individuals;
- c) poor performance issues, known to the Purchaser
- d) negative social media reports;
- e) adverse assurance (e.g. due diligence) report outcomes; or
- f) circumstances where the relevant vendor has employed, or is directed by, anyone who was previously employed in the service of the state (as defined in clause 1.53), where the person is or was negatively implicated in any SCM irregularity.

By or in relation to the Supplier, the Contract may be terminated by the Purchaser after providing notice to the Supplier.

23.9 If the Contract is terminated in terms of clause 23.8, all obligations that were due and enforceable prior to the date of the termination, must be performed by the relevant Party.

26. Termination for insolvency

Delete clause 26.1 and replace with the following:

26.1 In the event of the Supplier becoming bankrupt or otherwise insolvent the Purchaser may elect to:

- 26.1.1 At any time, terminate the Contract by giving written notice to the Supplier; or
- 26.1.2 Accept a Supplier's proposal (via the liquidator) to render delivery utilising the appropriate contractual mechanisms or takes steps to ensure its rights are protected and any negative impact on service delivery is mitigated.

26.2 In the event of the Purchaser electing to cancel the Contract in accordance with clause 26.1.1 above, the Purchaser shall make payment of all verified and signed off invoices. In the event of there being any dispute in respect of any outstanding invoices such dispute shall be dealt with in accordance with the dispute resolution mechanism in the Contract.

27. Settlement of Disputes

Amend clause 27.1 as follows:

27.1 If any dispute or difference of any kind whatsoever, with the exception of termination in terms of clause 23 arises between the Purchaser and the Supplier in connection with or arising out of the Contract, the Parties shall make every effort to resolve such dispute or difference amicably, by mutual consultation.

Delete Clause 27.2 in its entirety and replace with the following:

27.2 Should the Parties fail to resolve any dispute by way of mutual consultation, either party shall be entitled to refer the matter for mediation before an independent and impartial person appointed by the City Manager in accordance with Regulation 50(1) of the Local Government: Municipal Finance Management Act, 56 of 2003 – Municipal Supply Chain Management Regulations (Notice 868 of 2005). Such referral shall be done by either party giving written notice to the other of its intention to commence with mediation. No mediation may be commenced unless such notice is given to the other party.

Irrespective whether the mediation resolves the dispute, the Parties shall bear their own costs concerning the mediation and share the costs of the mediator and related costs equally.

The mediator shall agree the procedures, representation and dates for the mediation process with the

Parties. The mediator may meet the Parties together or individually to enable a settlement.

Where the Parties reach settlement of the dispute or any part thereof, the mediator shall record such agreement and on signing thereof by the Parties the agreement shall be final and binding.

Save for reference to any portion of any settlement or decision which has been agreed to be final and binding on the Parties, no reference shall be made by or on behalf of either party in any subsequent court proceedings, to any outcome of an amicable settlement by mutual consultation, or the fact that any particular evidence was given, or to any submission, statement or admission made in the course of amicable settlement by mutual consultation or mediation.

28. Limitation of Liability

Delete clause 28.1 (a) and (b) and replace with the following:

- (a) notwithstanding any provision to the contrary contained in this contract, neither the supplier nor any of its officers, directors, employees, agents contractors, consultants or other representatives shall be liable to the purchaser, whether in contract, tort, or otherwise, for any indirect, incidental, special or consequential loss or damage of any kind, including without limitation the loss of use, loss of production, or loss of profits or interest costs, loss of goodwill, lost or damaged data or software, costs of substitute products/services and/or loss of business or business opportunities (whether foreseeable or unforeseeable), provided that this exclusion shall not apply to any obligation of the supplier to pay penalties and/or damages to the purchaser;
- (b) the aggregate liability of the Supplier to the Purchaser, whether under the Contract, in tort or otherwise, shall not exceed the sums insured in terms of clause 11 in respect of insurable events, or where no such amounts are stated, to an amount equal to twice the Contract price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment.

Add the following after clause 28.1:

28.2 Without detracting from, and in addition to, any of the other indemnities in this Contract, the Supplier shall be solely liable for and hereby indemnifies and holds harmless the Purchaser against all claims, charges, damages, costs, actions, liability, demands and/or proceedings and expense in connection with:

- a) personal injury or loss of life to any individual;
- b) loss of or damage to property;

arising from, out of, or in connection with the performance by the Supplier in terms of this Contract, save to the extent caused by the gross negligence or wilful misconduct of the Purchaser.

28.3 The Supplier and/or its employees, agents, concessionaires, suppliers, sub-contractors or customers shall not have any claim of any nature against the purchaser for any loss, damage, injury or death which any of them may directly or indirectly suffer, whether or not such loss, damages, injury or death is caused through negligence of the Purchaser or its agents or employees.

28.4 Notwithstanding anything to the contrary contained in this Contract, under no circumstances whatsoever, including as a result of its negligent (including grossly negligent) acts or omissions or those of its servants, agents or contractors or other persons for whom in law it may be liable, shall any party or its servants (in whose favour this constitutes a *stipulatio alteri*) be liable for any indirect, extrinsic, special, penal, punitive, exemplary or consequential loss or damage of any kind whatsoever, whether or not the loss was actually foreseen or reasonably foreseeable), sustained by the other party, its directors and/or servants, including but not limited to any loss of profits, loss of operation time, corruption or loss of information and/or loss of contracts.

28.5 Each party agrees to waive all claims against the other insofar as the aggregate of compensation which might otherwise be payable exceeds the aforesaid maximum amounts payable.

31. Notices

Delete clauses 31.1 and 31.2 and replace with the following:

31.1 Any notice, request, consent, approvals or other communications made between the Parties pursuant to

the Contract shall be in writing and forwarded to the addresses specified in the Contract and may be given as set out hereunder and shall be deemed to have been received when:

- a) hand delivered – on the day delivery of delivery or the next Working Day,
- b) sent by registered mail – five (5) Working Days after mailing,
- c) sent by email or telefax – one (1) Working Day after transmission.

32. Taxes and Duties

Delete the final sentence of 32.3 and replace with the following:

- . In this regard, it is the responsibility of the Tenderer to submit evidence in the form of a valid Tax Compliance Status PIN issued by SARS to the CCT at the Supplier Management Unit located within the Supplier Management / Registration Office, 2nd Floor (Concourse Level), Civic Centre, 12 Hertzog Boulevard, Cape Town (Tel 021 400 9242/3/4/5), or included with this tender.

Add the following after clause 32.3:

32.4 The VAT registration number of the CCT is 4500193497.

C.7 GENERAL CONDITIONS OF CONTRACT

(National Treasury - General Conditions of Contract (revised July 2010))

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1. Definitions

1. The following terms shall be interpreted as indicated:

- 1.1 'Closing time' means the date and hour specified in the bidding documents for the receipt of bids.
- 1.2 'Contract' means the written agreement entered into between the purchaser and the supplier, as recorded in the contract form signed by the Parties, including all attachments and appendices thereto and all documents incorporated by reference therein.
- 1.3 'Contract price' means the price payable to the supplier under the contract for the full and proper performance of his or her contractual obligations.
- 1.4 'Corrupt practice' means the offering, giving, receiving, or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution.
- 1.5 'Countervailing duties' are imposed in cases in which an enterprise abroad is subsidised by its government and encouraged to market its products internationally.

- 1.6 'Country of origin' means the place where the goods were mined, grown or produced or from which the services are supplied. Goods are produced when, through manufacturing, processing or substantial and major assembly of components, a commercially recognised new product results that is substantially different in basic characteristics or in purpose or utility from its components.
- 1.7 'Day' means calendar day.
- 1.8 'Delivery' means delivery in compliance with the conditions of the contract or order.
- 1.9 'Delivery ex stock' means immediate delivery directly from stock actually on hand.
- 1.10 'Delivery into consignee's store or to his site' means delivered and unloaded in the specified store or depot or on the specified site in compliance with the conditions of the contract or order, the supplier bearing all risks and charges involved until the supplies are so delivered and a valid receipt is obtained.
- 1.11 'Dumping' occurs when a private enterprise abroad markets its goods on its own initiative in the RSA at lower prices than that of the country of origin, and which action has the potential to harm the local industries in the RSA.
- 1.12 'Force majeure' means an event beyond the control of the supplier, not involving the supplier's fault or negligence, and not foreseeable. Such events may include, but are not restricted to, acts of the purchaser in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.
- 1.13 'Fraudulent practice' means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of any bidder, and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial, non-competitive levels and to deprive the bidder of the benefits of free and open competition.
- 1.14 'GCC' means the General Conditions of Contract.
- 1.15 'Goods' means all of the equipment, machinery, and/or other materials that the supplier is required to supply to the purchaser under the contract.
- 1.16 'Imported content' means that portion of the bidding price represented by the cost of components, parts or materials which have been or are still to be imported (whether by the supplier or his subcontractors) and which costs are inclusive of the costs abroad, plus freight and other direct importation costs such as landing costs, dock dues, import duty, sales duty or other similar tax or duty at the South African place of entry as well as transportation and handling charges to the factory in the Republic where the supplies covered by the bid will be manufactured.
- 1.17 'Local content' means that portion of the bidding price which is not included in the imported content, provided that local manufacture does take place.
- 1.18 'Manufacture' means the production of products in a factory using labour, materials, components and machinery, and includes other, related value-adding activities.
- 1.19 'Order' means an official written order issued for the supply of goods or works or the rendering of a service.
- 1.20 'Project site', where applicable, means the place indicated in bidding documents.
- 1.21 'Purchaser' means the organisation purchasing the goods.
- 1.22 'Republic' means the Republic of South Africa.
- 1.23 'SCC' means the Special Conditions of Contract.

1.24 'Services' means those functional services ancillary to the supply of the goods, such as transportation and any other incidental services, such as installation, commissioning, provision of technical assistance, training, catering, gardening, security, maintenance, and other such obligations of the supplier covered under the contract.

1.25 'Written' or 'in writing' means handwritten in ink or any form of electronic or mechanical writing.

2. Application

2.1 These general conditions are applicable to all bids, contracts and orders, including bids for functional and professional services, sales, hiring, letting and the granting or acquiring of rights, but excluding immovable property, unless otherwise indicated in the bidding documents.

2.2 Where applicable, special conditions of contract are also laid down to cover specific supplies, services or works.

2.3 Where such special conditions of contract are in conflict with these general conditions, the special conditions shall apply.

3. General

3.1 Unless otherwise indicated in the bidding documents, the purchaser shall not be liable for any expense incurred in the preparation and submission of a bid. Where applicable, a non-refundable fee for documents may be charged.

3.2 With certain exceptions, invitations to bid are only published in the Government Tender Bulletin. The Government Tender Bulletin may be obtained directly from the Government Printer, Private Bag X85, Pretoria 0001, or accessed electronically from www.treasury.gov.za.

4. Standards

4.1 The goods supplied shall conform to the standards mentioned in the bidding documents and specifications.

5. Use of contract documents and information; inspection.

5.1 The supplier shall not, without the purchaser's prior written consent, disclose the contract, or any provision thereof, or any specification, plan, drawing, pattern, sample, or information furnished by or on behalf of the purchaser in connection therewith, to any person other than a person employed by the supplier in the performance of the contract. Disclosure to any such employed person shall be made in confidence and shall extend only as far as may be necessary for the purposes of such performance.

5.2 The supplier shall not, without the purchaser's prior written consent, make use of any document or information mentioned in GCC clause 5.1, except for purposes of performing the contract.

5.3 Any document, other than the contract itself, mentioned in GCC clause 5.1 shall remain the property of the purchaser and shall be returned (all copies) to the purchaser on completion of the supplier's performance under the contract if so required by the purchaser.

5.4 The supplier shall permit the purchaser to inspect the supplier's records relating to the performance of the supplier and to have them audited by auditors appointed by the purchaser, if so required by the purchaser.

6. Patent rights

6.1 The supplier shall indemnify the purchaser against all third-party claims of infringement of patent, trademark, or industrial design rights arising from the use of the goods or any part thereof by the purchaser.

7. Performance Security

7.1 Within 30 (thirty) days of receipt of the notification of contract award, the successful bidder shall furnish to the purchaser the performance security of the amount specified in the SCC.

- 7.2 The proceeds of the performance security shall be payable to the purchaser as compensation for any loss resulting from the supplier's failure to complete his obligations under the contract.
- 1.3 The performance security shall be denominated in the currency of the contract or in a freely convertible currency acceptable to the purchaser, and shall be in one of the following forms:
- a) a bank guarantee or an irrevocable letter of credit issued by a reputable bank located in the purchaser's country or abroad, acceptable to the purchaser, in the form provided in the bidding documents or another form acceptable to the purchaser; or
 - b) A cashier's or certified cheque.
- 7.4 The performance security will be discharged by the purchaser and returned to the supplier not later than 30 (thirty) days following the date of completion of the supplier's performance obligations under the contract, including any warranty obligations, unless otherwise specified in the SCC.

8. Inspections, tests and analyses

- 8.1 All pre-bidding testing will be for the account of the bidder.
- 8.2 If it is a bid condition that supplies to be produced or services to be rendered should at any stage during production or execution or on completion be subject to inspection, the premises of the bidder or contractor shall be open, at all reasonable hours, for inspection by a representative of the Department or an organisation acting on behalf of the Department.
- 8.3 If there are no inspection requirements indicated in the bidding documents and no mention of such is made in the contract, but during the contract period it is decided that inspections shall be carried out, the purchaser shall itself make the necessary arrangements, including payment arrangements with the testing authority concerned.
- 8.4 If the inspections, tests and analyses referred to in clauses 8.2 and 8.3 show the supplies to be in accordance with the contract requirements, the cost of the inspections, tests and analyses shall be defrayed by the purchaser.
- 8.5 Where the supplies or services referred to in clauses 8.2 and 8.3 do not comply with the contract requirements, irrespective of whether such supplies or services are accepted or not, the cost in connection with these inspections, tests or analyses shall be defrayed by the supplier.
- 8.6 Supplies and services which are referred to in clauses 8.2 and 8.3 and which do not comply with the contract requirements may be rejected.
- 8.7 Any contract supplies may on or after delivery be inspected, tested or analysed and may be rejected if found not to comply with the requirements of the contract. Such rejected supplies shall be held at the cost and risk of the supplier, who shall, when called upon, remove them immediately at his own cost and forthwith substitute them with supplies which do comply with the requirements of the contract. Failing such removal, the rejected supplies shall be returned at the suppliers cost and risk. Should the supplier fail to provide the substitute supplies forthwith, the purchaser may, without giving the supplier further opportunity to substitute the rejected supplies, purchase such supplies as may be necessary at the expense of the supplier.
- 8.8 The provisions of clauses 8.4 to 8.7 shall not prejudice the right of the purchaser to cancel the contract on account of a breach of the conditions thereof, or to act in terms of Clause 23 of the GCC.

9. Packing

- 9.1 The supplier shall provide such packing of the goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit, and open storage. Packing, case size and weights shall take into consideration, where appropriate, the remoteness of the goods' final destination and the absence of heavy handling facilities at all points in transit.

- 9.2 The packing, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the contract, including additional requirements, if any, specified in the SCC, and in any subsequent instructions ordered by the purchaser.

10. Delivery and documents

- 10.1 Delivery of the goods shall be made by the supplier in accordance with the terms specified in the contract. The details of shipping and/or other documents to be furnished by the supplier are specified in the SCC.
- 10.2 Documents to be submitted by the supplier are specified in the SCC.

11. Insurance

- 11.1 The goods supplied under the contract shall be fully insured, in a freely convertible currency, against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery in the manner specified in the SCC.

12. Transportation

- 12.1 Should a price other than an all-inclusive delivered price be required, this shall be specified in the SCC.

13. Incidental Services

- 13.1 The supplier may be required to provide any or all of the following services, including additional services (if any) specified in the SCC:
- (a) performance or supervision of on-site assembly, and/or commissioning of the supplied goods;
 - (b) furnishing of tools required for the assembly and/or maintenance of the supplied goods;
 - (c) furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied goods;
 - (d) performance or supervision or maintenance and/or repair of the supplied goods, for a period of time agreed by the Parties, provided that this service shall not relieve the supplier of any warranty obligations under this contract; and
 - (e) training of the purchaser's personnel, at the supplier's plant and/or on-site, in assembly, start-up, operation, maintenance, and/or repair of the supplied goods.
- 13.2 Prices charged by the supplier for incidental services, if not included in the contract price for the goods, shall be agreed upon in advance by the Parties and shall not exceed the prevailing rates charged to other Parties by the supplier for similar services.

14. Spare parts

- 14.1 As specified in the SCC, the supplier may be required to provide any or all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the supplier:
- (a) such spare parts as the purchaser may elect to purchase from the supplier, provided that this election shall not relieve the supplier of any warranty obligations under the contract; and
 - (b) in the event of termination of production of the spare parts:
 - (i) Advance notification to the purchaser of the pending termination, in sufficient time to permit the purchaser to procure needed requirements; and
 - (ii) following such termination, furnishing at no cost to the purchaser, the blueprints, drawings, and specifications of the spare parts, if requested.

15. Warranty

- 15.1 The supplier warrants that the goods supplied under the contract are new, unused, of the most recent or current models, and that they incorporate all recent improvements in design and materials unless provided otherwise in the contract. The supplier further warrants that all goods supplied under this contract shall have no defect arising from design, materials, or workmanship (except when the design and/or material is required by the purchaser's specifications), or from any act or omission of the supplier, that may develop under normal use of the supplied goods in the conditions prevailing in the country of final destination.

15.2 This warranty shall remain valid for 12 (twelve) months after the goods, or any portion thereof, as the case may be, have been delivered to and accepted at the final destination indicated in the contract, or for 18 (eighteen) months after the date of shipment from the port or place of loading in the source country, whichever period concludes earlier, unless specified otherwise in the SCC.

15.3 The purchaser shall notify the supplier promptly, in writing, of any claims arising under this warranty.

15.4 Upon receipt of such notice, the supplier shall, within the period specified in the SCC and with all reasonable speed, repair or replace the defective goods or parts thereof, without costs to the purchaser.

15.5 If the supplier, having been notified, fails to remedy the defect(s) within the period specified in the SCC, the purchaser may proceed to take such remedial action as may be necessary, at the supplier's risk and expense and without prejudice to any other rights which the purchaser may have against the supplier under the contract.

16. Payment

16.1 The method and conditions of payment to be made to the supplier under this contract shall be specified in the SCC.

16.2 The supplier shall furnish the purchaser with an invoice accompanied by a copy of the delivery note and upon fulfilment of any other obligations stipulated in the contract.

16.3 Payments shall be made promptly by the purchaser, but in no case later than 30 (thirty) days after submission of an invoice or claim by the supplier.

16.4 Payment will be made in Rand unless otherwise stipulated in the SCC.

17. Prices

17.1 Prices charged by the supplier for goods delivered and services performed under the contract shall not vary from the prices tendered by the supplier in his bid, with the exception of any price adjustments authorized in the SCC or in the purchaser's request for bid validity extension, as the case may be.

18. Contract Amendments

18.1 No variation in or modification of the terms of the contract shall be made except by written amendment signed by the Parties concerned.

19. Assignment

19.1 The supplier shall not assign, in whole or in part, its obligations to perform under the contract, except with the purchaser's prior written consent.

20. Subcontracts

20.1 The supplier shall notify the purchaser in writing of all subcontracts awarded under this contract if not already specified in the bid. Such notification, in the original bid or later, shall not relieve the supplier from any liability or obligation under the contract.

21. Delays in the supplier's performance

21.1 Delivery of the goods and performance of services shall be made by the supplier in accordance with the time schedule prescribed by the purchaser in the contract.

21.2 If at any time during the performance of the contract, the supplier or its subcontractor(s) should encounter conditions impeding timely delivery of the goods and performance of services, the supplier shall promptly notify the purchaser in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the supplier's notice, the purchaser shall evaluate the situation and may at his or her discretion extend the supplier's time for performance, with or without the imposition of penalties, in which case the extension shall be ratified by the Parties by amendment of contract.

- 21.3 No provision in a contract shall be deemed to prohibit the obtaining of supplies or services from a national department, provincial department, or a local authority.
- 21.4 The right is reserved to procure, outside of the contract, small quantities of supplies; or to have minor essential services executed if an emergency arises, or the supplier's point of supply is not situated at or near the place where the supplies are required, or the supplier's services are not readily available.
- 21.5 Except as provided under GCC Clause 25, a delay by the supplier in the performance of its delivery obligations shall render the supplier liable to the imposition of penalties, pursuant to GCC Clause 22, unless an extension of time is agreed upon pursuant to GCC Clause 21.2 without the application of penalties.
- 21.6 Upon any delay beyond the delivery period in the case of a supplies contract, the purchaser shall, without cancelling the contract, be entitled to purchase supplies of a similar quality and up to the same quantity in substitution of the goods not supplied in conformity with the contract and to return any goods delivered later at the supplier's expense and risk, or to cancel the contract and buy such goods as may be required to complete the contract and, without prejudice to his other rights, be entitled to claim damages from the supplier.

22. Penalties

- 22.1 Subject to GCC Clause 25, if the supplier fails to deliver any or all of the goods or to perform the services within the period(s) specified in the contract, the purchaser shall, without prejudice to its other remedies under the contract, deduct from the contract price, as a penalty, a sum calculated on the delivered price of the delayed goods or unperformed services, using the current prime interest rate, calculated for each day of the delay until actual delivery or performance. The purchaser may also consider termination of the contract pursuant to GCC Clause 23.

23. Termination for default

- 23.1 The purchaser, without prejudice to any other remedy for breach of contract, by written notice of default sent to the supplier, may terminate this contract in whole or in part:
- (a) if the supplier fails to deliver any or all of the goods within the period(s) specified in the contract, or within any extension thereof granted by the purchaser pursuant to GCC Clause 21.2;
 - (b) if the supplier fails to perform any other obligation(s) under the contract; or
 - (c) if the supplier, in the judgment of the purchaser, has engaged in corrupt or fraudulent practices in competing for or in executing the contract.
- 23.2 In the event the purchaser terminates the contract in whole or in part, the purchaser may procure, upon such terms and in such manner as it deems appropriate, goods, works or services similar to those undelivered, and the supplier shall be liable to the purchaser for any excess costs for such similar goods, works or services. However, the supplier shall continue performance of the contract to the extent not terminated.
- 23.3 Where the purchaser terminates the contract in whole or in part, the purchaser may decide to impose a restriction penalty on the supplier by prohibiting such supplier from doing business with the public sector for a period not exceeding 10 years.
- 23.4 If a purchaser intends imposing a restriction on a supplier or any person associated with the supplier, the supplier will be allowed a time period of not more than 14 (fourteen) days to provide reasons why the envisaged restriction should not be imposed. Should the supplier fail to respond within the stipulated 14 (fourteen) days the purchaser may regard the intended penalty as not objected against and may impose it on the supplier.
- 23.5 Any restriction imposed on any person by the Accounting Officer/Authority will, at the discretion of the Accounting Officer/Authority, also be applicable to any other enterprise or any partner, manager, director or other person who wholly or partly exercises or exercised or may exercise control over the enterprise of the first-mentioned person, and with which enterprise or person the first-mentioned person is or was, in the opinion of the Accounting Officer/Authority, actively associated.

23.6 If a restriction is imposed, the purchaser must, within 5 (five) working days of such imposition, furnish the National Treasury with the following information:

- (i) the name and address of the supplier and/or person restricted by the purchaser;
- (ii) the date of commencement of the restriction;
- (iii) the period of restriction; and
- (iv) the reasons for the restriction.

These details will be loaded in the National Treasury's central database of suppliers or persons prohibited from doing business with the public sector.

23.7 If a court of law convicts a person of an offence as contemplated in sections 12 or 13 of the Prevention and Combating of Corrupt Activities Act, Act 12 of 2004, the court may also rule that such person's name be endorsed on the Register for Tender Defaulters. When a person's name has been endorsed on the Register, the person will be prohibited from doing business with the public sector for a period of not less than five years and not more than 10 years. The National Treasury is empowered to determine the period of restriction, and each case will be dealt with on its own merits. According to section 32 of the Act the Register must be open to the public. The Register can be perused on the National Treasury website.

24. Anti-dumping and countervailing duties and rights

24.1 When, after the date of bid, provisional payments are required, or anti-dumping or countervailing duties are imposed, or the amount of a provisional payment or anti-dumping or countervailing right is increased in respect of any dumped or subsidised import, the State is not liable for any amount so required or imposed, or for the amount of any such increase. When, after the said date, such a provisional payment is no longer required or any such anti-dumping or countervailing right is abolished, or where the amount of such provisional payment or any such right is reduced, any such favourable difference shall, on demand, be paid forthwith by the contractor to the State, or the State may deduct such amounts from moneys (if any) which may otherwise be due to the contractor in regard to supplies or services which he or she delivered or rendered, or is to deliver or render in terms of the contract or any other contract or any other amount which may be due to him or her.

25. Force majeure

25.1 Notwithstanding the provisions of GCC Clauses 22 and 23, the supplier shall not be liable for forfeiture of its performance security, damages, or termination for default if, and to the extent that, his delay in performance or other failure to perform his obligations under the contract is the result of an event of force majeure.

25.2 If a force majeure situation arises, the supplier shall notify the purchaser promptly, in writing, of such condition and the cause thereof. Unless otherwise directed by the purchaser in writing, the supplier shall continue to perform its obligations under the contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the force majeure event.

26. Termination for insolvency

26.1 The purchaser may at any time terminate the contract by giving written notice to the supplier if the supplier becomes bankrupt or otherwise insolvent. In this event, termination will be without compensation to the supplier, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the purchaser.

27. Settlement of Disputes

27.1 If any dispute or difference of any kind whatsoever arises between the purchaser and the supplier in connection with or arising out of the contract, the Parties shall make every effort to resolve such dispute or difference amicably, by mutual consultation.

27.2 If, after 30 (thirty) days, the Parties have failed to resolve their dispute or difference by such mutual consultation, then either the purchaser or the supplier may give notice to the other party of his intention to commence with mediation. No mediation in respect of this matter may be commenced unless such notice is given to the other party.

27.3 Should it not be possible to settle a dispute by means of mediation, it may be settled in a South African court of law.

27.4 Mediation proceedings shall be conducted in accordance with the rules of procedure specified in the SCC.

27.5 Notwithstanding any reference to mediation and/or court proceedings herein,

- (a) the Parties shall continue to perform their respective obligations under the contract unless they otherwise agree; and
- (b) the purchaser shall pay the supplier any monies due to the supplier.

28. Limitation of Liability

28.1 Except in cases of criminal negligence or wilful misconduct, and in the case of infringement pursuant to Clause 6:

- (a) the supplier shall not be liable to the purchaser, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the supplier to pay penalties and/or damages to the purchaser; and
- (b) the aggregate liability of the supplier to the purchaser, whether under the contract, in tort or otherwise, shall not exceed the total contract price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment.

29. Governing language

29.1 The contract shall be written in English. All correspondence and other documents pertaining to the contract that is exchanged by the Parties shall also be written in English.

30. Applicable Law

30.1 The contract shall be interpreted in accordance with South African laws, unless otherwise specified in the SCC.

31. Notices

31.1 Every written acceptance of a bid shall be posted to the supplier concerned by registered or certified mail, and any other notice to him shall be posted by ordinary mail, to the address furnished in his bid or to the address notified later by him in writing; and such posting shall be deemed to be proper service of such notice.

31.2 The time mentioned in the contract documents for performing any act after such aforesaid notice has been given, shall be reckoned from the date of posting of such notice.

32. Taxes and Duties

32.1 A foreign supplier shall be entirely responsible for all taxes, stamp duties, licence fees, and other such levies imposed outside the purchaser's country.

32.2 A local supplier shall be entirely responsible for all taxes, duties, licence fees, etc., incurred until delivery of the contracted goods to the purchaser.

32.3 No contract shall be concluded with any bidder whose tax matters are not in order. Prior to the award of a bid the Department must be in possession of a tax clearance certificate submitted by the bidder. This certificate must be an original issued by the South African Revenue Services.

33. National Industrial Participation (NIP) Programme

33.1 The NIP Programme administered by the Department of Trade and Industry shall be applicable to all contracts that are subject to the NIP obligation.

34 Prohibition of Restrictive practices

34.1 In terms of section 4 (1) (b) (iii) of the Competition Act, Act 89 of 1998, as amended, an agreement between or concerted practice by firms, or a decision by an association of firms, is prohibited if it is between Parties in a horizontal relationship and if a bidder(s) is/are or a contractor(s) was/were involved in collusive bidding (or bid rigging).

- 34.2 If a bidder(s) or contractor(s), based on reasonable grounds or evidence obtained by the purchaser, has/have engaged in the restrictive practice referred to above, the purchaser may refer the matter to the Competition Commission for investigation and possible imposition of administrative penalties as contemplated in the Competition Act, Act 89 of 1998.
- 34.3 If a bidder(s) or contractor(s) has/have been found guilty by the Competition Commission of the restrictive practice referred to above, the purchaser may, in addition and without prejudice to any other remedy provided for, invalidate the bid(s) for such item(s) offered, and/or terminate the contract in whole or part, and/or restrict the bidder(s) or contractor(s) from conducting business with the public sector for a period not exceeding 10 (ten) years and/or claim damages from the bidder(s) or contractor(s) concerned.

C.8 ANNEXURES

Annexure A – Pro Forma Insurance Broker’s Warranty

Broker Logo

Letterhead of supplier’s Insurance Broker

Date _____

CCT
City Manager
Civic Centre
12 Hertzog Boulevard
Cape Town
8000

Dear Sir

TENDER NO.: 303G/2023/24

TENDER DESCRIPTION: SUPPLY AND DELIVERY OF 18M LOW FLOOR/LOW-ENTRY DIESEL POWERED BUSES FOR THE MYCITI METRO SOUTH EAST (MSE) ROLL-OUT

NAME OF SUPPLIER: _____

I, the undersigned, do hereby confirm and warrant that all the insurances required in terms of the abovementioned contract have been issued and/or in the case of blanket/umbrella policies, have been endorsed to reflect the interests of the CCT with regard to the abovementioned contract, and that all the insurances and endorsements, etc., are all in accordance with the requirements of the contract.

I furthermore confirm that all premiums in the above regard have been paid.

Yours faithfully

Signed: _____

For: _____ (Supplier’s Insurance Broker)

Annexure B – Monthly Project Labour Report

NOT APPLICABLE

Annexure C - Pro Forma Performance Security/ Guarantee

NOT APPLICABLE

Annexure D - Pro Forma Advance Payment Guarantee

ADVANCE PAYMENT GUARANTEE

GUARANTOR DETAILS AND DEFINITIONS

"Guarantor" means:

Physical address of guarantor:

"Supplier" means:

"Contract Sum" means: The accepted tender amount (INCLUSIVE of VAT) of R

Amount in words:

"Contract" means: The agreement made in terms of the Form of Offer and Acceptance and such amendments or additions to the Contract as may be agreed in writing between the Parties.

"Plant and materials" means: The Plant and materials in respect of which an advance payment prior to manufacture is required, which the CCT has agreed may be subject to advance payment, such Plant and materials being listed in the Schedule of Plant and materials.

"Schedule of Plant and materials" means: A list of Plant and materials which shows the value thereof to be included in the Guaranteed Advance Payment Sum.

"Guaranteed Advance Payment Sum" means: The maximum amount of R.....

Amount in words:

1. The Guarantor's liability shall be limited to the amount of the Guaranteed Advance Payment Sum.
2. The Guarantor's period of liability shall be from and including the date of issue of this Advance Payment Guarantee and up to and including the termination of the Contract or the date of payment in full of the Guaranteed Advance Payment Sum, whichever occurs first.
3. The Guarantor hereby acknowledges that:
 - 3.1 any reference in this Advance Payment Guarantee to the Contract is made for the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a suretyship;
 - 3.2 Its obligation under this Advance Payment Guarantee is restricted to the payment of money.
4. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor hereby undertakes to pay the CCT the sum advanced to the Supplier upon receipt of the documents identified in 4.1 to 4.2:
 - 4.1 A copy of a first written demand issued by the CCT to the Supplier stating that payment of a sum advanced by the CCT has not been repaid by the Supplier in terms of the Contract ("default") and failing such payment within seven (7) calendar days, the CCT intends to call upon the Guarantor to make payment in terms of 4.2;
 - 4.2 A first written demand issued by the CCT to the Guarantor at the Guarantor's physical address with a copy to the Supplier stating that a period of seven (7) calendar days has elapsed since the first written demand in terms of 4.1 and the sum advanced has still not been repaid by the Supplier.
5. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor undertakes to pay to the CCT the Guaranteed Advance Payment Sum or the full outstanding balance not repaid upon receipt of a first written demand from the CCT to the Guarantor at the Guarantor's physical address calling up this Advance Payment Guarantee, such demand stating that:

- 5.1 the Contract has been terminated due to the Supplier's default and that this Advance Payment Guarantee is called up in terms of 5; or
 - 5.2 a provisional or final sequestration or liquidation court order has been granted against the Supplier and that the Advance Payment Guarantee is called up in terms of 5; and
 - 5.3 The aforesaid written demand is accompanied by a copy of the notice of termination and/or the provisional/final sequestration and/or the provisional liquidation court order.
6. It is recorded that the aggregate amount of payments required to be made by the Guarantor in terms of 4 and 5 shall not exceed the Guarantor's maximum liability in terms of 1.
 7. Payment by the Guarantor in terms of 4 or 5 shall be made within seven (7) calendar days upon receipt of the first written demand to the Guarantor.
 9. The CCT shall have the absolute right to arrange its affairs with the Supplier in any manner which the CCT may deem fit and the Guarantor shall not have the right to claim his release from this Advance Payment Guarantee on account of any conduct alleged to be prejudicial to the Guarantor.
 10. The Guarantor chooses the physical address as stated above for the service of all notices for all purposes in connection herewith.
 11. This Advance Payment Guarantee is neither negotiable nor transferable and shall expire in terms of 2, where after no claims will be considered by the Guarantor. The original of this Guarantee shall be returned to the Guarantor after it has expired.
 12. This Advance Payment Guarantee, with the required demand notices in terms of 4 or 5, shall be regarded as a liquid document for the purposes of obtaining a court order.
 13. Where this Guarantee/Performance Security is issued in the Republic of South Africa the Guarantor hereby consents in terms of Section 45 of the Magistrate's Courts Act No 32 of 1944, as amended, to the jurisdiction of the Magistrate's Court of any district having jurisdiction in terms of Section 28 of the said Act, notwithstanding that the amount of the claim may exceed the jurisdiction of the Magistrate's Court.

Signed at

Date

Guarantor's signatory (1)

Capacity

Guarantor's signatory (2)

Capacity

Witness signatory (1)

Witness signatory (2)

Approved Financial Institution as at 28 February 2023:**1.1 National Banks**

ABSA Bank Limited
Firststrand Bank Limited
Investec Bank Limited
Nedbank Limited
Standard Bank of South Africa Limited

1.2 International Banks (with branches in South Africa)

Barclays Bank PLC
Citibank NA
Credit Agricole Corporate and Investment Bank
HSBC Bank PLC
JPMorgan Chase Bank
Societe Generale
Standard Chartered Bank

1.3 Insurance Companies

American International Group Inc (AIG)
Bryte Insurance Company Limited
Coface SA
Compass Insurance Company Limited
Credit Guarantee Insurance Corporation of Africa Limited
Guardrisk Insurance Company Limited
Hollard Insurance Company Limited
Infiniti Insurance Limited
Lombard Insurance Company Limited
Mutual and Federal Risk Financing Limited
New National Assurance Company Limited
PSG Konsult Ltd (previously Absa Insurance)
Regent Insurance Company Limited
Renasa Insurance Company Limited
Santam Limited...]

Annexure F - Tender Returnable Documents

Schedule F.1: Contract Price Adjustment

A. Variations in Rate of Exchange

Only tenderers who are the DIRECT IMPORTER of the Goods may claim rate of exchange price variations. (Refer to Special Conditions of Contract **Clause 17** and **Schedule 10: Price Basis for Imported Resources**.)

B. Escalation in Prices for imported Plant and Materials

Refer to Special conditions of Contract **Clause 17**.

Table to be completed by Tenderer

Country of Manufacture	Index used	% Labour	% Material

The Tenderer shall indicate below the authority responsible for publishing of the indices for the CPA Index listed above and the source and frequency (date) of published the indices.

Authority: _____

Frequency (or date) of publication of monthly statistical indices: _____

Source of Indices (i.e. URL with explicit reference to index site): _____

Tenderers are to attach sample extract from the source publication of the monthly indices cited above.

Attached: Yes / No

Should the tenderer elect not to provide the above information the contract price shall not be adjusted for variations in the cost of imported plant and materials.

Signature
Print name:
On behalf of the tenderer (duly authorised)

Date

C. Escalation in Prices for imported Plant and Materials

[illegible]

* State Customs Duty Tariff Reference for each item

Note:

Note that any Resources not inserted in this Returnable Schedule shall be deemed to be manufactured / supplied in South Africa for the purposes of Contract Price Adjustment. The BASE DATE referred to in column (B) will be 7 calendar days before tender closing.

SIGNED ON BEHALF OF TENDERER:

Schedule F.2: Certificate of Authority for Partnerships/ Joint Ventures/ Consortiums

This schedule is to be completed if the tender is submitted by a partnership/joint venture/ consortium.

1. We, the undersigned, are submitting this tender offer as a partnership/ joint venture/ consortium and hereby authorize Mr/Ms _____, of the authorised entity _____, acting in the capacity of Lead Partner, to sign all documents in connection with the tender offer and any contract resulting from it on the partnership/joint venture/ consortium's behalf.
2. By signing this schedule the partners to the partnership/joint venture/ consortium:
 - 2.1 warrant that the tender submitted is in accordance with the main business and objectives of the partnership/joint venture/ consortium;
 - 2.2 agree that the CCT shall make all payments in terms of this Contract into the following bank account of the Lead Partner:
 Account Holder: _____
 Financial Institution: _____
 Branch Code: _____
 Account No.: _____
 - 2.3 agree that in the event that there is a change in the partnership/ joint venture/ consortium and/or should a dispute arise between the partnership/joint venture/ consortium partners, that the CCT shall continue to make any/all payments due and payable in terms of the Contract into the aforesaid bank account until such time as the CCT is presented with a Court Order or an original agreement (signed by each and every partner of the partnership/joint venture/ consortium) notifying the CCT of the details of the new bank account into which it is required to make payment.
 - 2.4 agree that they shall be jointly and severally liable to the CCT for the due and proper fulfilment by the successful tenderer/supplier of its obligations in terms of the Contract as well as any damages suffered by the CCT as a result of breach by the successful tenderer/supplier. The partnership/joint venture/ consortium partners hereby renounce the benefits of excussion and division.

SIGNED BY THE PARTNERS OF THE PARTNERSHIP/ JOINT VENTURE/ CONSORTIUM		
NAME OF FIRM	ADDRESS	DULY AUTHORISED SIGNATORY
Lead partner		Signature..... Name..... Designation.....
		Signature..... Name..... Designation.....
		Signature..... Name..... Designation.....
		Signature..... Name..... Designation.....

Note: A copy of the Joint Venture Agreement shall be appended to *List of Other Documents Attached by Tenderer Schedule*.

Schedule F.3: Declaration for Procurement above R10 million

If the value of the transaction is expected to exceed R10 million (VAT included) the tenderer shall complete the following questionnaire, attach the necessary documents and sign this schedule:

1. Are you by law required to prepare annual financial statements for auditing? **(Please mark with X)**

YES		NO	
-----	--	----	--

If YES, submit audited annual financial statements:

- (i) For the past three years, or
(ii) Since the date of establishment of the tenderer (if established during the past three years)

By attaching such audited financial statements to **List of Other Documents Attached by Tenderer Schedule**.

2. Do you have any outstanding undisputed commitments for municipal services towards the CCT or other municipality in respect of which payment is overdue for more than 30 (thirty) days? **(Please mark with X)**

YES		NO	
-----	--	----	--

- 2.1 If NO, this serves to certify that the tenderer has no undisputed commitments for municipal services towards any municipality for more than three (3) (three) months in respect of which payment is overdue for more than 30 (thirty) days.

- 2.2 If YES, provide particulars:

3. Has any contract been awarded to you by an organ of state during the past five (5) years? **(Please mark with X)**

YES		NO	
-----	--	----	--

If YES, insert particulars in the table below including particulars of any material non-compliance or dispute concerning the execution of such contract. Alternatively attach the particulars to **List of Other Documents Attached by Tenderer** schedule in the same format as the table below:

Organ of State	Contract Description	Contract Period	Non-compliance/dispute (if any)

4. Will any portion of the goods or services be sourced from outside the Republic, and if so, what portion and whether any portion of payment from the CCT is expected to be transferred out of the Republic? **(Please mark with X)**

YES		NO	
-----	--	----	--

If YES, furnish particulars below

The tenderer hereby certifies that the information set out in this schedule and/or attached hereto is true and correct, and acknowledges that failure to properly and truthfully complete this schedule may result in steps being taken against the tenderer, the tender being disqualified, and/or (in the event that the tenderer is successful) the cancellation of the contract, restriction of the tenderer or the exercise by the CCT of any other remedies available to it.

Signature
Print name:
On behalf of the tenderer (duly authorised)

Date

Schedule F.4: Preference Points Claim Form In Terms Of the Preferential Procurement Regulations 2022

1. GENERAL CONDITIONS

- 1.1 The following preference point systems are applicable to invitations to tender:
- the 90/10 system for requirements with a Rand value above R50 000 000 (all applicable taxes included).

1.2 To be completed by the organ of state

The applicable preference point system for this tender is the 90/10 preference point system.

- 1.3 Points for this tender (even in the case of a tender for income-generating contracts) shall be awarded for:
- (a) Price; and
 - (b) Specific Goals.

1.4 To be completed by the organ of state:

The maximum points for this tender are allocated as follows:

	POINTS
PRICE	90
SPECIFIC GOALS	10
Total points for Price and SPECIFIC GOALS	100

- 1.5 Failure on the part of a tenderer to submit proof or documentation required in terms of this tender to claim points for specific goals with the tender, will be interpreted to mean that preference points for specific goals are not claimed.
- 1.6 The organ of state reserves the right to require of a tenderer, either before a tender is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the organ of state.

2. DEFINITIONS

The following definitions shall apply to this schedule:

- (a) "tender" means a written offer in the form determined by an organ of state in response to an invitation to provide goods or services through price quotations, competitive tendering process or any other method envisaged in legislation;
- (b) "price" means an amount of money tendered for goods or services, and includes all applicable taxes less all unconditional discounts;
- (c) "rand value" means the total estimated value of a contract in Rand, calculated at the time of bid invitation, and includes all applicable taxes;
- (d) "tender for income-generating contracts" means a written offer in the form determined by an organ of state in response to an invitation for the origination of income-generating contracts through any method envisaged in legislation that will result in a legal agreement between the organ of state and a third party that produces revenue for the organ of state, and includes, but is not limited to, leasing and disposal of assets and concession contracts, excluding direct sales and disposal of assets through public auctions; and
- (e) "The Act" means the Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000).

3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES**POINTS AWARDED FOR PRICE****THE 90/10 PREFERENCE POINT SYSTEMS**

A maximum of 90 points is allocated for price on the following basis:

90/10

Where

Ps = Points scored for price of tender under consideration

Pt = Price of tender under consideration

Pmin = Price of lowest acceptable tender

4. POINTS AWARDED FOR SPECIFIC GOALS

4.1 In terms of Regulation 4(2); 5(2); 6(2) and 7(2) of the Preferential Procurement Regulations, preference points must be awarded for specific goals stated in the tender. For the purposes of this tender the tenderer will be allocated points based on the goals stated in table 1 below as may be supported by proof/documentation stated in the conditions of this tender:

4.2 In cases where organs of state intend to use Regulation 3(2) of the Regulations, which states that, if it is unclear whether the 80/20 or 90/10 preference point system applies, an organ of state must, in the tender documents, stipulate in the case of—

- (a) an invitation for tender for income-generating contracts, that either the 80/20 or 90/10 preference point system will apply and that the highest acceptable tender will be used to determine the applicable preference point system; or
- (b) any other invitation for tender, that either the 80/20 or 90/10 preference point system will apply and that the lowest acceptable tender will be used to determine the applicable preference point system,

then the organ of state must indicate the points allocated for specific goals for both the 90/10 and 80/20 preference point system.

Table 1: Specific goals for the tender and points claimed are indicated per the table below.

(Note to organs of state: Where either the 90/10 preference point system is applicable, corresponding points must also be indicated as such.

Note to tenderers: The tenderer must indicate how they claim points for each preference point system.)

The specific goals allocated points in terms of this tender	To be Completed by the Organ of State	To be Completed by the Tenderer
	Number of points Allocated (90/10 system)	Number of points claimed (90/10 system)
Gender	3	
Race	3	
Disability	1	
Promotion of Micro and Small Enterprises	3	

DECLARATION WITH REGARD TO COMPANY/FIRM

4.3 Name of company/firm.....

4.4 Company registration number:

4.5 TYPE OF COMPANY/ FIRM

- ☐ Partnership/Joint Venture / Consortium
- ☐ One-person business/sole propriety
- ☐ Close corporation
- ☐ Public Company
- ☐ Personal Liability Company
- ☐ (Pty) Limited
- ☐ Non-Profit Company

☐ State Owned Company

[Tick applicable box]

4.6

I, the undersigned, who is duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the specific goals as advised in the tender, qualifies the company/ firm for the preference(s) shown and I acknowledge that:

- ii) The information furnished is true and correct;
- iii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;
- iv) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 4.1 and 4.2, the Supplier may be required to furnish documentary proof to the satisfaction of the organ of state that the claims are correct;
- v) If the specific goals have been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the organ of state may, in addition to any other remedy it may have –
 - (a) disqualify the person from the tendering process;
 - (b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;
 - (c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;
 - (d) recommend that the tenderer or Supplier, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted from obtaining business from any organ of state for a period not exceeding 10 years, after the audi alteram partem (hear the other side) rule has been applied; and
 - (e) forward the matter for criminal prosecution, if deemed necessary.

<i>Signature of Tenderer</i>	<i>Date</i>	<i>Name and Surname</i>	<i>Address</i>

For official use.

**SIGNATURE OF CCT OFFICIALS AT
TENDER OPENING**

1.	2.	3.
----	----	----

Schedule F.5: Declaration of Interest – State Employees (MBD 4 amended)

1. No bid will be accepted from:
 - 1.1 persons in the service of the state¹, or
 - 1.2 if the person is not a natural person, of which any director, manager or principal shareholder or stakeholder is in the service of the state, or
 - 1.3 from persons, or entities of which any director, manager or principal shareholder or stakeholder, has been in the service of the City of Cape Town (CCT) during the previous twelve (12) months, or
 - 1.4 from an entity who has employed a former CCT employee who was at a level of T14 or higher at the time of leaving the CCT's employ and involved in any of the CCT's bid committees for the bid submitted, if:
 - 1.4.1 the CCT employee left the CCT's employment voluntarily, during the previous twelve (12) months;
 - 1.5 a person who was a CCT employee, or an entity that employs a CCT employee, if
 - 1.5.1 the CCT employee left the CCT's employment whilst under investigation for alleged misconduct, or
 - 1.5.2 was facing disciplinary action or potential disciplinary action by the CCT, or
 - 1.5.3 was involved in a dispute against the CCT during the previous thirty six (36) months.

2. Any person, having a kinship with persons in the service of the state, including a blood relationship, may make an offer or offers in terms of this invitation to bid. In view of possible allegations of favouritism, should the resulting bid, or part thereof, be awarded to persons connected with or related to persons in service of the state, it is required that the tenderer or their authorised representative declare their position in relation to the evaluating/adjudicating authority.

3. In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.
 - 3.1 Full Name of tenderer or his or her representative: _____
 - 3.2 Identity Number: _____
 - 3.3 Position occupied in the Company (director, trustee, shareholder²): _____
 - 3.4 Company or Close Corporation Registration Number: _____
 - 3.5 Tax Reference Number: _____
 - 3.6 VAT Registration Number: _____
 - 3.7 The names of all directors / trustees / shareholders members, their individual identity numbers and state employee numbers must be indicated in paragraph 4 below.
 - 3.8 Are you presently in the service of the state? **YES / NO**
 - 3.8.1 If yes, furnish particulars: _____
 - 3.9 Have you been in the service of the state for the past twelve months? **YES / NO**
 - 3.9.1 If yes, furnish particulars: _____
 - 3.10 Do you have any relationship (family, friend, other) with persons in the service of the state and who may be involved with the evaluation and or adjudication of this bid? **YES / NO**
 - 3.10.1 If yes, furnish particulars: _____
 - 3.11 Are you, aware of any relationship (family, friend, other) between any other tenderer and any persons in the service of the state who may be involved with the evaluation and or adjudication of this bid? **YES / NO**
 - 3.11.1 If yes, furnish particulars: _____
 - 3.12 Are any of the company's directors, trustees, managers, principle shareholders or stakeholders in service of the state? **YES / NO**
 - 3.12.1 If yes, furnish particulars: _____

- 3.13 Are any spouse, child or parent of the company's directors, trustees, managers, principle shareholders or stakeholders in service of the state? **YES / NO**
 3.13.1 If yes, furnish particulars: _____
- 3.14 Do you or any of the directors, trustees, managers, principle shareholders, or stakeholders of this company have any interest in any other related companies or business whether or not they are bidding for this contract? **YES / NO**
 3.14.1 If yes, furnish particulars: _____
- 3.15 Have you, or any of the directors, trustees, managers, principle shareholders, or stakeholders of this company been in the service of the CCT in the past twelve months? **YES / NO**
 3.15.1 If yes, furnish particulars: _____
- 3.16 Do you have any employees who was in the service of the CCT at a level of T14 or higher at the time they left the employ of the CCT, and who was involved in any of the CCT's bid committees for this bid? **YES / NO**
 3.16.1 If yes, furnish particulars: _____

4. Full details of directors / trustees / members / shareholders

Full Name	Identity Number	State Employee Number

If the above table does not sufficient to provide the details of all directors / trustees / shareholders, please append full details to the tender submission.

The tenderer hereby certifies that the information set out in this schedule and/or attached hereto is true and correct, and acknowledges that failure to properly and truthfully complete this schedule may result in steps being taken against the tenderer, the tender being disqualified, and/or (in the event that the tenderer is successful) the cancellation of the contract, restriction of the tenderer or the exercise by the CCT of any other remedies available to it.

Signature _____

Print name: _____

Date _____

On behalf of the tenderer (duly authorised)

'MSCM Regulations: "in the service of the state" means to be –

(a) a member of –

- (i) any municipal council;**
- (ii) any provincial legislature; or**
- (iii) the national Assembly or the national Council of provinces;**

(b) a member of the board of directors of any municipal entity;

(c) an official of any municipality or municipal entity;

(d) an employee of any national or provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No.1 of 1999);

(e) an executive member of the accounting authority of any national or provincial public entity; or

(f) an employee of Parliament or a provincial legislature.

² **Shareholder" means a person who owns shares in the company and is actively involved in the management of the company or business and exercises control over the company.**

Schedule F.6: Conflict of Interest Declaration

1. The tenderer shall declare whether it has any conflict of interest in the transaction for which the tender is submitted. **(Please mark with X)**

YES		NO	
-----	--	----	--

1.1 If yes, the tenderer is required to set out the particulars in the table below:

2. The tenderer shall declare whether it has directly or through a representative or intermediary promised, offered or granted:

2.1 Any inducement or reward to the CCT for or in connection with the award of this contract; or

2.2 Any reward, gift, favour or hospitality to any official or any other role player involved in the implementation of the supply chain management policy. **(Please mark with X)**

YES		NO	
-----	--	----	--

If yes, the tenderer is required to set out the particulars in the table below:

Should the tenderer be aware of any corrupt or fraudulent transactions relating to the procurement process of the CCT, please contact the following:

The CCT's anti-corruption hotline at 0800 32 31 30 (toll free)

The tenderer hereby certifies that the information set out in this schedule and/or attached hereto is true and correct, and acknowledges that failure to properly and truthfully complete this schedule may result in steps being taken against the tenderer, the tender being disqualified, and/or (in the event that the tenderer is successful) the cancellation of the contract, restriction of the tenderer or the exercise by the CCT of any other remedies available to it.

Signature
Print name:
On behalf of the tenderer (duly authorised)

Date

Schedule F.7: Declaration of Tenderer's Past Supply Chain Management Practices (MBD 8)

Where the entity tendering is a partnership/joint venture/consortium, each party to the partnership/joint venture/consortium must sign a declaration in terms of the Municipal Finance Management Act, Act 56 Of 2003, and attach it to this schedule.

- 1 The tender offer of any tenderer may be rejected if that tenderer or any of its directors/members have:
- a) abused the municipality's / municipal entity's supply chain management system or committed any fraudulent conduct in relation to such system;
 - b) been convicted for fraud or corruption during the past five years;
 - c) willfully neglected, reneged on or failed to comply with any government, municipal or other public sector contract during the past five years; or
 - d) been listed in the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004) or Database of Restricted Suppliers.
- 2 In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.

Item	Question	Yes	No
2.1	Is the tenderer or any of its directors/members listed on the National Treasury's Database of Restricted Suppliers as companies or persons prohibited from doing business with the public sector? (Companies or persons who are listed on this Database were informed in writing of this restriction by the Accounting Officer/Authority of the institution that imposed the restriction after the <i>audi alteram partem</i> rule was applied). The Database of Restricted Suppliers now resides on the National Treasury's website (www.treasury.gov.za) and can be accessed by clicking on its link at the bottom of the home page.	Yes ☐	No ☐
2.1.1	If so, furnish particulars:		
2.2	Is the tenderer or any of its directors/members listed on the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004) or Database of Restricted Suppliers? The Register for Tender Defaulters can be accessed on the National Treasury's website (www.treasury.gov.za) by clicking on its link at the bottom of the home page.	Yes ☐	No ☐
2.2.1	If so, furnish particulars:		
2.3	Was the tenderer or any of its directors/members convicted by a court of law (including a court of law outside the Republic of South Africa) for fraud or corruption during the past five years?	Yes ☐	No ☐
2.3.1	If so, furnish particulars:		
Item	Question	Yes	No

2.4	Does the tenderer or any of its directors owe any municipal rates and taxes or municipal charges to the municipality / municipal entity, or to any other municipality / municipal entity, that is in arrears for more than three months?	Yes ☐	No ☐
2.4.1	If so, furnish particulars:		
2.5	Was any contract between the tenderer and the municipality / municipal entity or any other organ of state terminated during the past five years on account of failure to perform on or comply with the contract?	Yes ☐	No ☐
2.5.1	If so, furnish particulars:		

The tenderer hereby certifies that the information set out in this schedule and/or attached hereto is true and correct, and acknowledges that failure to properly and truthfully complete this schedule may result in steps being taken against the tenderer, the tender being disqualified, and/or (in the event that the tenderer is successful) the cancellation of the contract,, restriction of the tenderer or the exercise by the CCT of any other remedies available to it.

 Signature
 Print name:
 On behalf of the tenderer (duly authorised)

 Date

Schedule F.8: Authorisation for the Deduction of Outstanding Amounts Owed to the CCT

To: THE CITY MANAGER, City of Cape Town

From: _____
(Name of tenderer)

RE: AUTHORISATION FOR THE DEDUCTION OF OUTSTANDING AMOUNTS OWED TO THE CCT

The tenderer:

- a) hereby acknowledges that according to SCM Regulation 38(1)(d)(i) the City Manager may reject the tender of the tenderer if any municipal rates and taxes or municipal service charges owed by the tenderer (or any of its directors/members/partners) to the CCT, or to any other municipality or municipal entity, are in arrears for more than 3 (three) months; and
- b) therefore hereby agrees and authorises the CCT to deduct the full amount outstanding by the Tenderer or any of its directors/members/partners from any payment due to the tenderer; and
- c) confirms the information as set out in the tables below for the purpose of giving effect to b) above;

Physical Business address(es) of the tenderer	Municipal Account number(s)	Inside the CCT municipal boundary (Yes/No)

If there is not enough space for all the names, please attach the information to **List of other documents attached by tenderer** schedule in the same format:

Name of Director / Member / Partner	Identity Number	Physical residential address of Director / Member / Partner	Municipal Account number(s)	Inside the CCT municipal boundary (Yes/No)

The tenderer hereby certifies that the information set out in this schedule and/or attached hereto is true and correct, and acknowledges that failure to properly and truthfully complete this schedule may result in steps being taken against the tenderer, the tender being disqualified, and/or (in the event that the tenderer is successful) the cancellation of the contract, restriction of the tenderer or the exercise by the CCT of any other remedies available to it.

Signature
Print name:
On behalf of the tenderer (duly authorised)

Date

Schedule F.9: Certificate of Independent Tender Determination

I, the undersigned, in submitting this tender number **303G/2023/24** and tender description: **SUPPLY AND DELIVERY OF 18M LOW FLOOR/LOW-ENTRY DIESEL POWERED BUSES FOR THE MYCITI METRO SOUTH EAST (MSE) ROLL-OUT** in response to the tender invitation made by THE CCT, do hereby make the following statements, which I certify to be true and complete in every respect:

I certify, on behalf of: _____ (Name of tenderer) that:

1. I have read and I understand the contents of this Certificate;
2. I understand that this tender will be disqualified if this Certificate is found not to be true and complete in every respect;
3. I am authorised by the tenderer to sign this Certificate, and to submit this tender, on behalf of the tenderer;
4. Each person whose signature appears on this tender has been authorised by the tenderer to determine the terms of, and to sign, the tender on behalf of the tenderer;
5. For the purposes of this Certificate and this tender, I understand that the word 'competitor' shall include any individual or organisation other than the tenderer, whether or not affiliated with the tenderer, who:
 - (a) has been requested to submit a tender in response to this tender invitation;
 - (b) could potentially submit a tender in response to this tender invitation, based on their qualifications, abilities or experience; and
 - (c) provides the same goods and services as the tenderer and/or is in the same line of business as the tenderer.
6. The tenderer has arrived at this tender independently from and without consultation, communication, agreement or arrangement with any competitor. However, communication between partners in a joint venture or consortium¹ will not be construed as collusive price quoting.
7. In particular, without limiting the generality of paragraphs 5 and 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
 - (a) prices;
 - (b) geographical area where product or service will be rendered (market allocation);
 - (c) methods, factors or formulas used to calculate prices;
 - (d) the intention or decision to submit or not to submit a tender;
 - (e) the submission of a tender which does not meet the specifications and conditions of the tender; or
 - (f) tendering with the intention not to win the contract.
8. In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this tender invitation relates.
9. The terms of this tender have not been and will not be disclosed by the tenderer, directly or indirectly, to any competitor, prior to the date and time of the official tender opening or of the awarding of the contract.
10. I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to tenders and contracts, tenders that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act, Act 89 of 1998, and/o/r may be reported to the National Prosecuting Authority (NPA) for criminal investigation, and/or may be restricted from conducting business with the public sector for a period not exceeding 10 (ten) years in terms of the Prevention and Combating of Corrupt Activities Act, Act 12 of 2004, or any other applicable legislation.

Signature

Print name:

On behalf of the tenderer (duly authorised)

Date

(¹ Consortium: Joint venture or Consortium means an association of persons for the purpose of combining their expertise, property, capital, efforts, skill and knowledge in an activity for the execution of a contract.)

Schedule F.10: Proposed Deviations And Qualifications By Tenderer

The Tenderer should record any **proposed** deviations or qualifications they may wish to make to the tender documents in this Returnable Schedule. Alternatively, a tenderer may state such proposed deviations and qualifications in a covering letter attached to his tender and reference such letter in this schedule. Any proposed deviations or qualifications contained in a covering letter which is not referenced in this schedule will not be considered.

The Tenderer's attention is drawn to clause 2.3.7.2 of the Standard Conditions of Tender referenced in the Tender Data regarding the CCT's handling of material deviations and qualifications.

If no deviations or qualifications are proposed, the schedule hereunder is to be marked NIL and signed by the Tenderer.

PAGE	CLAUSE OR ITEM	PROPOSED DEVIATION OR QUALIFICATION

List relevant documentation attached in Schedule F.10 below.

 Signature
 Print name:
 On behalf of the tenderer (duly authorised)

 Date

Schedule F.11: List of Other Documents Attached By Tenderer
--

The tenderer has attached to this schedule, the following additional documentation:		
	Date of Document	Title of Document or Description (refer to clauses / schedules of this tender document where applicable)
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		
17.		

Attach additional pages if more space is required.

 Signature
 Print name:
 On behalf of the tenderer (duly authorised)

 Date

Schedule F.12: Record of Addenda to Tender Documents

We confirm that the following communications received from the CCT before the submission of this tender offer, amending the tender documents, have been taken into account in this tender offer:		
	Date	Title or Details
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
Attach additional pages if more space is required.		

	Date	Title or Details
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

 Signature
 Print name:
 On behalf of the tenderer (duly authorised)

 Date

Schedule F.13: Information to Be Provided With the Tender

The following information shall be provided with the Tender:

Schedule F13A: Confirmation that Tenderer as a Registered Vehicle Manufacturer or Motor Dealer in terms of the National Road Traffic Act of 1996

Schedule F13B: Technical Information for 18m low floor/low entry Diesel Powered Bus

Schedule F13C: Tenderer's Experience

Schedule F13D: Provisional manufacturing, assembly and delivery programme

Schedule F13E: Rates for Information/Benchmarking purposes

Signature

Print name:

On behalf of the tenderer (duly authorised)

Date

Schedule F13A: Confirmation that Tenderer is a Registered Manufacturer, Builder or Importer in terms of the National Road Traffic Act of 1996
--

The Tenderer is referred to Clause 2.2.1.1.6 of the Conditions of Tender and shall complete the schedule below and provide a copy of the required Registration Certificate.

COMPANY NAME and /or NAME OF JV REGISTERED PARTNER	REGISTRATION NUMBER

A copy of the Registration Certificate to be attached / provided

In this regard it is the sole responsibility of tenderers to ensure that this requirement is complied with.

In the case of Joint Venture Partnerships this requirement will apply to one party in the Joint Venture.

Note: Failure to complete and provide the information requested at tender submission will result in the tenderer being declared non-responsive.

Signature
Print name:
On behalf of the tenderer (duly authorised)

Date

Schedule F13B: Technical Information for 18m low-floor and low-entry Diesel Powered Bus

The Tenderer is referred to Clause 2.2.1.1.7 of the Conditions of Tender and the Tenderer is to provide sufficient information to demonstrate to the Purchaser compliance with the requirements of those items listed in the Specifications. Should the Purchaser require additional information for clarification, the Tenderer shall be required to provide such information within the stipulated time period.

Note: Failure to complete and provide the information at tender submission will result in the tenderer being declared non-responsive.

	Information Requirement	Reference*	Included (Y/N)
	VEHICLE BODY DESIGN AND DIMENSIONAL REQUIREMENTS		
1	Bus body and interior design The following shall be provided for each bus type being offered. - A complete set dimensioned drawings for the body design (all elevations) and - A set of renderings or (images if available) of the proposed body shape. - Dimensioned drawings of the proposed interior layout showing the configuration of the doors, aisle widths, seating, preferential seating, wheelchairs bay and wheelchair accessibility and any raised floor areas etc. - Number of seated and standing passengers	7	
2	Bus body structure material The following information shall be provided: Confirmation that the major component materials to be used in the fabrication of the bus body is of an inherently corrosion resistant material, specify material selected	7	
3	Power plant and chassis details. Tenderer to submit a standard chassis specification sheet giving technical details of the chassis and power and drive train components as set out in standard specification.	Tenderer to submit	
4	Warranty A copy of the Supplier's Standard bus Warranty shall be provided as outlined in the CF.5 SOW.	9.3	
5	Vehicle telematics unit The following information shall be provided. - Details of the vehicle telematics system offered. This should include a description of the functions and options monitored by the system e.g. driver behaviour/characteristics, vehicle performance etc. - Details of the licencing and pricing requirements for options in a. above	8.7.1	
6	Maintenance / servicing Provide the following. A schedule of the standard OEM and body builder's maintenance intervals and service types (e.g. minor, major, A, B, C etc.) required for the vehicle types being procured under this contract.	11.5	

		b. A list of unique or specialized tools required for servicing and/or maintenance particular to the model of bus (es) being procured		
7	Suppliers ITS equipment installation	Provide the following information. a. Details of the CCTV equipment (e.g. make model etc.) and warranty period. b. Details of the Electronic Destination Display equipment (e.g. make model etc.) and warranty period.	8	

Signature

Print name:

On behalf of the tenderer (duly authorised)

Date

Schedule F13C: Tenderer's Experience

The Tenderer is referred to Clause 2.2.1.1.8 of the Conditions of Tender and shall indicate on the schedule below the tenderer's experience in the manufacturing of urban buses that are operated by at least two independent bus operating companies. Tenderer's are to provide reference letters of the below noted bus operating companies confirming the manufacture of urban buses.

Note: Failure to complete and provide the information at tender submission will result in the tenderer being declared non-responsive.

Contact Details of Client	Number of vehicles manufactured	Year Manufactured	Bus type
Contact Person: Tel: Email:			

Signature _____
Print name:
On behalf of the tenderer (duly authorised)

Date

Schedule F13D: Provisional manufacturing, assembly and delivery programme
--

Tenderers hereby confirm that they will be able to meet the required manufacturing and delivery programme with the envisaged final delivery by 31 March 2027.

The above manufacturing and delivery programme shall include:

- a. the component manufacturing stages,
- b. chassis and component shipping period
- c. local assembly
- d. prototype completion and homologation (if applicable),
- e. delivery of the first production bus and subsequent buses.
- f. final bus delivery date

The programme include at least one month for testing and final acceptance of a bus following its delivery.

The programme shall indicate appropriate periods for training on the bus types being delivered i.e. train the trainer programme

The program also indicate appropriate times for the Purchaser's in-production inspection, availability of buses for the fitment of specialised ITS equipment by others (e.g., APTMS, AFC and SIS equipment) and final inspection and acceptance time frames for a staggered delivery programme.

 Signature
 Print name:
 On behalf of the tenderer (duly authorised)

 Date

Schedule F13E: Rates for Benchmarking/Information Purposes

Tenderers are hereby to provide the rates contained in the below solely for benchmarking/information purposes and shall not be evaluated as part of this tender:

THE RATES CONTAINED HEREIN IS FOR BENCHMARKING PURPOSES AND WILL NOT BE COMPENSATED THROUGH THIS CONTRACT						
NO.	DESCRIPTION	REFERENCE	UNIT OF MEASURE	RATE (EXCL VAT)	RATE (INCL VAT) R C	
1	ON-GOING TECHNICAL SUPPORT					
1.1	Provision of Maintenance Manual for 18 metre Low-Floor/Low-Entry bus.					
1.1.1	Maintenance manual on-line version	10	Rate Per Bus			
1.1.2	Annual on-line access licence / subscription fee on-line version	10	Rate Per Bus			
1.2	Provision of Parts Manual for 18m Low-Floor / Low-Entry articulated bus.					
1.2.1	Parts manual on-line version	10	Rate Per Bus			
1.2.2	Annual On-line access licence / subscription fee on-line version	10	Rate Per Bus			
2	MAINTENANCE PLAN / ONGOING MAINTENANCE SERVICES					
2.1	Provision of a standard 3-year fleet wide maintenance plan					
2.1.1	YEAR 1	11.6	Rate Per Bus			
2.1.2	YEAR 2	11.6	Rate Per Bus			
2.1.3	YEAR 3	11.6	Rate Per Bus			
3	PROVISION OF EXTENDED WARRANTY					
3.1	Provision of Extended Warranty					
2.1.1	Year 1	9.4	Rate Per Bus			
2.1.2	Year 2	9.4	Rate Per Bus			
2.1.3	Year 3	9.4	Rate Per Bus			

Schedule F.14: Appeal Application

annexure 'B'

OFFICIAL RECEIPT
(Valid only if printed
by official cash
receipting machine)

IRISITI ESESIKWENI
(Isemthethweni kuphela
xa ishicilelwe
ngumatshini wokukhupa
irisiti osesikweni.)

AMPTELIKE KWITANSIE
(Geldig alleenlik indien deur
amptelike kontantvangs
masjien gedruk.)

GL DATA CAPTURE RECEIPT
(CASHIERTO RETAIN A COPY)

RECEIPT NO: _____

DATE: _____

SAP GL:

8	1	0	1	0	0
---	---	---	---	---	---

PROFIT CENTRE:

1	3	0	5	0	0	0	1
---	---	---	---	---	---	---	---

NAME/COMPANY NAME:

AMOUNT:

						R	3	0	0	-	0	0
--	--	--	--	--	--	---	---	---	---	---	---	---

SERVICE DEPARTMENT DETAILS-

DEPARTMENT: LEGAL SERVICES: APPEALS UNIT

CONTACT PERSON: CHARLENE CEBEKHULU / MELANIE CLOETE

PHONE NO: 021 400 2503 / 021 400 3788

OFFICIAL RECEIPT
(Valid only if printed
by official cash
receipting machine)

IRISITI ESESIKWENI
(Isemthethweni kuphela
xa ishicilelwe
ngumatshini wokukhupa
irisiti osesikweni.)

AMPTELIKE KWITANSIE
(Geldig alleenlik indien deur
amptelike kontantvangs
masjien gedruk.)

GL DATA CAPTURE RECEIPT
(CASHIERTO RETAIN A COPY)

RECEIPT NO: _____

DATE: _____

SAP GL:

8	1	0	1	0	0
---	---	---	---	---	---

PROFIT CENTRE:

1	3	0	5	0	0	0	1
---	---	---	---	---	---	---	---

NAME/COMPANY NAME:

AMOUNT:

						R	3	0	0	-	0	0
--	--	--	--	--	--	---	---	---	---	---	---	---

SERVICE DEPARTMENT DETAILS-

DEPARTMENT: LEGAL SERVICES: APPEALS UNIT

CONTACT PERSON: CHARLENE CEBEKHULU / MELANIE CLOETE

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