CLUSTER

FINANCE

UNIT

CITY FLEET

DEPARTMENT

SUPPORT SERVICES

PROCUREMENT DOCUMENT: GOODS / SERVICES

Documents can be obtained either in hard copy or electronic format, issued by the eThekwini Municipality: Electronically downloaded documentation is obtainable from the National Treasury's eTenders website or the eThekwini Municipality's Website. The entire document should be printed and suitably bound by the tenderer.

Tender No: 1J-18539

Title: Manufacture, Customisation and Delivery of various Commercial Superstructure(s) for a period of thirty-six (36) months

CLARIFICATION MEETING AND QUERIES

Clarification Meeting: Bidders are required to submit email queries related to this bid. All email queries are to be submitted no later than 2nd of December 2022. Email questions and answers will be consolidated and posted on eTenders Municipal Website for the benefit of all bidders on 8th of December 2022.

Non-compulsory briefing session will be held virtually using MS Teams platform on the 17th of November 2022 from 09:00am-10:00am. All potential bidder(s) seeking to participle must send their contact details (email addresses) to Nondumiso Khumalo no later than 16th of November 2022.

Queries can be addressed to:

General / Contractual: Nondumiso Khumalo; Tel: 031 322 5093; eMail: nondumiso.khumalo@durban.gov.za

Technical: Nondumiso Khumalo; Tel: 031 322 5093; eMail: Nondumiso.khumalo@durban.gov.za

DELIVERY OF TENDERS

Sealed Tenders, addressed to the City Manager and marked with the Tender Number, are to be placed in the Tender Box **located in the ground floor foyer of the Municipal Buildings, 166 KE Masinga Road (Old Fort Rd), Durban** (and not any other municipal department), no later than:

Closing Date: Thursday, 15 December 2022

Time: 11:00am

FACSIMILE, eMAIL or POSTED TENDERS WILL NOT BE ACCEPTED

Issued by:

ETHEKWINI MUNICIPALITY

Deputy Head: SUPPORT SERVICES

Issued: November 2022 **Document Version: 02/03/2022**

NAME OF TENDERER: .....

Tender Price: R ..... **VAT Registered: YES / NO** (circle applicable)

PROCUREMENT DOCUMENT (Goods / Services)

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SECTION 1: GENERAL INFORMATION

YOU ARE HEREBY INVITED TO TENDER FOR REQUIREMENTS OF THE ETHEKWINI MUNICIPALITY

TENDER No.: 1J-18539

DESCRIPTION: **Manufacture, Customisation and Delivery of various Commercial Superstructure(s) for a period of thirty-six (36) months**

CLOSING DATE / TIME: Thursday, 15 December 2022 at 11:00am

All tenders must be submitted on official tender documentation issued (in electronic format) by the eThekwini Municipality. Electronically downloaded documentation should be printed by tenderer.

Tenderers are required to be registered on the National Treasury Central Supplier Database (CSD) as a service provider. Tenderers must register as such upon being requested in writing to do so by the Employer, within the period contained in such a request. In the case of a Joint Venture, this requirement will apply individually to each party in the Joint Venture.

Tenderers should ensure that tenders are delivered timeously to the correct address as stated in the Conditions of Tender. If the tender is late, it will not be accepted for consideration.

The Municipality will consider a tender submitted in response to this request for tender to be an offer from your company to perform the supply on the basis of that tender. Accordingly, please review the attached General and Special Terms and Conditions which will form the basis for any supply arrangement entered into between the Municipality and your company.

The Municipality is seeking tenders from potential suppliers only and makes no representation or promise in relation to procuring work from a supplier or suppliers. The Municipality will not be responsible for any costs associated with preparing and submitting a tender.

The Municipality does not bind itself to accept the lowest or any tender. It reserves the right to accept the whole or any part of a tender to place orders. Bidders shall not bind the Municipality to any minimum quantity per order. The successful Tenderer (s) shall be bound to provide any quantities stipulated in the specification.

The successful tenderer will be required to fill in and sign a written Contract Form (MBD 7).

Registration on the eThekwini Municipality's Database can be done via website: https://ethekwinivendor.durban.gov.za/

NB: NO TENDER WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE (as defined in Regulation 44 of the Local Government: Municipal Supply Chain Management Regulations).

THE FOLLOWING PARTICULARS MUST BE FURNISHED
(Failure to do so may result in your tender being disqualified)

Name of Tenderer: ……

Postal Address: ……

Street Address: ……

E-Mail Address: ……

Telephone Number:				-				-							
Cell phone Number:				-				-							
Facsimile Number:				-				-							

	Circle / Tick Applicable
Is your entity registered on the eThekwini Municipality's supplier database?	YES / NO
If YES insert your PR Number:	PR ……..……....
Is your entity registered on the National Treasury Central Supplier Database (CSD)?	YES / NO
If YES insert your MAAA Number: …….....	MAAA ……..……....
Is your entity VAT registered?	YES / NO
7 If YES insert Vat Registration Number: ……..……....	……..…….
Has an original and valid **Tax Clearance Certificate** (MBD 2) been **a**ttached?	YES / NO
Has a **Declaration of Interest** (MBD 4) been submitted?	YES / NO
Has a **Declaration for Procurement Above R10 Million** (MBD 5) been submitted?	YES / NO
Has a **B-BBEE Status Level Verification Certificate** (MBD 6.1) been submitted?	YES / NO

If YES, who was the certificate issued by?

5 An accounting officer as contemplated in the Close Corporation Act.	
6 A verification agency accredited by the South African National Accreditation System (SANAS).	
7 A registered auditor.	
8 Sworn Affidavit.	

Has a **Declaration Certificate for Local Production and Content for Designated Sectors** (MBD 6.2) been submitted?	YES / NO
Has a **Declaration of Bidder's Past SCM Practices** (MBD 8) been submitted?	YES / NO
Has a **Certificate of Independent Bid Determination** (MBD 9) been submitted?	YES / NO
Are you the accredited representative in South Africa for the goods / services / works offered? If YES, enclose proof.	YES / NO

Signature of Tenderer: …… Date: ……

Name / Surname: …… (in block capitals)

Capacity under which this tender is signed: ……

SECTION 2 : CONDITIONS OF TENDER – (Goods / Services : June 2019)

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SPECIAL / ADDITIONAL CONDITIONS OF TENDER

STANDARD CONDITIONS OF TENDER (Goods / Services)

1. DEFINITIONS

General:

(1) Defined words / phrases are printed in Italic font.
(2) Definitions apply to the singular as well as the plural.
(3) Any reference to the masculine gender shall be taken to include the feminine and any reference to the feminine gender shall be taken to include the masculine.
(4) The words "bid" and "tender", and "bidder" and "tenderer" can be used interchangeably.
(5) All definitions as defined in the ***General Conditions of Contract*** are applicable to these ***Standard Conditions of Tender***. These definitions include:
8 "Closing time"
9 "Contract"
10 "Contract Price"
11 "Corrupt practice"
12 "Countervailing duties"
13 "Country of origin"
14 "Day"
15 "Delivery"
16 "Delivery ex stock"
17 "Delivery into consignees store or to his site"
18 "Dumping"
19 "Force majeure"
20 "Fraudulent practice"
21 "GCC"
22 "Goods"
23 "Imported content"
24 "Local content"
25 "Manufacture"
26 "Order"
27 "Project site"
28 "Purchaser"
29 "Republic"
30 "SCC"
31 "Services"
32 "Supplier"
33 "Tort"
34 "Turnkey"
35 "Written" or "in writing"
(6) **Bid or Tender**: The offer submitted in respect of an invitation to submit such an offer.
(7) **Bidder or Tenderer**: An entity (company, close corporation, partnership, joint venture, sole proprietor) which submits a *bid/tender*.
(8) **Municipality**: The eThekwini Municipality, as represented by the duly authorised delegate, official or committee.
(9) **SCT:** Special Conditions of Tender (found in Section 3).
(10) **Week**: A period of seven (7) consecutive *days*.
(11) **Material Deviation**: A material deviation or qualification is one which, in the *Municipality's* opinion, would:
(a) Detrimentally affect the scope, quality, or performance of the services or supply identified in the Scope;
(b) Significantly change the *Municipality'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.

2. CONDITIONS OF TENDER & CONTRACT

The specification will be governed by the ***Standard Conditions of Tender*** (Goods and Services), ***Special Conditions of Tender (SCT)***, ***General Conditions of Contract (GCC)*** (Government Procurement General Conditions (July 2010), as amended by National Treasury Circular 52 dated 30 July 2010), the ***Special Conditions of Contract (SCC)***, the ***Occupational Health and Safety Act*** (Act No. 85 of 1993), and the ***eThekwini Code of Conduct***.

Complete Acceptance of Conditions

Unless otherwise expressly stipulated in a letter covering the *tender*, every *Tenderer* shall be deemed to have waived, renounced, and abandoned any conditions printed or written upon any stationery used for the purpose of, or in connection with, the submission of their *tender*, which are in conflict with the ***General Conditions of Contract*** and ***Special Conditions of Contract***. *Tenderers* are advised that any *material divergences / qualifications* from the official Conditions or Specification will render their *tenders* liable to disqualification.

3. TENDER INFORMATION

(1) **General**
(a) *Tenders* will be liable for rejection unless made out on the official tendering documentation.
(b) Any alterations effected upon any of the tendering documents must be clearly shown by means of a hand written (black, non-erasable ink), or typed, entry and must be signed in full by the *Tenderer*. **The use of correction fluid is not permitted**.
(c) *Tenderers* may submit alternative solutions that, in the *Tenderer's* opinion, are to the *Municipality's* advantage economically and technically. Full technical details of the alternative *tender(s)* shall be submitted with the tender documents. Alternative *tender(s)* shall be submitted separately.

(2) **Obtaining Tender Documentation**

All tenders must be submitted on official tender documentation issued (either in hard copy or in electronic format) by the eThekwini Municipality. Electronically downloaded documentation (obtainable free of charge) should be printed and bound by tenderer. Hard copy versions are available as indicated on the tender notice, for the non-refundable tender charge as indicated in the ***SCT*** (payment by Bank Cheques (where the Drawer of the Cheque is the Bank) OR cash). Tender documents must be collected no later than 3 days prior to close of tender.

(3) **Queries Relating to this Tender**

Queries can be directed to the person / Department as stated in the ***SCT***.

(4) **Briefing Session (Clarification Meeting)**

Details of the briefing session are stated in the ***SCT***.
Failure to attend a compulsory briefing session will invalidate the *tender*. *Tenderers* must sign the attendance list in the name of the tendering entity. Tenders will only be evaluated from those tendering entities appearing on the attendance list.

(5) **Closing Date and Delivery of Tender Submissions**

Sealed *tenders* made out on the enclosed Official Tender Form, which shall be signed by or on behalf of the *Tenderer* , and addressed to the Head: Supply Chain Management Unit, marked with the appropriate Tender number, must be placed in the **Tender Box** as stated in the ***SCT*** not later than the **date and time** as stated in the ***SCT***, where after they will be opened publicly.

All tender documents **must** be placed directly into the Tender Box and should not be delivered to any other Municipal Department. *Bidders* are advised that *tenders* submitted by post, fax or email **will not** be considered. All couriered documents must be placed directly into the Tender Box and should not be delivered to any other Municipal Department.

Any *tender* received after the closing date and time stated for the receipt thereof **shall not** be accepted for consideration and shall be returned to the *Tenderer*.

(6) **Tender Validity and Withdrawal of Tenders**

Tenders must hold good until 16:00 of the 5th week following the date on which *tenders* are opened, or during such other period as may be specified in the ***SCT***. The *Municipality* may, during the period for which *tenders* are to remain open for acceptance, authorize a *Tenderer* to withdraw their *tender* in whole or in part on condition that the *Tenderer* pays to the *Municipality* on demand, a sum of one thousand Rand (R1,000.00). The *Municipality* may, if it thinks fit, waive payment of such sum in whole or in part.

4. **RETURNABLE SCHEDULES, FORMS, CERTIFICATES**

Each *Tenderer* shall complete fully and accurately the following documents and submit these documents with the *tender*:

(1) **Authority of Signatory:** In terms of Clause 4(10)(c) of the Conditions of Tender.

(2) **Declaration of Municipal Fees:** Only those *Bidders* whose municipal fees are fully paid, or those that have concluded acknowledgement of debt agreements with the *Municipality*, are eligible to *tender*.

All Bidders must sign the Declaration of Municipal Fees returnable form, declaring that their municipal fees are in order or that acknowledgement of debt agreements have been concluded, and include the relevant account numbers in the declaration. Failure to include account numbers or sign will invalidate the *tender*. The completion of the declaration is also applicable to *Bidders* outside of the eThekwini Municipal Area.

(3) **Declaration with respect to the Occupational Health and Safety Act:** Acceptance of undertaking in terms of the Occupational Health and Safety Act (Act 85 of 1993) and the relevant Regulations.

(4) **Consolidated Municipal Biding Documents** (which includes):

6 **MBD 2**: Tax Clearance Certificate Requirements: Bidders are to include with their tender submission a valid (at time of tender closing), tax clearance certificate OR Tax Clearance Status PIN, which has sufficient validity to ensure that the tender process is adequately covered. Non-submission, or submission of an expired certificate/ TCS PIN, will preclude Bidders from the tender process.

7 MBD 4: Declaration of Interest: All Bidders are to sign the Declaration of Interest wherein they declare any relationship that may exist with an official of the Municipality involved in the evaluation process.

Regulation 44 of the Supply Chain Management Regulations states that a Municipality or Municipal Entity may not make any award to a person:

(i) Who is in the service of the state;
(ii) If that person is not a natural person, of which any Director, Manager, Principal, Shareholder or Stakeholder is a person in the service of the state; or
(iii) Who is an advisor or consultant contracted with the Municipality or municipal entity.

Should a contract be awarded and it is subsequently established that Regulation 44 has been breached, the Municipality shall have the right to terminate the contract with immediate effect.

8 MBD 5: Declaration for Procurement Above R10 Million (if applicable): For all procurement expected to exceed R10 million (all applicable taxes included), tenderers must complete this questionnaire.

9 **MBD 6.1**: Preference Points Claim Form: For the awarding of Preference Points, Bidders are required to complete the attached MBD 6.1 form and return it with their tender submission. Failure on the part of a tenderer to submit a B-BBEE Verification Certificate from a Verification Agency accredited by the South African Accreditation System (SANAS), or a Sworn Affidavit for an EME, or sworn affidavit for a QSE (in line with the revised BBBEE codes of Good Practice), together with the bid will be interpreted to mean that preference points for B-BBEE status level of contribution are not claimed.

The Municipality reserves the right to require of a tenderer, either before a bid is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the Municipality.

10 **MBD 6.2**: Declaration Certificate for Local Production and Content for Designated Sector: If this tender is subject to "Local Content and Production", the tenderer must complete and sign MBD 6.2 and attach Annexure C (of SATS 1286:2011).

11 **MBD 8**: Declaration of Bidders Past Supply Chain Management Practices Form: This form serves as a declaration to be used by municipalities and municipal entities in ensuring that when goods and services are being procured, all reasonable steps are taken to combat the abuse of the supply chain management system.

12 **MBD 9**: Certificate of Independent Bid Determination: Section 4(1)(b)(iii) of the Competition Act No. 89 of 1998, as amended, prohibits an agreement between, or concerted practice by, firms if it involves collusive tendering or tender rigging. In order to give effect to this, the Certificate of Bid Determination must be completed and submitted with the tender.

(5) **Official Tender Form** (see Section 9)

4 Legal Status of Tenderer

It is essential for the purpose of entering into a legal contract that *Bidders* state on the Official Tender Form, under "Name and Address of Tenderer ", their full legal status:

2. the full registered name of the company making a *tender*; or
3. if the *Tenderer* is a person conducting business under a recognised trading name then:
    2. State the name of the person(s);
    3. State recognised trading name; and
    4. State whether an owner, co-owner, proprietor, etc.

(b) **Signing of Official Tender Form**

Failure of a *Tenderer* to complete, in its entirety, and sign the Official Tender Form will invalidate the *tender*.

(c) **Authority of Signatory**

Bidders are to complete and sign the Authority of Signatory returnable document, and attach the required additional documents.

(d) **Differences or Discrepancies**

Should there be any difference or discrepancy between the prices or price contained in the Official Tender Form and those contained in any covering letter from the Tenderer, the prices or price contained in the Official Tender Form shall prevail.

(6) **Any additional Schedules, Forms, or Certificates as stated in the *SCT*.**

5. **INFORMATION TO BE SUPPLIED REGARDING SUB-CONTRACTORS**

Bidders are to state in their *tenders*, or covering letters, whether, if the contract were to be awarded to them, the whole of the work would be executed by them in their own workshop / factory. If the answer is in the negative, they are required to state which part(s) would be handed to sub-contractors and the name and address of such sub-contractors.

6. **SAMPLES**

Bidders may be required to state where samples of the full range of products can be inspected or be required to submit samples for inspection prior to the closing date of the *tender*.

7. **MANUFACTURERS**

The names of the manufacturers of the goods or equipment offered must be stated in the *tender*.

Bidders who are not manufacturers, accredited distributors, or agents must provide a valid agreement / Joint Venture Agreement, entered into with the manufacturer, accredited distributors, or agents, with their submission. This agreement must meet all the requirements as laid down in the *tender* document, and must cover the contract period.

8. **CLARIFICATION**

The Head: Supply Chain Management Unit, or an authorized representative, may request clarification or further information on any aspect of the *tender*. The *Tenderer* **must** supply the requested information within the time specified. Failure to comply will render the *tender* non-responsive.

9. **PRICING**

Bidders would be precluded from this *tender* if their pricing structure deviates from the Official Tender Form.

7 Nett Prices

All prices shall be quoted in South African currency (Rand) after deduction of any brokerage or discount allowed to the Municipality.

8 Unit Prices

Bidders shall quote only one price in respect of each item. Such price is to hold good for the full duration of the contract period, being subject to variation only in accordance with specified criteria, as stated in the ***Conditions of Contract***.

9 Firm Tenders

Bidders may submit firm prices for each 12 month period. These prices shall be free from all fluctuations, including any statutory increases.

10 **Value Added Tax (V.A.T)**

Prices exclusive and inclusive of VAT must be stated separately on the Official Tender Form.

10. **ESTIMATED QUANTITIES**

The estimated quantities are set out in Section 8 : Bill of Quantities / Schedule of Rates/Activities which forms part of the official tender documents. The quantities are stated purely for the information of the *Bidders* and are in order to ascertain an estimated total contract price. The *Supplier* will, however, be bound to supply whatever quantity or quantities the *Municipality* may actually require, and may be in excess or less than the estimated quantities stated.

11. **DELIVERY, RISK, PACKAGES, ETC**

(1) Unless otherwise provided, all goods are to be supplied only against the form of order issued by the *Municipality*.

(2) *Bidders* shall quote a unit price which shall include delivery to the specified delivery point, as stated in the ***SCT.***

(3) The risk in all goods purchased by the *Municipality* under the contract shall remain with the *Supplier* until such goods shall have been duly delivered.

(4) *Bidders* shall clearly state the period within which delivery will be made after receipt of the official order, as this may be material in the adjudication of the *tender*.

12. **RATES OF EXCHANGE**

(1) Where the goods are imported the *Supplier* shall, within seven days of date of official Purchase Order, arrange through their bankers for the foreign commitment to be covered forward down to the Rand in order to fix the rate of exchange. The *Supplier* shall notify the *Municipality* as soon as possible thereafter regarding the rate which has been fixed on such forward exchange.

Any increase or decrease between the basic rate of exchange as at a date seven days prior to the date of closing of *tenders* and that existing at the date of establishment of the forward exchange cover within the period stipulated above shall be paid or deducted by the Municipality. Upon the failure of the *Supplier* to arrange forward exchange cover, the *Supplier* shall be liable should there be any increase in the basic rate of exchange occurring after the last mentioned date.

The bank charges incurred in obtaining the forward exchange cover shall be for the *Municipality's* account.

(2) The *Supplier* shall on request:
- (a) Submit documentary proof of the rate of exchange; and
- (b) When an adjustment is claimed in terms of this sub-clause, whether by the *Supplier* or the *Municipality*, submit documentary proof to the satisfaction of the Deputy City Manager: Treasury in respect of such claim.

13. **IMPORT PERMITS**

4 In order to minimise special importation, *Bidders* should, where possible, have recourse to local suppliers and / or manufacturers.

5 *Bidders* must state whether their *tender* is dependent upon the issue of a special import permit or whether they are able to supply the goods by making use of the import facilities available to them.

(3) In the event of a *tender* being dependent upon the issue of a special import permit, application for such special import permit shall be made by the *Tenderer* , unless otherwise provided for in the ***SCT***.

14. **EVALUATION PROCESS**

The procedure for evaluation of responsive Tender Offers will be in accordance with the eThekwini Municipality's current SCM Policy and the Preferential Procurement Policy Framework Act (5 of 2000), and the Preferential Procurement Policy Framework Act Regulations (January 2017).

Details of additional evaluation criteria, if applicable, are stated in the *SCT*.

Evaluation points for price and preference will only be calculated for *Bidders* who comply with the contractual and technical specification, and if applicable, have attained the minimum Functionality Score as stated in the ***SCT***.

The evaluation process of responsive *tenders* will be as follows:

9 Score each *tender* in respect of the financial offer made and preferences claimed (if any);

10 Calculate the total number of evaluation points (T_{EV}) in accordance with the following formula:
$T_{EV} = N_{FO} + N_P$ where: **N_{FO}** : is the number of evaluation points awarded for the financial offer; and **N_P** : is the number of evaluation points awarded for preferences claimed.

2. Rank *tenders* from the highest number of evaluation points to the lowest.

3. Recommend the *Tenderer* with the highest number of evaluation points for the award of the contract, unless there are compelling and justifiable reasons not to do so.

4. Rescore and re-rank all *Bidders* should there be compelling and justifiable reasons not to recommend the *Tenderer* with the highest number of evaluation points, and recommend the *Tenderer* with the highest number of evaluation points, unless there are compelling and justifiable reasons not to do so, and the process set out in this sub-clause is repeated.

(1) **Evaluation points awarded for the financial offer:**

The financial offer will be scored using the formula:

$N_{FO} = W\left(1 - \frac{P - Pm}{Pm}\right)$

Where the value of W is:

(a) **90** where the financial value inclusive of VAT of all responsive *tenders* received have a value in excess of R 50,000,000; OR
80 where the financial value inclusive of VAT of one or more responsive *tenders* offers have a value that equals or is less than R 50,000,000;

(b) **Pm** is the comparative offer of the most favourable comparative offer; and

(c) **P** is the comparative offer of the *tender* offer under consideration.

(2) **Evaluation points awarded for preference:**

Up to 100 minus W (see (1) above) tender evaluation points will be awarded for preference to *Bidders* who attain the BBBEE status level of contributor in accordance with the table below:

B-BBEE Status Level of Contributor	Number of Points where W = 90	Number of Points where W = 80
1	10	20
2	9	18
3	6	14
4	5	12
5	4	8
6	3	6
7	2	4
8	1	2
Non-Compliant Contributor	0	0

15. **BRIBERY AND COMMUNICATION WITH COUNCILLORS / OFFICIALS**

(1) **Bribery**

No *Tenderer* shall offer, promise or give to any person or person connected with a *tender* or the awarding of a contract, any gratuity, bonus or discount etc, in connection with the obtaining of a contract.

(2) **Communication, Councillors and Officials**

A *Tenderer* shall not in any way communicate with a member of the *Municipality* or with any official of the *Municipality* on a question affecting any contract for the supply of goods or for any work, undertaking or services which is the subject of a *tender* during the period between the closing date for receipt of *tenders* and the dispatch of the written notification of the *Municipality's* decision on the award of the contract; provided that a *Tenderer* shall not hereby be precluded:

(a) At the request of the Head: SCM Unit, or an authorized representative, from furnishing him with additional information or with a sample or specimen for testing purposes or otherwise from giving a demonstration so as to enable the recommendation to the Bid Committee on the award of the contract to be formulated;

(b) From obtaining from the Head : SCM Unit, or an authorised representative, information as to the date upon which the award of the contract is likely to be made, or, after the decision upon the award has been made by the *Municipality* or any Committee to which the *Municipality* has delegated its powers, information as to the nature of the decision or such information as was publicly disclosed at the opening of *tenders* or from submitting to the Accounting Officer in writing any communication relating to their *tender* or the award of the contract or a request for leave to withdraw their *tender*; and

(c) Provided further that nothing contained herein shall be construed so as to prevent information being sought and obtained from an Official in regard to any decision taken at an open Municipal meeting, or any Committee to which the *Municipality* has delegated its powers.

A contravention of subsection (1) and / or (2), or an attempt to contravene such subsection, shall be reported to the Accounting Officer, who may on receipt of such report disqualify the *tender* of the *Tenderer* concerned.

16. **NEGOTIATIONS WITH PREFERRED BIDDERS**

The *Municipality* reserves the right to invoke Regulation 24 of Municipal Finance Management Act if required.

(1) The Accounting Officer may negotiate the final terms of a contract with *Bidders* identified through a competitive tendering process as preferred *Bidders*, provided that such negotiation:

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

(2) Minutes of such negotiations must be kept for record purposes.

(3) Such negotiation may be delegated by the Accounting Officer.

17. **CANCELLATION OF TENDER PROCESS**

The municipality is entitled to cancel the tender at any time before the award of a tender and the decision to cancel the tender shall be published in the same manner in which the original tender invitation was advertised. The Municipality shall, in no way, be liable for any damages whatsoever, including, without limitation, damages for loss of profit, in any way connected with the cancellation of this bid.

18. **ACCEPTANCE OF BID**

(1) The *Municipality* does not bind itself to accept the lowest or any *tender*, and reserves the right to accept the whole or any part of a *tender* to place orders.

(2) The *Municipality* reserves the right to accept more than one technically and contractually compliant *tender* for part or the whole of the contract and to place orders on the price and availability.

(3) *Bidders* shall not bind the *Municipality* to any minimum quantity per order.

(4) The successful *Tenderer (s)* shall be bound to provide any quantities stipulated in the specification.

(5) Tenders will only be accepted on condition that:

(a) The *tender* is signed by a person authorised to sign on behalf of the *Tenderer* .

(b) A valid (at time of close of tenders), original, Tax Clearance Certificate is included with the *tender* submission, which has sufficient validity to ensure the process is adequately covered;

(c) A *Tenderer* who submitted their *tender* as a Joint Venture has included an acceptable Joint Venture Agreement and a B-BBEE Certificate pertaining to the Joint Venture with their *tender*.

(6) Financial Standing: The Head: Supply Chain Management reserves the right to require *Bidders* to submit evidence that their financial standing is adequate to meet their obligations under the contract should they be successful.

(7) Change of Ownership or Major Policy: Where it is known to a *Tenderer* that a change in ownership or major policy (of the tendering entity) will occur, or is likely to occur, during a specified contract period, the scope and effect thereof must be fully defined in a covering letter to be submitted with the *tender*.

(8) Purchase of Goods From Other Sources: Nothing contained in this contract shall be held to restrain the *Municipality* from purchasing from persons other than the *Supplier*, any of the goods described or referred to in this contract, if it shall in its discretion think fit to do so.

(9) Capability and Breach of Contract: Tenderers that do not have the capability of undertaking this enquiry in terms of the requirements of the contract or have been in breach of contract previously will not be considered.

19. **PAYMENT and FACTORING**

Payment will be as per the ***Conditions of Contract***.

Payment will be made only to the *Supplier(s).* Factoring arrangements will not be accepted.

20 **APPEALS**

In terms of Regulation 49 of the Municipal Supply Chain Management Regulations persons aggrieved by decisions or actions taken by the *Municipality*, may lodge an appeal within 14 days of the decision or action, in writing to the *Municipality*. The appeal (clearly setting out the reasons for the appeal) and queries with regard to decision of award are to be directed to the office of the City Manager, attention:

Ms. S. Pillay, P.O. Box 1394, Durban, 4000;
eMail: Simone.Pillay@durban.gov.za.

SECTION 3: SPECIAL / ADDITIONAL CONDITIONS OF TENDER

3.1 SPECIAL CONDITIONS OF TENDER (SCT)

The ***Standard Conditions of Tender*** (Goods / Services) make several references to the ***Special Conditions of Tender*** *(SCT)* for details that apply specifically to this tender. The ***Special Conditions of Tender*** shall have precedence in the interpretation of any ambiguity or inconsistency between it and the ***Standard Conditions of Tender***.

Each item below is cross-referenced to the clause in the ***Standard Conditions of Tender*** to which it mainly applies.

SCT 3(1) **TENDER INFORMATION: General**

The tender document comprises of a cover page and 402 pages. If an electronic version is downloaded from the internet the entire document is to be printed on A4 sized paper and appropriately bound. **Bidders are required to submit alongside their hard copy submission a SOFT COPY of their complete tender scanned and saved onto a memory stick. Memory stick must be clearly marked (contract number and bidder's name).**

SCT 3(2) **TENDER INFORMATION: Obtaining Tender Documentation**

Documents can be obtained either in electronic format, issued by the eThekwini Municipality:

- Electronically downloaded documentation is obtainable from the National Treasury's eTenders website or the eThekwini Municipality's Website. The entire document should be printed and suitably bound by the tenderer.

SCT 3(3) **TENDER INFORMATION: Queries Relating to this Tender**

General and Contractual Queries are to be directed to:
Nondumiso Khumalo; Tel: 031 322 5093; eMail: nondumiso.khumalo@durban.gov.za

Technical Queries are to be directed to:
Nondumiso Khumalo; Tel: 031 322 5093; eMail: Nondumiso.khumalo@durban.gov.za

SCT 3(4) **TENDER INFORMATION: Briefing Session**

Bidders are required to submit email queries related to this bid. All email queries are to be submitted no later than 2nd of December 2022. Email questions and answers will be consolidated and posted on eTenders Municipal Website for the benefit of all bidders on 8th of December 2022.

SCT 3(5) **TENDER INFORMATION: Closing Date and Delivery of Tender Submissions**

Sealed Tenders, addressed to the City Manager and marked with the Tender Number, are to be placed in the Tender Box **located in the ground floor foyer of the Municipal Buildings, 166 KE Masinga Road (Old Fort Rd), Durban** (and not any other municipal department), no later than: **Thursday, 15 December 2022** at **11:00am**.

SCT 3(6) **TENDER INFORMATION: Tender Validity and Withdrawal of Tenders**

Tenders must hold good until 16:00 of the **12th week** following the date on which tenders are opened.

SCT 4(6) **RETURNABLE SCHEDULES, FORMS, CERTIFICATES**

MIB (Manufacturer, Importer and Builder)

SCT 14 **EVALUATION PROCESS**

Step one – Mandatory Requirement

14.1 Offers will be considered from body builder(s) (superstructural manufacturers) who are in possession of the Manufacturer, Importer and Builder (MIB) certificate or any third-party supplier that will have a letter of undertaking from body builder(s) who are in possession of MIB certificate. Bidders to submit MIB certificate as part of their tender submission.

14.2 Failure to submit MIB certificate will invalidate the tender submission.

Step Two – Price & Preference

The **80/20** preference points system will be used where the financial value (incl. VAT) of one or more responsive tender offers have a value that equals or is less than R 50,000,000. The Formula used to calculate the Price Points will be that in F.3.11.3.4(a) and the Preference Points will be allocated according to the 2017 PPPFA Regs.

3.2 ADDITIONAL CONDITIONS OF TENDER (ACT)

ACT 1 ELIGIBILITY – CSD REGISTRATION

Tenderers are required to be registered on the National Treasury Central Supplier Database (CSD) as a service provider. In the case of a Joint Venture, this requirement will apply individually to each party in the Joint Venture. Tenderers not so registered, at time of closing of tenders, will not be eligible to submit tenders.

The Tenderer's CSD Supplier Number (starting with "MAAA") is to be provided in the relevant portions of the tender submission.

Tenderers who wish to register on the CSD may do so via web address https://secure.csd.gov.za.

SECTION 4: RETURNABLE TENDER DOCUMENTS

The required returnable documents are as detailed in;

1. A superstructure customisation catalogue (with drawings/pictures) and datasheets of equipment being supplied.
2. Section 2 (Clause 4) : “Returnable Schedules, Forms, Certificates” of the Conditions of Tender / Special Conditions of Tender.
3. Section 6,7 and 8: functional and technical returnable documents, compulsory questionnaire and pricing schedule.
4. The Tender Form can be found in Section 9 : “Official Tender Form”, and any additional schedules, forms, certificates can be found in Section 10 : “Annexures”.

a) AUTHORITY OF SIGNATORY

Reference is made to the Conditions of Tender: Clause 4(5)(c).

Indicate the status of the tenderer by ticking the appropriate box hereunder.

COMPANY		CLOSE CORPORATION		PARTNERSHIP		JOINT VENTURE		SOLE PROPRIETOR	
Refer to Notes at the bottom of the page									

I / We, the undersigned, being the Chairperson (Company), Member(s) (Close Corporation), Partners (Partnership), Sole Owner (Sole Proprietor), Lead Partner (JV), in the company / business trading as:

……

hereby authorise Mr/Mrs/Ms ……

acting in the capacity of .....

to sign all documents in connection with the tender for Contract No. **1J-18539** and any contract resulting from it on our behalf.

NAME	ADDRESS	SIGNATURE	DATE

Notes

The following documents must be attached to the back inside cover to this procurement document:

If a Company : a “Resolution of the Board” in this regard.
If a Joint Venture : a “Power of Attorney” signed by the legally authorised signatories of all the partners to the Joint venture.

b) DECLARATION OF MUNICIPAL FEES

I, the undersigned, do hereby declare that the Municipal fees of

.....
(full name of Company / Close Corporation / partnership / sole proprietary/Joint Venture)

(hereinafter referred to as the TENDERER) are, as at the date hereunder, fully paid or an Acknowledgement of Debt has been concluded with the Municipality to pay the said charges in instalments.

The following account details relate to property of the said TENDERER:

Account	Account Number: to be completed by tenderer.
Consolidated Account No.	
Electricity	
Water	
Rates	
Other	
Other	
Other	

I acknowledge that should the aforesaid Municipal charges fall into arrears, the Municipality may take such remedial action as is required, including termination of any contract, and any payments due to the Contractor by the Municipality shall be first set off against such arrears. **ATTACHED, to the back inside cover of this document, please find copies of the above account's and or agreements signed with the Municipality**.

9 Where the TENDERER'S place of business or business interests are outside the jurisdiction of eThekwini Municipality, a copy of the accounts/agreements from the relevant municipality must be attached (to the back inside cover of this document).

10 Where the tenderer's Municipal Accounts are part of their lease agreement, then a copy of the agreement, or official letter to that effect is to be attached (to the back inside cover of this document).

NAME : ..... (Block Capitals)

SIGNATURE : ..... DATE: .....
(of person authorised to sign on behalf of the Tenderer)

c) DECLARATION WITH RESPECT TO THE OCCUPATIONAL HEALTH AND SAFETY ACT

Definitions

The Act: The Occupational Health and Safety Act No 85 of 1993 (as amended by the Occupational Health and Safety Amendment Act No 181 of 1993), and any associated / applicable Regulations.

Declaration by Tenderer

1. I, the undersigned, hereby declare and confirm that I am fully conversant with the Act.

2. I hereby declare that my company has the competence and the necessary resources to safely carry out the work / supply / services under this contract in compliance with the Act, and the Employer's / Purchaser's / Client's Health and Safety Specifications.

3. I hereby undertake, if my tender is accepted, to provide on request a suitable and sufficiently documented Health and Safety Plan which plan shall be subject to approval by the Employer / Purchaser / Client.

4. I hereby confirm that adequate provision has been made in my tendered rates to cover the cost of all resources, actions, training and all health and safety measures envisaged in the Act, and that I will be liable for any penalties that may be applied by the Employer / Purchaser / Client for failure to comply with the provisions of the Act.

5. I agree that my failure to complete and execute this declaration to the satisfaction of the Employer / Purchaser / Client will mean that I am unable to comply with the requirements of the Act and accept that my tender will be prejudiced and may be rejected at the discretion of the Employer / Purchaser / Client.

NAME : ..... (Block Capitals)

SIGNATURE : ……..……..…… DATE: .....
(of person authorised to sign on behalf of the Tenderer)

d) CONSOLIDATED MUNICIPAL BIDDING DOCUMENTS

The following SECTIONS are required to be completed as part of this procurement document

Section	Description	Required?
A	General Enterprise Information	Yes
B	MBD2: Tax Clearance Certificate Requirements	Yes
C	MBD4: Declaration of Interest	Yes
D	MBD5: Declaration for Procurement Above R10 Million	Yes
E	MBD6.1: Preference Points Claim Form ITO the Preferential Regulations	Yes
F	MBD6.2: Declaration Certificate for Local Production and Content for Designated Sectors	No
G	MBD8: Declaration of Bidder's Past SCM Practices	Yes
H	MBD9: Certificate of Independent Bid Determination	Yes
I	Confirmations, Authorities, Certifications, Acknowledgements and Signatures	Yes

NOTES

1. 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 enterprise;
   (c) an official of any municipality or municipal enterprise;
   (d) an emplo0yee of any national or provincial department, national or provincial public enterprise or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No.1 of 1999);
   (e) a member of the accounting authority of any national or provincial public enterprise; 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.
3. Includes price quotations, advertised competitive bids, limited bids and proposals.
4. Bid rigging (or collusive bidding) occurs when businesses, that would otherwise be expected to compete, secretly conspire to raise prices or lower the quality of goods and / or services for purchasers who wish to acquire goods and / or services through a bidding process. Bid rigging is, therefore, an agreement between competitors not to compete.

Ref	Description	Complete as Applicable

SECTION A : GENERAL ENTERPRISE INFORMATION

1.0	Full Name of bidder or his or her representative	
1.1	ID Number of bidder or his or her representative	
1.2	Position occupied in the enterprise	
2.0	Name of enterprise:	
2.1	Tax Reference number, if any:	
2.2	VAT registration number, if any:	
2.3	CIDB registration number, if any:	
2.4	Company registration number, if applicable:	
2.5	Close corporation number, if applicable:	
2.6	Supplier reference number (PR), if any:	PR:
2.7	South African Revenue Service Tax Compliance Status PIN :	
2.8	National Treasury Central Supplier Database registration number	MAAA:

3.0 The names of all directors / trustees / shareholders / members / sole proprietors / partners in partnerships, their individual identity numbers and state employee numbers must be indicated below. In the case of a joint venture, information in respect of each partnering enterprise must be completed and submitted

Full Name	Identity No.	State Employee No.	Personal income tax No. *
Use additional pages if necessary			

Ref	Description	Complete or Circle Applicable

SECTION B : MBD 2 : TAX CLEARANCE CERTIFICATE REQUIREMENTS

It is a condition of bid that the taxes of the successful bidder must be in order, or that satisfactory arrangements have been made with South African Revenue Service (SARS) to meet the bidder's tax obligations.

1.0 In order to meet this requirement bidders are required to complete the TCC 001 : "Application for a Tax Clearance Certificate" form and submit it to any SARS branch office nationally. The Tax Clearance Certificate Requirements are also applicable to foreign bidders / individuals who wish to submit bids.

2.0 SARS will then furnish the bidder with a Tax Clearance Certificate that will be valid for a period of 1 (one) year from the date of approval.

3.0 The original Tax Clearance Certificate must be submitted together with the bid (attached to the inside back cover of this procurement document). Failure to submit the original and valid Tax Clearance Certificate will result in the invalidation of the bid. Certified copies of the Tax Clearance Certificate will not be acceptable.

4.0 In bids where Consortia / Joint Ventures / Sub-contractors are involved, each party must submit a separate Tax Clearance Certificate.

5.0 Copies of the TCC 001 : "Application for a Tax Clearance Certificate" form are available from any SARS branch office nationally or on the website www.sars.gov.za .

6.0 Applications for the Tax Clearance Certificates may also be made via eFiling. In order to use this provision, taxpayers will need to register with SARS as eFilers through the website www.sars.gov.za .

7.0 Notwithstanding Clauses 1.0 to 6.0 above: Since 18 April 2016, SARS has introduced a new Tax Compliance Status System (TCS). As part of this enhanced system, tenderers can now submit a Tax Compliance Status PIN instead of an original Tax Clearance Certificate (TCC). This TCS PIN can be used by third parties to certify the taxpayer's real-time compliance status. This number, if available, is to be entered in Item 2.7 of Section A of these consolidated Municipal Bidding Documents.
For further particulars please contact your nearest SARS branch, or call the SARS Contact Centre on 0800 00 7277, or log onto SARS eFiling.

Attach a valid Tax Clearance Certificate OR Tax Compliance Status PIN, issued by the TCS System of the South African Revenue Service, to the inside back cover of this procurement document

SECTION C : MBD 4 : DECLARATION OF INTEREST

No bid will be accepted from persons "in the service of the state[1]". 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 bidder or their authorised representative declare their position in relation to the evaluating/adjudicating authority and/or take an oath declaring his/her interest. In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.

1.0	Are you presently in the service of the state? If yes, furnish particulars :	YES	NO
2.0	Have you been in the service of the state for the past twelve months? If yes, furnish particulars :	YES	NO
3.0	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? If yes, furnish particulars :	YES	NO
4.0	Are you, aware of any relationship (family, friend, other) between any other bidder and any persons in the service of the state who may be involved with the evaluation and or adjudication of this bid? If yes, furnish particulars :	YES	NO
5.0	Are any of the company's directors, trustees, managers, principle shareholders or stakeholders in service of the state? If yes, furnish particulars:	YES	NO
6.0	Are any spouse, child or parent of the company's directors, trustees, managers, principle shareholders or stakeholders in service of the state? If yes, furnish particulars:	YES	NO
7.0	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? If yes, furnish particulars:	YES	NO

8.0 The names of all directors / trustees / shareholders / members / sole proprietors / partners in partnerships, their individual identity numbers and state employee numbers are indicated in **SECTION A**.

Ref	Description	Complete or Circle Applicable

SECTION D : MBD 5 : DECLARATION FOR PROCUREMENT ABOVE R10 MILLION (ALL APPLICABLE TAXES INCLUDED)

For all procurement expected to exceed R10 million (all applicable taxes included), bidders must complete the following questionnaire.

1.0	Are you by law required to prepare annual financial statements for auditing? If YES, you will be required to submit audited annual financial statements (on request during the tender evaluation period) for the past three years or since the date of establishment if established during the past three years.	YES	NO
2.0	Do you have any outstanding undisputed commitments for municipal services towards any municipality for more than three months or any other service provider in respect of which payment is overdue for more than 30 days? If NO, this serves to certify that the bidder has no undisputed commitments for municipal services towards any municipality for more than three months or other service provider in respect of which payment is overdue for more than 30 days. If YES, provide particulars on a letterhead. (Attach this letter to the back inside cover of this procurement document).	YES	NO
3.0	Has any contract been awarded to you 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? If YES, provide particulars on a letterhead. (Attach this letter to the back inside cover of this procurement document).	YES	NO
4.0	Will any portion of goods or services be sourced from outside the Republic, and, if so, what portion and whether any portion of payment from the municipality / municipal entity is expected to be transferred out of the Republic? If YES, provide particulars on a letterhead. (Attach this letter to the back inside cover of this procurement document).	YES	NO

SECTION E : MBD 6.1 : PREFERENCE POINTS CLAIM ITO THE PREFERENTIAL REGULATIONS

Preference points for this tender shall be awarded as per the Tender Data and the Preferential Procurement Regulations (2017).
Failure on the part of a tenderer to submit a B-BBEE Verification Certificate from a Verification Agency accredited by the South African Accreditation System (SANAS), or a Sworn Affidavit for an EME, or sworn affidavit for a QSE (in line with the revised BBBEE codes of Good Practice), together with the bid will be interpreted to mean that preference points for B-BBEE status level of contribution are not claimed.
The Employer reserves the right to require of a tenderer, either before a bid is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the Employer.

DECLARATION

1.0	B-BBEE Status Level of Contribution claimed:		
	Will any portion of the contract be sub-contracted?	YES	NO
	If YES, indicate:		
	(i) what percentage of the contract will be subcontracted?		
	(ii) the name of the sub-contractor?		
	Name : ……		
	(iii) the B-BBEE status level of the sub-contractor?		
	(iv) whether the sub-contractor is an EME?	YES	NO

The undersigned, certify that the B-BBEE status level of contribution indicated in paragraph 1.0 above qualifies the company / firm for preference points and acknowledges that the remedies as per Clause 14 of the Preferential Procurement Regulations (2017) shall apply.

Attach a B-BBEE Verification Certificate to the inside back cover of this procurement document

Ref	Description	Complete or Circle Applicable

SECTION F : MBD 6.2 : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS

This Municipal Bidding Document (MBD) must form part of all bids invited. It contains general information and serves as a declaration form for local content (local production and local content are used interchangeably).

Before completing this declaration, bidders must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2011 and the South African Bureau of Standards (SABS) approved technical specification number SATS 1286:2011 (Edition 1) and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Supporting Schedule to Annex C)].

1.0 General Conditions

1.1 Preferential Procurement Regulations, 2017 (Regulation 8) makes provision for the promotion of local production and content.

1.2 Regulation 8.(1) prescribes that in the case of designated sectors, where in the award of bids local production and content is of critical importance, such bids must be advertised with the specific bidding condition that only locally produced goods, services or works or locally manufactured goods, with a stipulated minimum threshold for local production and content will be considered.

1.3 Where necessary, for bids referred to in paragraph 1.2 above, a two stage bidding process may be followed, where the first stage involves a minimum threshold for local production and content and the second stage price and B-BBEE.

1.4 A person awarded a contract in relation to a designated sector, may not sub-contract in such a manner that the local production and content of the overall value of the contract is reduced to below the stipulated minimum threshold.

1.5 The local content (LC) expressed as a percentage of the bid price must be calculated in accordance with the SABS approved technical specification number SATS 1286: 2011 as follows:

$$LC = [1- x / y] *100$$

Where : x is the imported content in Rand

y is the bid price in Rand excluding value added tax (VAT).

Prices referred to in the determination of x must be converted to Rand (ZAR) by using the exchange rate published by the South African Reserve Bank (SARB) at 12:00 on the date of advertisement of the bid as required in paragraph 4.1 below.

The SABS approved technical specification number SATS 1286:2011 is accessible on http://www.thedti.gov.za/industrial development/ip.jsp at no cost.

1.6 A bid may be disqualified if –

(a) this Declaration Certificate and the Annex C (Local Content Declaration: Summary Schedule) are not submitted as part of the bid documentation; and

(b) the bidder fails to declare that the Local Content Declaration Templates (Annex C, D and E) have been audited and certified as correct.

2.0 Definitions

2.1 “bid” includes written price quotations, advertised competitive bids or proposals;

2.2 “bid price” price offered by the bidder, excluding value added tax (VAT);

2.3 “contract” means the agreement that results from the acceptance of a bid by an organ of state;

2.4 “designated sector” means a sector, sub-sector or industry that has been designated by the Department of Trade and Industry in line with national development and industrial policies for local production, where only locally produced services, works or goods or locally manufactured goods meet the stipulated minimum threshold for local production and content;

2.5 “duly sign”means a Declaration Certificate for Local Content that has been signed by the Chief Financial Officer or other legally responsible person nominated in writing by the Chief Executive, or senior member / person with management responsibility(close corporation, partnership or individual).

2.6 “imported content” means that portion of the bid price represented by the cost of components, parts or materials which have been or are still to be imported (whether by the supplier or its subcontractors) and which costs are inclusive of the costs abroad (this includes labour and intellectual property costs), plus freight and other direct importation costs, such as landing costs, dock duties, import duty, sales duty or other similar tax or duty at the South African port of entry;

2.7 “local content” means that portion of the bid price which is not included in the imported content, provided that local manufacture does take place;

2.8 “stipulated minimum threshold” means that portion of local production and content as determined by the Department of Trade and Industry; and

2.9 “sub-contract” means the primary contractor’s assigning, leasing, making out work to, or employing another person to support such primary contractor in the execution of part of a project in terms of the contract.

3.0 The stipulated minimum threshold(s) for local production and content (refer to Annex A of SATS 1286:2011) for this bid is/are as follows:

Description of services, works or goods	Stipulated minimum threshold
.....	..... %
.....	..... %
.....	..... %

Ref	Description	Complete or Circle Applicable

4.0 Does any portion of the services, works or goods offered have any imported content? YES / NO

4.1 If yes, the rate(s) of exchange to be used in this bid to calculate the local content as prescribed in paragraph 1.5 of the general conditions must be the rate(s) published by the SARB for the specific currency at 12:00 on the date of advertisement of the bid.
The relevant rates of exchange information is accessible on www.reservebank.co.za .
Indicate the rate(s) of exchange against the appropriate currency in the table below (refer to Annex A of SATS 1286:2011):

US Dollar : | Pound Sterling : | Euro : | Yen : | Other :

NB: Bidders must submit proof of the SARB rate (s) of exchange used.

5.0 Were the Local Content Declaration Templates (Annex C, D and E) audited and certified as correct? YES / NO

5.1 If yes, provide the following particulars:

(a) Full name of auditor: .....

(b) Practice number: ..... (c) Telephone number: .....
Cell number: .....

(d) Email address: .....

(Documentary proof regarding the declaration will, when required, be submitted to the satisfaction of the Accounting Officer / Accounting Authority)

6.0 Where, after the award of a bid, challenges are experienced in meeting the stipulated minimum threshold for local content the dti must be informed accordingly in order for the dti to verify and in consultation with the Accounting Officer / Accounting Authority provide directives in this regard.

LOCAL CONTENT DECLARATION

(REFER TO ANNEX B OF SATS 1286:2011)

LOCAL CONTENT DECLARATION BY CHIEF FINANCIAL OFFICER OR OTHER LEGALLY RESPONSIBLE PERSON NOMINATED IN WRITING BY THE CHIEF EXECUTIVE OR SENIOR MEMBER/PERSON WITH MANAGEMENT RESPONSIBILITY (Close Corporation, Partnership or Individual)

....
IN RESPECT OF BID No: ISSUED BY: (Procurement Authority / Name of Municipality / Municipal Entity)

NB 1 - The obligation to complete, duly sign and submit this declaration cannot be transferred to an external authorized representative, auditor or any other third party acting on behalf of the bidder.

NB 2 - Guidance on the Calculation of Local Content together with Local Content Declaration Templates (Annex C, D and E) is accessible on http://www.thedti.gov.za/industrial development/ip.jsp. Bidders should first complete Declaration D. After completing Declaration D, bidders should complete Declaration E and then consolidate the information on Declaration C. Declaration C should be submitted with the bid documentation at the closing date and time of the bid in order to substantiate the declaration made in paragraph (c) below. Declarations D and E should be kept by the bidders for verification purposes for a period of at least 5 years. The successful bidder is required to continuously update Declarations C, D and E with the actual values for the duration of the contract.

I, the undersigned in Section H of these Consolidated MBD returnable questionnaires (comprising 8 pages), do hereby declare the following:

(a) The facts contained herein fall within my own personal knowledge.

(b) I have satisfied myself that:
(i) the goods/services/works to be delivered in terms of the above-specified bid comply with the minimum local content requirements as specified in the bid, and as measured in terms of SATS 1286:2011; and
(ii) the declaration templates have been audited and certified to be correct.

(c) The local content percentages (%) indicated below has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E which has been consolidated in Declaration C;

4	Bid price, excluding VAT (y)	R
5	Imported content (x), as calculated in terms of SATS 1286:2011	R
6	Stipulated minimum threshold for local content (paragraph 3 above).....	%
7	Local content %, as calculated in terms of SATS 1286:2011	%

If the bid is for more than one product, the local content percentages for each product contained in Declaration C shall be used instead of the table above. The local content percentages for each product has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E.

(d) I accept that the Procurement Authority / Municipality /Municipal Entity has the right to request that the local content be verified in terms of the requirements of SATS 1286:2011.

(e) I understand that the awarding of the bid is dependent on the accuracy of the information furnished in this application. I also understand that the submission of incorrect data, or data that are not verifiable as described in SATS 1286:2011, may result in the Procurement Authority / Municipal / Municipal Entity imposing any or all of the remedies as provided for in Regulation 13 of the Preferential Procurement Regulations, 2017 promulgated under the Preferential Policy Framework Act (PPPFA), 2000 (Act No. 5 of 2000).

Ref	Description	Complete or Circle Applicable

SECTION G : MBD8 : DECLARATION OF BIDDER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES

This Municipal Bidding Document must form part of all bids invited. It serves as a declaration to be used by municipalities and municipal entities in ensuring that when goods and services are being procured, all reasonable steps are taken to combat the abuse of the supply chain management system.

The bid of any bidder may be rejected if that bidder, or any of its directors have:

a) abused the municipal entity's supply chain management system or committed any improper conduct in relation to such system;
b) been convicted for fraud or corruption during the past five years;
c) wilfully 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).

In order to give effect to the above, the following questions must be answered.

1.0	Is the bidder or any of its directors 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 audi alteram partem 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. If yes, furnish particulars : ……	YES	NO
2.0	Is the bidder or any of its directors 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)? 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. If yes, furnish particulars : ……	YES	NO
3.0	Was the bidder or any of its directors 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? If yes, furnish particulars : ……	YES	NO
4.0	Does the bidder 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? If yes, furnish particulars : ……	YES	NO
5.0	Was any contract between the bidder 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? If yes, furnish particulars : ……	YES	NO

SECTION H : MBD9 : CERTIFICATE OF INDEPENDENT BID DETERMINATION

Section 4 (1) (b) (iii) of the Competition Act No. 89 of 1998, as amended, prohibits an agreement between, or concerted practice by, firms, or a decision by an association of firms, if it is between parties in a horizontal relationship and if it involves collusive bidding (or bid rigging).[2] Collusive bidding is a pe se prohibition meaning that it cannot be justified under any grounds.

Municipal Supply Regulation 38 (1) prescribes that a supply chain management policy must provide measures for the combating of abuse of the supply chain management system, and must enable the accounting officer, among others, to:

(a) take all reasonable steps to prevent such abuse;
(b) reject the bid of any bidder if that bidder or any of its directors has abused the supply chain management system of the municipality or municipal entity or has committed any improper conduct in relation to such system; and
(c) cancel a contract awarded to a person if the person committed any corrupt or fraudulent act during the bidding process or the execution of the contract.

The following MBD serves as a certificate of declaration that would be used by institutions to ensure that, when bids are considered, reasonable steps are taken to prevent any form of bid-rigging.

In order to give effect to the above, the following Certificate of Bid Determination must be completed and submitted with the bid.The undersigned, in submitting the accompanying bid, in response to the invitation for the bid do hereby make the following statements that I certify to be true and complete in every respect:

1.0 I have read and I understand the contents of this Certificate;

2.0 I understand that the accompanying bid will be disqualified if this Certificate is found not to be true and complete in every respect;

Ref	Description	Complete or Circle Applicable

3.0 I am authorized by the bidder to sign this Certificate, and to submit the accompanying bid, on behalf of the bidder;

4.0 Each person whose signature appears on the accompanying bid has been authorized by the bidder to determine the terms of, and to sign, the bid, on behalf of the bidder;

5.0 For the purposes of this Certificate and the accompanying bid, I understand that the word "competitor" shall include any individual or organization, other than the bidder, whether or not affiliated with the bidder, who:

4 has been requested to submit a bid in response to this bid invitation;
5 could potentially submit a bid in response to this bid invitation, based on their qualifications, abilities or experience; and
6 provides the same goods and services as the bidder and/or is in the same line of business as the bidder.

6.0 The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However communication between partners in a joint venture or consortium[3] will not be construed as collusive bidding. (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.

7.0 In particular, without limiting the generality of paragraphs 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:

8 prices;
9 geographical area where product or service will be rendered (market allocation);
10 methods, factors or formulas used to calculate prices;
11 the intention or decision to submit or not to submit, a bid;
12 the submission of a bid which does not meet the specifications and conditions of the bid;
13 bidding with the intention not to win the bid.

8.0 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 bid invitation relates.

9.0 The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.

10.0 I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to bids and contracts, bids 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 No. 89 of 1998 and or 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 ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No. 12 of 2004 or any other applicable legislation.

SECTION I : CONFIRMATIONS, AUTHORITIES, CERTIFICATIONS, ACKNOWLEDGEMENTS and SIGNATURES

The undersigned, who warrants that he/she is duly authorised to do so on behalf of the enterprise:

1.0 Confirms that the contents of these Consolidated MBD returnable questionnaires (comprising 8 pages) are within my personal knowledge and are to the best of my belief both true and correct;

2.0 Confirms that neither the name of the enterprise or the name of any partner, manager, director or other person, who wholly or partly exercise, or may exercise, control over the enterprise appears on the Register of Tender Defaulters established in terms of the Prevention and Combating of Corrupt Activities Act of 2004;

3.0 Confirms that no partner, member, director or other person, who wholly or partly exercise control over the enterprise, has within the last five years been convicted of fraud or corruption;

4.0 Confirms that I/we are not associated, linked or involved with any other tendering entities submitting tender offers and have no other relationship with any of the bidders or those responsible for compiling the scope of work that could cause or be interpreted as a conflict of interest;

5.0 Certify that the B-BBEE status level of contribution indicated in Section E : Item 1.0 qualifies the enterprise for preference points and acknowledges that the remedies as per Clause 13 of the Preferential Procurement Regulations (2011) shall apply. In the event of a contract being awarded as a result of points claimed, the enterprise may be required to furnish documentary proof to the satisfaction of the employer that the claims are correct;

6.0 Accept that, in addition to cancellation of a contract, action may be taken against me should these declarations prove to be false.

Signed …… Date ……

Name …… Position ……

SECTION 5: CONDITIONS OF CONTRACT

GOVERNMENT PROCUREMENT: CONDITIONS OF CONTRACT (July 2010)

The ***Conditions of Contract*** are the ***General Conditions of Contract*** as published by the National Treasury titled "Government Procurement: General Conditions of Contract (July 2010), as amended by National Treasury Circular 52 dated 30 July 2010, hereinafter referred to as ***GCC***.

THE NATIONAL TREASURY

Republic of South Africa

GOVERNMENT PROCUREMENT:

GENERAL CONDITIONS OF CONTRACT

July 2010

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1. Definitions

The following terms shall be interpreted as indicated:

4.1 "Closing time" means the date and hour specified in the bidding documents for the receipt of bids.

4.2 "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.

4.3 "Contract price" means the price payable to the supplier under the contract for the full and proper performance of his contractual obligations.

4.4 "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.

4.5 "Countervailing duties" are imposed in cases where an enterprise abroad is subsidized by its government and encouraged to market its products internationally.

4.6 "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 recognized new product results that is substantially different in basic characteristics or in purpose or utility from its components.

4.7 "Day" means calendar day.

4.8 "Delivery" means delivery in compliance of the conditions of the contract or order.

4.9 "Delivery ex stock" means immediate delivery directly from stock actually on hand.

4.10 "Delivery into consignees 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 goods are so delivered and a valid receipt is obtained.

4.11 "Dumping" occurs when a private enterprise abroad market its goods on own initiative in the RSA at lower prices than that of the country of origin and which have the potential to harm the local industries in the RSA.

4.12 "Force majeure" means an event beyond the control of the supplier and not involving the supplier's fault or negligence and not foreseeable. Such events may include, but is not restricted to, acts of the purchaser in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.

4.13 "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.

4.14 "GCC" means the General Conditions of Contract.

4.15 "Goods" means all of the equipment, machinery, and/or other materials that the supplier is required to supply to the purchaser under the contract.

4.16 "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 goods covered by the bid will be manufactured.

4.17 "Local content" means that portion of the bidding price, which is not included in the imported content provided that local manufacture does take place.

4.18 "Manufacture" means the production of products in a factory using labour, materials, components and machinery and includes other related value-adding activities.

4.19 "Order" means an official written order issued for the supply of goods or works or the rendering of a service.

4.20 "Project site," where applicable, means the place indicated in bidding documents.

4.21 "Purchaser" means the organization purchasing the goods.

4.22 "Republic" means the Republic of South Africa.

4.23 "SCC" means the Special Conditions of Contract.

4.24 "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.

4.25 "Supplier" means the successful bidder who is awarded the contract to maintain and administer the required and specified service(s) to the State.

4.26 "Tort" means in breach of contract.

4.27 "Turnkey" means a procurement process where one service provider assumes total responsibility for all aspects of the project and delivers the full end product / service required by the contract.

1.28 "Written" or "in writing" means hand-written 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 (excluding professional services related to the building and construction industry), 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 goods, 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 Invitations to bid are usually published in locally distributed news media and on the municipality/municipal entity website.

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 so far as may be necessary for 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 use of the goods or any part thereof by the purchaser.

6.2 When a supplier developed documentation / projects for the municipality / municipal entity, the intellectual, copy and patent rights or ownership of such documents or projects will vest in the municipality / municipal entity.

7. Performance security

7.1 Within thirty (30) 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 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.

7.3 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 thirty (30) days following the date of completion of the supplier's performance obligations under the contract, including any warranty obligations, unless otherwise specified.

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 goods to be produced or services to be rendered should at any stage be subject to inspections, tests and analyses, the bidder or contractor's premises shall be open, at all reasonable hours, for inspection by a representative of the purchaser or organization acting on behalf of the purchaser.

8.3 If there are no inspection requirements indicated in the bidding documents and no mention 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 goods 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 goods or services referred to in clauses 8.2 and 8.3 do not comply with the contract requirements, irrespective of whether such goods or services are accepted or not, the cost in connection with these inspections, tests or analyses shall be defrayed by the supplier.

8.6 Goods 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 goods 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 goods 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 goods, which do comply with the requirements of the contract. Failing such removal the rejected goods shall be returned at the suppliers cost and risk. Should the supplier fail to provide the substitute goods forthwith, the purchaser may, without giving the supplier further opportunity to substitute the rejected goods, purchase such goods 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 22 of 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 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, and in any subsequent instructions ordered by the purchaser.

10. Delivery and documents

10.1 Delivery of the goods and arrangements for shipping and clearance obligations, shall be made by the supplier in accordance with the terms specified in the contract.

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.

12. Transportation

12.1 Should a price other than an all-inclusive delivered price be required, this shall be specified.

13. Incidental Services

13.1 The supplier may be required to provide any or all of the following services, including additional services, if any:

(a) performance or supervision of on-site assembly and/or commissioning of the supplied goods;

(b) furnishing of tools required for 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, 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:

10 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:

8 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 twelve (12) 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 eighteen (18) months after the date of shipment from the port or place of loading in the source country, whichever period concludes earlier, unless specified otherwise.

15.3 The purchaser shall promptly notify the supplier in writing of any claims arising under this warranty.

15.4 Upon receipt of such notice, the supplier shall, within the period specified 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, 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.

16.2 The supplier shall furnish the purchaser with an invoice accompanied by a copy of the delivery note and upon fulfilment of other obligations stipulated in the contract.

16.3 Payments shall be made promptly by the purchaser, but in no case later than thirty (30) days after submission of an invoice or claim by the supplier.

16.4 Payment will be made in Rand unless otherwise stipulated.

17. Prices

17.1 Prices charged by the supplier for goods delivered and services performed under the contract shall not vary from the prices quoted by the supplier in his bid, with the exception of any price adjustments authorized or in the purchaser's request for bid validity extension, as the case may be.

18. Variation orders

18.1 In cases where the estimated value of the envisaged changes in purchase does not vary more than 15% of the total value of the original contract, the contractor may be instructed to deliver the goods or render the services as such. In cases of measurable quantities, the contractor may be approached to reduce the unit price, and such offers may be accepted provided that there is no escalation in price.

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 contracts 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 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 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 The right is reserved to procure outside of the contract small quantities or to have minor essential services executed if an emergency arises, the supplier's point of supply is not situated at or near the place where the goods are required, or the supplier's services are not readily available.

21.4 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 22.2 without the application of penalties.

21.5 Upon any delay beyond the delivery period in the case of a goods contract, the purchaser shall, without cancelling the contract, be entitled to purchase goods 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 judgement 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 fourteen (14) days to provide reasons why the envisaged restriction should not be imposed. Should the supplier fail to respond within the stipulated fourteen (14) days the purchaser may regard the supplier as having no objection and proceed with the restriction.

23.5 Any restriction imposed on any person by the purchaser will, at the discretion of the purchaser, 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 purchaser actively associated.

23.6 If a restriction is imposed, the purchaser must, within five (5) 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, No. 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 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. Antidumping 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 subsidized 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 supplier to the purchaser or the purchaser may deduct such amounts from moneys (if any) which may otherwise be due to the supplier in regard to goods or services which he 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.

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 promptly notify the purchaser 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 amicably such dispute or difference by mutual consultation.

27.2 If, after thirty (30) 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 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 the supplier for goods delivered and / or services rendered according to the prescripts of the contract.

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.

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, license fees, and other such levies imposed outside the purchaser's country.

32.2 A local supplier shall be entirely responsible for all taxes, duties, license 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 SARS must have certified that the tax matters of the preferred bidder are in order.

32.4 No contract shall be concluded with any bidder whose municipal rates and taxes and municipal services charges are in arrears.

33. Transfer of Contracts

33.1 The contractor shall not abandon, transfer, cede assign or sublet a contract or part thereof without the written permission of the purchaser.

34. Amendment of contracts

34.1 No agreement to amend or vary a contract or order or the conditions, stipulations or provisions thereof shall be valid and of any force unless such agreement to amend or vary is entered into in writing and signed by the contracting parties. Any waiver of the requirement that the agreement to amend or vary shall be in writing, shall also be in writing.

35. Prohibition of restrictive practices

35.1 In terms of section 4 (1) (b) (iii) of the Competition Act No. 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.

35.2 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 section 59 of the Competition Act No 89 0f 1998.

35.3 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 ten (10) years and / or claim damages from the bidder(s) or contractor(s) concerned.

SECTION 6: SPECIAL / ADDITIONAL CONDITIONS OF CONTRACT

The ***Conditions of Contract*** make reference to the ***Special Conditions of Contract (SSC)*** for details that apply specifically to this bid. The ***Special Conditions of Contract*** shall have precedence in the interpretation of any ambiguity or inconsistency between it and the ***Conditions of Contract***.

Each item below is cross-referenced to the clause in the ***Conditions of Contract*** to which it mainly applies.

SCC 1.2 **CONTRACT**

This contract is for a period of thirty-six (36) months.

SCC 7.1 **PERFORMANCE SECURITY**

The liability of the Performance Security shall be Nil.

SCC 10.1 **DELIVERY AND DOCUMENTS**

The complete unit will have to be delivered to eThekwini Municipality Premises and have to be accompanied by an invoice. Delivery will only take place after the prototype and relevant documentation have been received and assessed by eThekwini Municipality's officials responsible.

The following documentation (soft copies) shall accompany the tender response:

A catalogue and assembly drawing indicating the general arrangement of the superstructure and the subassemblies making up the customisation together with datasheets/catalogues of auxiliary equipment.

SCC 11.1 **INSURANCE**

The successful tenderer is to take adequate insurance to cover the unit when it leaves the premises of the bidder until it is fully delivered and commissioned at eThekwini Municipality Premises.

SCC 12.1 **TRANSPORTATION**

No separate costs will be paid by the City for transportation of the goods, the tenderer must provide a price which is inclusive of delivery costs.

SCC 14.1 **SPARE PARTS**

The tenderer must have service representation in South Africa that can provide spare parts for the unit tendered on.

SCC 15.5 **WARRANTY**

The superstructure shall in no way effect/void the warranty of the primary commercial vehicle/chassis cab.

All subsystems and components fitted including but not limited to the hydraulic/pneumatic/electrical systems to be covered by a minimum 2-year warranty.

The steel structures shall have a minimum of a 7-year warranty for its application.

The paintwork shall be covered by a 10-year corrosion free warranty (superstructure and chassis cab).

SCC 16.1 **PAYMENT**

The Contractor shall submit to the Department concerned a detailed account which shall reflect the identifying number of each item / service. Payment will be made on this account when checked and substantiated by the authorised official.

Payment for goods received and accepted by the Municipality shall be made no later than 30 days after submission of invoice or claim, provided however that all the terms of the contract are duly complied with.

Payment will be made only to the supplier. Factoring arrangements will not be accepted.

SCC 17 **PRICES**

Prices must be fixed for the first 6-month period(s) and thereafter price adjustment will be in line with SEIFSA and Consumer Price Index. Such request for price adjustment must be supported by necessary documentation.

SCC 21.1 **DELAYS IN THE SUPPLIER'S PERFORMANCE**

Units are to be delivered within 4 to 8 weeks from confirmation of order.

SCC 22.1 **PENALTIES**

Replace this clause with the following:

"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 penalty of R 5000 per day for each day delivery is delayed.

The purchaser may also consider termination of the contract pursuant to GCC Clause 23."

ADDITIONAL CONDITIONS OF CONTRACT

ACC1 **PERFORMANCE MONITORING & ASSESSMENT OF SERVICE PROVIDERS**

For contract awards that are greater than R10m, the Contractor shall be subjected to "Performance Monitoring" assessments in terms of the applicable Section of the Council's current Supply Chain Management Policy.

ACC2 **QUALITY OF PRODUCTS**

No inferior products will be accepted under this enquiry.

Should there be any cause for complaint against the standard of service or quality of products offered which is not resolved within a period of 10 working days, the Municipality reserves the right to cancel the contract after serving one month's notice, in writing, to the supplier involved. Should such notice be given, the supplier shall nevertheless be obliged to perform the duties covered by the contract up to the date of expiration of the period of notice.

ACC3 **SATISFACTORY PERFORMANCE**

The supplier shall employ for the purpose of this contract only such personnel as are careful and competent and the Municipality shall be at liberty to object to and require the supplier to remove from the job forthwith any person, including supervisory staff, employed by the supplier who, in the opinion of the Municipality, misconducts himself/herself or is incompetent or negligent in the proper performance of his/her duties and such person shall not again be employed upon this contract without the permission of the Municipality.

ACC4 **OCCUPATIONAL INJURIES AND DISEASES ACT**

This act replaces the Workmen's Compensation Act:

The supplier **shall, before commencement of work, produce documentary proof to the Deputy Municipal Manager, Treasury: Finance that he has complied in all respects with the provisions of the Occupational Injuries and Diseases Act**. The supplier undertakes that he/she will perform and comply with all provisions of the Occupational Injuries and Diseases Act and more particularly that he/she will render all returns and pay all assessments for which he/she is liable in terms of such Act.

ACC5 **DAMAGE TO PERSONS AND PROPERTY**

(1) The supplier **shall** indemnify and keep indemnified the Council against any claim for death, injury, damage or loss to any person or property whatsoever in respect thereof or in relation thereto.

(2) The supplier enters into this contract as an independent contractor and shall be solely liable in respect of any claim for death, injury, damage or loss to any person or property whatsoever in respect thereof or in relation thereto.

ACC6 **RATE OF EXCHANGE VARIATION**

Where the goods are imported the Contractor shall within seven days of date of Official Purchase Order, arrange through his bankers for the foreign commitment to be covered forward down to the Rand in order to fix the rate of exchange. The Contractor shall notify the Municipality as soon as possible thereafter regarding the rate which has been fixed on such forward exchange. The forward cover shall be from a reputable South African bank. The Contractor is to confirm with the employer prior to placing forward cover if the service provider is acceptable.

Any increase or decrease between the basic rate of exchange as at 12:00 on the date of close of the bid and that existing at the date of establishment of the forward exchange cover within the period stipulated above shall be paid or deducted by the Municipality. Upon the failure of the Contractor to arrange forward exchange cover, the Contractor shall be liable should there be an increase in the basic rate of exchange occurring after the last-mentioned date.

The bank charges incurred in obtaining the forward exchange cover must be included in the Tenderer's bid.

ACC7 **ESTIMATED QUANITITIES**

The quantities stated in Section 8 are applicable for evaluation purposes only. The final quantity of goods and services required shall vary, depending on the total number of actual instances a service/goods will be required over the Contract Period. The rates tendered shall be applicable, irrespective of the total quantity of goods and services procured over the contract duration.

ACC8 **SERVICE PROVIDER OFFICE REQUIREMENTS**

The service provider must have, for the duration of the contract, a local presence (within the geographical eThekwini boundary).

ACC9 **EMPOWERMENT REQUIREMENT**

Bidder must sub-contract a minimum of 10% of the total unit value (minimum 10% for each superstructure) to a company / companies with at least 51% black owned as defined by the eThekwini Municipality Supply Chain Management Policy. Subcontractor to be from the following categories:

(a) an EME or QSE.
(b) an EME or QSE which is at least 51% owned by black people;
(c) an EME or QSE which is at least 51% owned by black people who are youth;
(d) an EME or QSE which is at least 51% owned by black people who are women;
(e) an EME or QSE which is at least 51% owned by black people with disabilities;
(f) an EME or QSE which is 51% owned by black people living in rural or underdeveloped areas or townships;
(g) a cooperative which is at least 51% owned by black people; (h) an EME or QSE which is at least 51% owned by black people who are military veterans; or

Name of the company	**Ownership**	**BBBEE Status Level**	**Scope of work to be subcontracted (add as an Appendix if necessary)**	**Subcontracted percentage (%)**

Bidder must provide CPG Implementation plan and supporting documents as part of tender including BBBEE certificate any other documents such as company registration documents if any.

ACC10 **PROTOTYPE**

A Prototype unit must be designed and built-in conjunction with eThekwini Municipality officials. Once the prototype has being tested and approved then production of numbers can go ahead. Once approval has been obtained for full production from eThekwini Municipality, the supplier must provide a Homologation Certificate (SANS 10267) for the chassis cab and superstructure being manufactured**.**

ACC11 **AWARDING OF TENDER – PANEL CONTRACT**

The awarding shall be done according to per item where a multiple bidders can be considered. The bidder is not compelled to bid for every item in the tender.

SECTION 7: SCOPE AND SPECIFICATION OF REQUIRED SUPPLY / SERVICES

The superstructure with the customisation shall be supplied complete and fully assembled in all respects, including standard equipment supplied by the manufacturer and shall comply with the South African Occupational Health and Safety Act, Act 85 of 1993/as amended and the applicable current Road Traffic Legislation. All work on the vehicle including the superstructure and its customisation is to be constructed by a SABS/SANS approved body/coach/vehicle manufacturer/ builder. The total operating mass of the vehicle and its customisation should not exceed the trucks legal V rating less 1000 kg. The layout should also ensure that the laden individual axle loads do not exceed the legal limits.

The superstructure and its customisation must be operationally friendly, easy to operate and maintain. All replaceable items including (but not limited to) critical components shall be designed for easy access, removal and replacement. There shall be a prescreening design phase of the superstructure concept on the vehicle provided by the bidder before getting approval from eThekwini Municipality City Fleet to go ahead with the prototype. Prototype will be used in field conditions before being accepted or revised. Thereafter consent will be provided for production (if multiple units required).

The vehicle and its customisation shall be to I.S.O. Metric Standards, and instrumentation gauges, dials, etc. shall be in Systeme International (S.I.) units.

Prospective tenderers must ensure that they read the specific Contractual Conditions applicable to this contract which appear in the section immediately preceding Section 7.

Each superstructure must be supplied with detailed maintenance, operating, training and spares manuals (in English), including technical data for each spare, as well as general arrangement drawings and a bill of materials.

There must be sufficient information to allow the capture of maintenance schedules in terms of inspections, servicing and replacement of parts. Three hardcopies and three electronic copies of the operating, maintenance, training and spare parts manuals shall be provided, as well as a training manual for each trainee. There shall be a minimum on site training of user/operator, driver and maintenance staff for the superstructure and its sub systems and accessories.

PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

All exposed electrical wiring looms of the superstructure and chassis cab shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

In each listed item for supply, accessories and additional equipment for the superstructure and vehicle is expected to be provided by the bidder. Bidders are asked to be diligent in this process with attention to items

and the specifications. Where catalogues and proof is required bidder shall submit it highlighting the critical specifications and fill in the compulsory questionnaire accordingly with references to the appendix/catalogue.

Various colors are requested for the superstructures to serve the different service departments and their specific branding. The colors are provided in the technical specification of each and will be communicated at the time of order.

The design of the superstructure shall only be produced when signed off by the relevant eThekwini City Fleet and department officials. The protype construction, fitment and use of the superstructure and subsystems shall be approved at the relevant hold steps in the quality plan and process flow. Pre-delivery inspection of the completed vehicle and superstructure will be only deemed complete after used once in field operations and conditions. Thereafter the design can be approved for production of units dependent on the quantity ordered.

Training shall be provided for maintenance and operator staff for each superstructure at the bidder's expense. For superstructures that have auxiliary driven equipment (tanker vehicles, cranes, aerial platforms etc.) and other equipment (multimedia etc.) training shall be fully accredited by the bidder from the OEM/agent.

There is a minimum Gross Vehicle Mass (GVM) and range supplied per superstructure for the chassis cab the superstructure is intended for. Due to the range of chassis cabs, makes and models the bidder must accommodate for the supplied details with tolerance should it be exceeded in an acceptable range.

At the end Section 7 other specifications/standards are covered that will be adhered to for all items.

List of items for supply:

Items 1.1 to 1.4: Recovery vehicle superstructures

Item 2: Rear load body with crane

Item 3: Insulated aerial platform

Item 4: High pressure street cleaning structure

Item 5: Sludge tanker superstructure

Item 6: 13-16 000 liter hook lift water tanker

Item 7: 12-16 000 liter hook lift vacuum tanker

Item 8: Hook lift rear tipper

Item 9: Hook lift 12 m Aerial platform superstructure

Item 10: Hook lift 20 m Aerial platform superstructure

Item 11: Mobile stage superstructure including multimedia equipment

Item 12: Mobile kitchen superstructure including kitchen appliances and equipment

Item 13: Mobile clinic superstructure including equipment

Item 14: 12-14 m Scissors platform superstructure

Item 15.1-15.2: Hook lift superstructures

Item 16: Mobile resources centre superstructure including multimedia equipment

Item 17: Hook lift 28 m Aerial platform superstructure

Item 18: 28 m Aerial platform superstructure

Item 19: Conversion of a panel van into a passenger carrying vehicle with disability access

Item 20.1-20.5: Conversion of Panel vans to various mobile workshops

Item 21: Riot defence superstructure

Item 22: Customisation of LDV to Rapid intervention superstructure/vehicle

Item 23: Customisation of LDV to a specialised coastal superstructure/vehicle

Item 24: Emulsion sealant tanker superstructure

Item 25.1 and 25.2: Technical specification for Diesel fuel tanker superstructure

Item 26: Technical specification for a mobile vehicle service superstructure

Item 27: Technical specification for a mobile service workshop superstructure

Item 28: Technical specification for a prisoner transport superstructure

Item 29: Customisation of LDV to a field/mobile workshop superstructure/vehicle

Item 30: Technical specification for a general-purpose rear loading superstructure

Item 31: Technical specification for a Horse transport superstructure

Item 32: Technical specification for a crowd control LDV customization

Item 33: Mobile police station superstructure

Item 34: 8x4 Rear tipping superstructure with the option of it being heated

Item 35: K-9 dog unit and Patrol unit conversion for police response vehicles

Item 36: Search and rescue vehicle customization

Item 37: Armored mobile resources panel van conversion

Item 38: 4-5 Ton Rear Tipping Truck body with a custom crew cab

Item 39: Customization of vehicles with a skid tank diesel refueling system

Item 40: 7000L Combination Jetting/Vacuum superstructure

Item 41: 6000L Auxiliary Engine Jetting superstructure

Item 42: 8000L Vacuum superstructure

Item 43: 16000L Combination Jetting/Vacuum superstructure

Item 44: 13 000L Vacuum superstructure

Item 45: Construction Rear Tipping body

Item 46: Construction Rear Tipping body with a crane

Item 47: Construction Side Tipping body

Item 48: 6500-liter water tanker

Item 49: 14 000-liter water tanker

Item 50: 18-22 000-liter water tanker

Item 51: Welder's truck body

Item 52: 4-ton mobile workshop (plumbers' body)

Item 53: 4-ton mobile sewer body

Item 54: Rear Tipping body with crane

Item 55: 4-ton mobile workshop with accommodation for a compressor

Item 56: Pot Hole /3 Ton Rear Tipping Truck body

Item 57: Skip Loader/Tele-hoist superstructure

Item 58:4 Ton Rear Tipping Truck body with the option of caged sides

Item 59:12m aerial platform vehicle

Item 60: 20m aerial platform vehicle

Item 61: Electricians truck

Item 62: water tanker with drop sides tipping superstructure

Item 63: Tyre truck

Item 64: Bulbar and tow bars

Item 65: Tail lifts

Item 1.1: Technical specification for a Rollback recovery vehicle for light motor vehicles

1. Scope

The intent of this specification is to provide for a fully operational vehicle, which has the capability to load broken down vehicles and transport them on a roll back flatbed. The vehicle will be used in the recovery of the various municipality vehicles. The rollback recovery vehicle which shall have a load capacity of 3 500 kg for light motor vehicles. The flatbed shall be long enough to accommodate LDV double cabs, minimum 5200 mm recommended.

The chassis cab shall have a flatbed low angle rollback system with an electrical/hydraulic winch to load the broken-down vehicle onto the flatbed.

2. Vehicle

The chassis cab/vehicle for this item shall be a single chassis cab, with a minimum Gross Vehicle Mass (GVM) of 7 000 - 12 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

3. Material specification

The load baring items shall be made from structural steel to withstand the payload. Corten steel and Domex for the structural rolled sections and flat plate is recommended. Whilst Hardox for the wear pads and the floor.

4. Construction requirements

4.1 Rear body loading area

4.1.1 Flatbed to be the full length of the chassis to accommodate the payload as per item.

4.1.2 There shall be minimal overhang over the chassis, where there is it shall be in line with the NRTA.

4.1.3 Areas of the floor that shall be used as access walkways shall have a hard wearing, slip resistant material (Vastrap).

4.1.4 Access ladder and railings/grabs shall be installed in a suitable position behind the cab and rear/side.

4.1.5 The flatbed shall have enclosed guard railings (600 mm high) on either side and the rear with the option of removing them.

4.1.6 The hydraulic cylinder/s shall be suitable for the application and lift and lower the flatbed at a low enough angle to safely load the broken-down vehicle of the road. Maintenance free bushings/bearings shall be used.

4.1.7 A low as possible tipping angle shall be required (as close to or 40°).

4.1.8 Lateral guides shall be incrementally installed for loading and safety.

4.1.9 Pad eye and tie down points to be generously (8-10) mounted around the flatbed.

4.1.10 Removal side guards and rear solid opening tailgate and approx. 750 mm high to be mounted in a suitable position with a user-friendly fastening method.

4.1.11 The electric (12/24VDC)/hydraulic planetary winch shall be able to draw the mass of the specified vehicle at the angle of the flatbed when lowered. Cable shall be 30 m with a hook and safety catch. Must have operational controls at the winch and remote-control operation.

4.1.12 There shall be a self powered electronic ignition 150-liter compressor installed either on the flatbed near the winch or a suitable place on the chassis cab. The compressor shall be supplied with a minimum 15 m retractable air hose and analogue gauge tyre inflator with all the relevant couplings. The compressor shall be installed in an enclosed compartment that will not affect the operation of the crane or rollback rotation and movement.

4.1.13 A waterproof toolbox constructed with dimensions of 800 x 450 x 450 mm shall be positioned on near side of chassis or rear of the cab. Anti-loose fasteners to be used to close lid.

4.2 Crane option

4.2.1 The crane shall be mounted between the cab and rear body on a suitable subframe for the use as a multipurpose vehicle in recovery applications.

4.2.2 There shall be a pair of hydraulic outriggers mounted at the crane and the rear body (alternatively wheel lift can be used as a stabilizer if possible).

4.2.3 The crane and the outriggers shall be a single unit including sub systems and components to power it.

4.2.4 The crane shall have a minimum lifting capacity of 2-3 tons/meter and an outreach of 7-8 meters. Crane shall be equipped with a lifting hook including a safety catch for lifting a light motor vehicle similar to the crane's maximum capacity.

4.2.5 Crane shall be ergonomically designed with an agile profile and low tare mass.

4.2.6 The crane shall have the following options for the lift accessory:

4.2.6.1 2-3 000 kg rotator knuckle with a hook and safety catch.

4.2.6.2 Lifting tackle (SANS 10388) for various recovery purposes; A pair of recovery slings 10 meters in length to rig and recover a light motor vehicle. Two pairs of lifting slings with tyre clamps to lift a light motor vehicle off the ground to the rear load bed. Hydraulic outriggers to be supplied for stability.

4.2.7 Shall comply to DIN 15018.

4.2.8 Shall comply to shall the South African Occupational Health and Safety Act, Act 85 of 1993, Driven Machinery Regulations 2015.

4.2.9 Shall comply to SANS 1599 with particular attention to Part 2: Power driven mobile cranes.

4.2.10 The crane should have a light illuminating its hydraulic controls and adjustable light on the sides of the vehicle to illuminate the reached work area.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Lighting

5.1 A waterproof slim line bar light 1200 mm in length and 200 mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.

5.2 A pair of waterproof adjustable rubber encased spotlights shall be installed on the top of the flatbed on either side of the winch. Switch shall be located on the hydraulics control panel.

5.3 Each side of the flatbed shall have at least two pairs of 3 head generation 3 or 4, 3 Watt or better amber marker LED lights. Control switch shall be clearly marked in the driver's cab.

5.4 Six of 4 head generation 3 or 4, 3 Watt or better emergency LED amber modules with random flashing pattern to be supplied and mounted as required. Control switch shall be clearly marked in the driver's cab.

6. Hydraulic system

6.1 In respect of the hydraulic tank the following shall be required:

i. To be constructed of steel and mounted clear from all moving parts.
ii. To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.
iii. To be fitted with a bump guard from externalities.
iv. To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.
v. Must have a filler cap strainer & filter into filler base and filler cap assembly.
vi. Oil capacity shall be sufficient and a cooler added if necessary.

6.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the tipper / solenoid valve system.

6.3 The hydraulic valves shall be grouped together for ease of maintenance.

6.4 Test points for testing hydraulic pressures shall be fitted and grouped together.

6.5 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.

6.6 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.

6.7 Safety hold valve for cylinder in case of hydraulic failure.

6.8 Hydraulic controls for the operation of the loading/offloading shall be fitted in a user friendly manner in the driver's cab and behind the cab allowing for ease of operation. The outside controls shall be protected by means of an enclosure.

6.9 Safety hand pump to be installed in case of failure.

6.10 The controls shall where possible be electronic and activate the necessary servos (either pneumatic or hydraulic) that will activate the operation. All actions will be fully adjustable at variable speeds for the operation of the hydraulics. A plug in, modular type, control panel is preferred for ease of maintenance.

7. Power Take Off (PTO)

7.1 The close coupled PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.

7.2 The engine and transmission must not be harmed by use of the PTO.

7.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

7.4 Electronic control module and wiring harness which incorporates the “Rev Up Limiter” must be integrated into the existing OEM vehicle using the OEM 24 Volt system.

7.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.

7.6 The accelerator pedal cannot be used, while the PTO is engaged.

7.7 PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

8. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

8.1 Descale all metal surfaces
8.2 Grind down & smooth all rough edges
8.3 Thoroughly clean all surfaces and shot/bead blast to correct surface roughness for primer application
8.4 Prime the superstructure using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
8.5 Thereafter paint using a coat of premium quality twin pack automotive paint.
8.6 Paint film thickness must not be less than 80 microns each. Two coats of primer and one-color coat.

9. Colors

Underside of Body	Black
Cab	Yellow/White/Blue
Deck and structures	Black

10. Electrical

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

10.1 Taillight units shall be premium quality equal light unit incorporating 30 LEDs or more of not less than 100 mm in diameter that are screwed into position with a stainless-steel flange.
10.2 Battery isolator switch for vehicle and winch.
10.3 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
10.4 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

11. Signage and Markings

11.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary:

a) The winch system indicating capacity, material grade (cable), maintenance instructions, specifications and test criteria.

b) Safe working loads to be clearly labeled on the structure on both sides.

c) Winch shall have a clear data plate with relevant information.

11.2 Safety, operation, technical data, dates of manufacture, manufacturer's details etc..

11.3 Chevron board to be fitted section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.

11.4 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

11.5 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

11.6 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

11.7 Registration number to be clearly marked on roof.

11.8 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

12. Miscellaneous items

12.1 Front mud flaps and full rear mudguards.
12.2 The batteries to have a well-insulated weather proof cover to prevent debris and moisture ingression.
12.3 Fuel tank, batteries, pneumatic cylinders and hydraulic tank to have structures built around them for protection.
12.4 Bolt on covers for safety where parts are rotating, swinging or of high temperature.
12.5 A 4.5 kg fire extinguisher should be supplied and fitted in an accessible position close to the driver when exiting the cab.
12.6 Bolt on head and tail light guards.

13. Wheel lift system

13.1 A self-loading wheel lift option shall be offered as an extra that can be coupled to the rear of the vehicle to draw another vehicle. It shall have a portable light board with integrated lights as in 10.1. Board shall be wired with a trailer connector plug/socket and cable of sufficient length for a typical towed vehicle.

13.2 The wheel lift system shall lift to a height above the ground when not in use to serve as the rear underrun device or totally lift to blend with the under of the flatbed.

Item 1.2: Technical specification for a Rollback recovery vehicle for plant equipment and multiple light motor vehicles

1. Scope

The intent of this specification is to provide for a fully operational vehicle, which has the capability to load broken down vehicles and transport them on a flatbed. The vehicle will be used in the recovery of the various municipality vehicles.

The rollback recovery vehicle which shall have a load capacity of 10 000 kg for plant vehicles and multiple light motor vehicles.

The chassis cab shall have a flatbed low angle rollback system with an electrical/hydraulic winch to load the broken-down vehicle/s onto the flatbed.

2. Vehicle

The chassis cab/vehicle for this item shall be a single chassis cab, with a minimum Gross Vehicle Mass (GVM) of 24 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure and the customisation shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.

b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.

c) The end of Section 7 covers other specifications/standards that shall be adhered to.

3. Material specification

The load baring items including shall be made out of structural steel to withstand the payload. Corten steel and Domex for the structural rolled sections and flat plate is recommended. Whilst Hardox for the wear pads and the floor.

4. Construction requirements

4.1Rear body loading area

4.1.1 Flatbed to be the full length of the chassis to accommodate the payload as per item.

4.1.2 There shall be minimal overhang over the chassis, where there is it shall be in line with the NRTA.

4.1.3 Areas of the floor that shall be used as access walkways shall have a hard wearing, slip resistant material (Vastrap).

4.1.4 Access ladder and railings/grabs shall be installed in a suitable position behind the cab and rear/side.

4.1.5 The flatbed shall have guard railings on either side with the option of removing them.

4.1.6 The hydraulic cylinder/s shall be suitable for the application and lift and lower the flatbed at a low enough angle to safely load the broken down vehicle of the road. Maintenance free bushings/bearings shall be used.

4.1.7 A low as possible tipping angle shall be required (as close to or 40°).

4.1.8 Lateral guides shall be incrementally installed for loading and safety.

4.1.9 Pad eye and tie down points to be generously (10-12) mounted around the flatbed.

4.1.10 The electric (12/24VDC)/hydraulic planetary winch shall be able to draw the mass of the specified vehicle at the angle of the flatbed when lowered. Cable shall be 30 m with a hook and safety catch. Must have operational controls at the winch and remote-control operation.

4.1.11 Hydraulic outriggers to be strategically positioned around the chassis.

4.1.12 A waterproof toolbox constructed with dimensions of 800 x 450 x 450 mm shall be positioned on near side of chassis or rear of the cab. Anti-loose fasteners to be used to close lid.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Lighting

5.1 A waterproof slim line bar light 1200 mm in length and 200 mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.

5.3 A pair of waterproof rubber encased spotlights shall be installed on the top of the flatbed on either side of the winch. Switch shall be located on the winch control panel.

5.4 Each side of the flatbed shall have at least two pairs of 3 head generation 3 or 4, 3 Watt or better amber marker LED lights. Control switch shall be clearly marked in the driver's cab.

5.5 Six of 4 head generation 3 or 4, 3 Watt or better emergency LED amber modules with random flashing pattern to be supplied and mounted as required. Control switch shall be clearly marked in the driver's cab.

6 Hydraulic system

6.1 In respect of the hydraulic tank the following shall be required:

6.1.1 To be constructed of steel and mounted clear from all moving parts.

6.1.2 To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.

6.1.3 To be fitted with a bump guard from externalities.

6.1.4 To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.

6.1.5 Must have a filler cap strainer & filter into filler base and filler cap assembly.

6.1.6 Oil capacity shall be sufficient and a cooler added if necessary.

6.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the tipper / solenoid valve system.

6.3 The hydraulic valves shall be grouped together for ease of maintenance.

6.4 Test points for testing hydraulic pressures shall be fitted and grouped together.

6.5 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.

6.6 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.

6.7 Safety hold valve for cylinder in case of hydraulic failure.

6.8 Hydraulic controls for the operation of the loading/offloading shall be fitted in a user friendly manner in the driver's cab and behind the cab allowing for ease of operation. The outside controls shall be protected by means of an enclosure.

6.9 Safety hand pump to be installed in case of failure.

6.10 The controls shall where possible be electronic, and activate the necessary servos (either pneumatic or hydraulic) that will activate the operation. All actions will be fully adjustable at variable speeds for the operation of the hydraulics. A plug in, modular type, control panel is preferred for ease of maintenance.

7. Power Take Off (PTO)

7.1 The close coupled PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.

7.2 The engine and transmission must not be harmed by use of the PTO.

7.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

7.4 Electronic control module and wiring harness which incorporates the “Rev Up Limiter” must be integrated into the existing OEM vehicle using the OEM 24 Volt system.

7.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.

7.6 The accelerator pedal cannot be used, while the PTO is engaged.

7.7 PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

8. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

8.7 Descale all metal surfaces
8.8 Grind down & smooth all rough edges
8.9 Thoroughly clean all surfaces and shot/bead blast to correct surface roughness for primer application
8.10 Prime the superstructure using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
8.11 Thereafter paint using a coat of premium quality twin pack automotive paint.
8.12 Paint film thickness must not be less than 80 microns each. Two coats of primer and one-color coat.

9. Colors

Underside of Body	Black
Cab	Yellow/White
Deck and structures	Black

10. Electrical

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

10.1 Taillight units shall be premium quality equal light unit incorporating 30 LEDs or more of not less than 100 mm in diameter that are screwed into position with a stainless-steel flange.
10.2 Reversing camera, buzzer and warning light to be installed when reverse gear is engaged.
10.3 Battery isolator switch for vehicle and winch.
10.4 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
10.5 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

11. Signage and Markings

11.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary:

a) The hydraulic system indicating tank capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

b) Safe working loads to be clearly labeled on the structure on both sides.

c) Winch shall have a clear data plate with relevant information.

11.2 Safety, operation, technical data, dates of manufacture, manufacturer’s details etc..

11.3 Chevron board to be fitted section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.

11.4 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

11.5 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

11.6 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

11.7 Registration number to be clearly marked on roof.

11.8 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

12. Miscellaneous items

12.1 Front mud flaps and full rear mudguards.
12.2 The batteries to have a well-insulated weather proof cover to prevent debris and moisture ingression.
12.3 Fuel tank, batteries, pneumatic cylinders and hydraulic tank to have structures built around them for safety.
12.4 Bolt on covers for safety where parts are rotating, swinging or of high temperature.
12.5 A 4.5 kg fire extinguisher should be supplied and fitted in an accessible position close to the driver when exiting the cab.
12.6 Bolt on head and tail light guards.

13. Wheel lift system

13.1 A self-loading wheel lift option shall be offered as an extra that can be coupled to the rear of the vehicle to draw another vehicle. It shall have a portable light board with integrated lights as in 10.1. Board shall be wired with a trailer connector plug/socket and cable of sufficient length for a typical towed vehicle.

13.2 The wheel lift system shall lift to a height above the ground when not in use to serve as the rear underrun device or totally lift to blend with the under of the flatbed.

Item 1.3 Technical specification for a Rollback recovery vehicle for trucks and heavy plant equipment

1. Scope

The intent of this specification is to provide for a fully operational vehicle, which has the capability to load broken down vehicles and transport them on a flatbed. The vehicle will be used in the recovery of the various municipality vehicles. The rollback recovery vehicle shall have a load capacity of 16 000 kg for heavy plant vehicles and 6x4/8x4 specialised vehicles.

The chassis cab shall have a flatbed low angle rollback system with an electrical/hydraulic winch to load the broken-down vehicle onto the flatbed.

2. Vehicle

The chassis cab/vehicle for this item shall be a single chassis cab, with a minimum Gross Vehicle Mass (GVM) of 28 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure, vehicle and the customisation shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.

b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.

c) The end of Section 7 covers other specifications/standards that shall be adhered to.

3. Material specification

The load baring items shall be made out of structural steel to withstand the payload. Corten steel and Domex for the structural rolled sections and flat plate is recommended. Whilst Hardox for the wear pads and the floor.

4. Construction requirements

4.1 Rear body loading area

4.1.1 Flatbed to be the full length of the chassis to accommodate the payload as per item.

4.1.2 There shall be minimal overhang over the chassis, where there is it shall be in line with the NRTA.

4.1.3 Areas of the floor that shall be used as access walkways shall have a hard wearing, slip resistant material (Vastrap).

4.1.4 Access ladder and railings/grabs shall be installed in a suitable position behind the cab and rear/side.

4.1.5 The flatbed shall have guard railings on either side with the option of removing them.

4.1.6 The hydraulic cylinder/s shall be suitable for the application and lift and lower the flatbed at a low enough angle to safely load the broken down vehicle of the road. Maintenance free bushings/bearings shall be used.

4.1.7 A low as possible tipping angle shall be required (as close to or 40°).

4.1.8 Lateral guides shall be incrementally installed for loading and safety.

4.1.9 Pad eye and tie down points to be generously (12+) mounted around the flatbed.

4.1.10 The electric (12/24VDC)/hydraulic planetary winch shall be able to draw the mass of the specified vehicle at the angle of the flatbed when lowered. Cable shall be 30 m with a hook and safety catch. Must have operational controls at the winch and remote-control operation.

4.1.11 Hydraulic outriggers to be strategically positioned around the chassis.

4.1.12 A waterproof toolbox constructed with dimensions of 800 x 450 x 450 mm shall be positioned on near side of chassis or rear of the cab. Anti-loose fasteners to be used to close lid.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Lighting

5.1 A waterproof slim line bar light 1200 mm in length and 200 mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.

5.2 A pair of waterproof rubber encased spotlights shall be installed to the rear top of the cab facing the flatbed. Switch shall be located on the hydraulics control panel.

5.3 Each side of the flatbed shall have at least two pairs of 3 head generation 3 or 4, 3 Watt or better amber marker LED lights. Control switch shall be clearly marked in the driver's cab.

5.4 Six of 4 head generation 3 or 4, 3 Watt or better emergency LED amber modules with random flashing pattern to be supplied and mounted as required. Control switch shall be clearly marked in the driver's cab.

6. Hydraulic system

6.1 In respect of the hydraulic tank the following shall be required:

a) To be constructed of steel and mounted clear from all moving parts.
b) To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.
c) To be fitted with a bump guard from externalities.
d) To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.
e) Must have a filler cap strainer & filter into filler base and filler cap assembly.
f) Oil capacity shall be sufficient and a cooler added if necessary.

6.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the tipper / solenoid valve system.

6.3 The hydraulic valves shall be grouped together for ease of maintenance.

6.4 Test points for testing hydraulic pressures shall be fitted and grouped together.

6.5 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.

6.6 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.

6.7 Safety hold valve for cylinder in case of hydraulic failure.

6.8 Hydraulic controls for the operation of the loading/offloading shall be fitted in a user friendly manner in the driver's cab and behind the cab allowing for ease of operation. The outside controls shall be protected by means of an enclosure.

6.9 Safety hand pump to be installed in case of failure.

6.10 The controls shall where possible be electronic, and activate the necessary servos (either pneumatic or hydraulic) that will activate the operation. All actions will be fully adjustable at variable speeds for the operation of the hydraulics. A plug in, modular type, control panel is preferred for ease of maintenance.

7. Power Take Off (PTO)

7.1 The close coupled PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.

7.2 The engine and transmission must not be harmed by use of the PTO.

7.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

7.4 Electronic control module and wiring harness which incorporates the "Rev Up Limiter" must be integrated into the existing OEM vehicle using the OEM 24 Volt system.

7.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.

7.6 The accelerator pedal cannot be used, while the PTO is engaged.

7.7 PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

8. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

8.1 Descale all metal surfaces

8.2 Grind down & smooth all rough edges
8.3 Thoroughly clean all surfaces and shot/bead blast to correct surface roughness for primer application
8.4 Prime the superstructure using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
8.5 Thereafter paint using a coat of premium quality twin pack automotive paint.
8.6 Paint film thickness must not be less than 80 microns each. Two coats of primer and one-color coat.

9. Colors

Underside of Body	Black
Cab	Yellow/White
Deck and structures	Black

10. Electrical

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

10.1 Taillight units shall be premium quality equal light unit incorporating 30 LEDs or more of not less than 100 mm in diameter that are screwed into position with a stainless steel flange.
10.2 Reversing camera, buzzer and warning light to be installed when reverse gear is engaged.
10.3 Battery isolator switch for vehicle and winch.
10.4 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
10.5 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

11. Signage and Markings

11.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary:

a) The hydraulic system indicating tank capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

b) Safe working loads to be clearly labeled on the structure on both sides.

c) Winch shall have a clear data plate with relevant information.

11.2 Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

11.3 Chevron board to be fitted section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.

11.4 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

11.5 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

11.6 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

11.7 Registration number to be clearly marked on roof.

11.8 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

12. Miscellaneous items

12.1 Front mud flaps and full rear mudguards.
12.2 The batteries to have a well insulated weather proof cover to prevent debris and moisture ingression.
12.3 Fuel tank, batteries, pneumatic cylinders and hydraulic tank to have structures built around them for safety.
12.4 Bolt on covers for safety where parts are rotating, swinging or of high temperature.
12.5 A 4.5 kg fire extinguisher should be supplied and fitted in an accessible position close to the driver when exiting the cab.
12.6 Bolt on head and tail light guards.

Item 1.4 Technical specification for a Heavy-Duty Recovery tow truck body

1. Scope

The intent of this specification is to provide for a fully operational vehicle, which has the capability to recover and tow heavy duty vehicles such as 6x4 and 8x4 trucks and passenger buses that are used in the eThekwini Municipality fleet. It shall also be used for heavy duty applications such as plant and trailer recovery and commodity handling equipment.

2. Vehicle

The vehicle will be supplied for the customisation shall be a 6x4 or 6x6 chassis cab with a Gross Vehicle Mass (GVM) of approx. 33 000 kg.

This vehicle is already part of the eThekwini Municipality fleet, and the customization shall be carried out on this model.

The chassis and cab shall be cosmetically refurbished back to OEM specification where corrosion is present.

The following below items shall be fitted:

2.1 Exterior windscreen sun visor.
2.2 Extended side mirrors.
2.3 Two pairs of fog lamps to the existing bulbar preferably wired to existing controls in the driver's cab.
2.4 Bluetooth radio with hands free cellphone capability and speakers/mic, 12v charger sockets.
2.5 Aerial mounted camera to assist with viewing of the rear whilst towing and reversing.
2.6 Fuel tank shall be fitted with an anti-siphon device.
2.7 The vehicle and the customisation shall be designed according to these critical specifications (summary of evidence shall be provided):

a) The superstructure and supplied systems are operating safely with respect to the payload. Safety factors and criteria for design can be used from SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) Any lifting components shall be supplied and certified according to SANS 10388.
c) SAE J2512: Towing Equipment Ratings and Practices.
d) Chapter 16 covers other specifications/standards that shall be adhered to.

3. Material specification

The load baring items including the main boom, ladder frame and goose neck shall be made out of structural steel to withstand the payload. Corten steel for the structural rolled sections and floor is recommended. Whilst Hardox for the floor wear pads.

4. Construction requirements

4.1 Rear body loading area

4.1.1 Superstructure to be the full length of the chassis and to accommodate the maximum payload possible whilst operating safely.
4.1.2 It shall be shock-mounted to reduce imposed stresses on the chassis.
4.1.3 There shall be minimal overhang over the chassis, where there is it shall be in line with the NRTA.

4.1.4 Areas of the floor that shall be used as access walkways shall have a hard wearing, slip resistant material (Vastrap).

4.1.5 Access ladder and railings/grabs shall be installed in a suitable position behind the cab and rear/side.
4.1.6 The hydraulic cylinder/s shall be suitable for the application. The boom shall raise and extend without repositioning the under lift allowing independent use of the extended boom. Three stage heavy duty is preferred with rotational use of at least 180º laterally.
4.1.7 Maintenance free bushings/bearings shall be used where possible.
4.1.8 The boom shall have a working height of at least 5000 mm.
4.1.9 The boom shall have a working reach of at least 3500 mm at minimum angle.
4.1.10 Boom working angle range of 30-40º.
4.1.11 The under lift shall be low profile with a working reach of at least 2700 mm.
4.1.12 The under lift shall have an articulation working angle of 30^{o} (with below road level working capability).
4.1.13 The under lift shall be equipped with interchangeable forks of various size and profiles.

4.1.14 The dual planetary winches shall be able to draw the mass of the specified vehicle at all angles of the boom. Cable/s shall be at least 50 m with a hook and safety catch. Must have independent and dual operational controls at the rear tailboard and via remote-control operation.
4.1.15 Winches should have rating capacity to operate independently if one fails.
4.1.16 The winch must have a protective cover which can be accessible or removable for maintenance of the winches and equipment.
4.1.17 Extendable independent hydraulic stabiliser telescopic legs to be strategically positioned along the chassis (rear and behind the driver's cab). They shall be able to operate on uneven terrain.

4.1.18 The rear body shall be made up of lockable compartments and tool boxes along the longitudinal length of the body. They shall be side opening with safety catches for the doors. It shall also enclose and protect all the chassis sub systems (pneumatics, fuel tank, batteries etc) however they must still be easily accessible through the vehicles compartments for use and maintenance.
4.1.19 The compartments are expected to be manufactured and supplied with the following items;

Pry Bar
Pair of heavy-duty bolt cutters
2x Safety triangles
Oil Spill kit
Shovel
Broom
Axe
Collapsible scissors/A frame ladder 3.5 to 4 meters.

Tools:
Lifetime guarantee, sizes 6-32 socket sets with rachets, extensions and t-bars in 3/8" and 1/2" drive with toolboxes.
Lifetime guarantee, standard and metric impact sockets sizes 6-32.
Lifetime guarantee, standard and metric spanner (flat and ring) sets sizes 6-32.
Steel breaker bar, and extensions of adequate lengths (2-3m) for the application.
A large set of channel locks.
Steel sledge hammers x 3: small medium and large
Lifetime guarantee, set of torx sockets sizes 6-32, regular and inverted.
Allen sockets set.
3 braided air hoses.
Tapered and pointed punches x 2, approx. 30cm.
Heavy duty u-joint puller/press.
2 x 20 ton bottle jack.

Portable propane hand torch.
3 x 6-8m heavy duty straps / rope with hooks and holding shackles.
3 x 6-8m heavy duty chains/lifting tackle with hooks and safety catch.
A motorcycle pull strap.
5 x Bungy cords.
5th wheel light extension cord.
3 x Wood blocks.
Spare (3 sets) of couplers/brass fittings.
Small medium and large set of forks and risers.
8 x Traffic Cones
Pair of steel rechargeable flash lights.
Personal protective equipment for driver and assistant/operator.

4.1.20 There shall be safety railings along the top length of the body when persons access the rear area.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Lighting

5.1 A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on a bracket on the front of the cab without drilling into the roof or on a light bar/headboard on the rear superstructure behind the driver's cab. It shall be visible from all sides of the vehicle. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.

5.2 A pair of LED waterproof spotlights (20-25W) shall be installed to the rear top of the boom facing and illuminating the lifting area. Switch shall be located at the hydraulics control panel.

5.3 A pair of LED waterproof rubber cased spotlights (20-25W) with protective guards shall be installed at the bottom of the tailboard illuminating the under lift lifting area. Switch shall be located at the hydraulics control panel.

5.4 There shall be two pairs of scene lights on either side of the vehicle to illuminate the surroundings. Lights shall be integrated into the superstructure. Switches shall be in the driver's cab and hydraulics control panel.

5.5 Control panel and tool box storage compartments shall be illuminated with internal LED lights with the switch located in the respective compartment.

5.6 A minimum of four amber 3-watt LED marker lights to be mounted on each longitudinal side of the body.

5.7 A chevron board towing light shall be supplied with the same lights as in 10.1 with bolt on safety guards. The holder shall have mechanical and magnetic holders to be securely located on the recovered vehicle. Electric cable should be of the same as in 10.7 with enough length (approx. 20m)

6. Hydraulic system

6.1 In respect of the hydraulic tank the following shall be required:

6.1.1 To be constructed of steel.
6.1.2 To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.
6.1.3 To be fitted with a bump guard from externalities.
6.1.4 To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.
6.1.5 Must have a filler cap strainer & filter into filler base and filler cap assembly.

6.1.6 Oil capacity shall be double that of the oil capacity of the hydraulic cylinder or an oil cooler added if necessary.

6.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the tipper / solenoid valve system.

6.3 The hydraulic valves shall be grouped together for ease of maintenance.

6.4 Test points for testing hydraulic pressures shall be fitted and grouped together.

6.5 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.

6.6 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.

6.7 Safety hold valves for the cylinders shall be installed to in case of hydraulic failure (boom, outrigger stabilizer legs and under lift).

6.8 Safety device such that rotation of the boom will not inhibit damage to the vehicle especially the cab.

6.9 Leak proof quick couplers to be installed at the rear for use with auxiliary equipment or trailers.

7. Power Take Off (PTO)

7.1 The close coupled PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.

7.2 The engine and transmission must not be harmed by use of the PTO.

7.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

7.4 Electronic control module and wiring harness which incorporates the “Rev Up Limiter” must be integrated into the existing OEM vehicle using the OEM 24 Volt system.

7.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.

7.6 The accelerator pedal cannot be used, while the PTO is engaged.

7.7 PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

8. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

8.1 Descale all metal surfaces

8.2 Grind down & smooth all rough edges

8.3 Thoroughly clean all surfaces and shot blast surfaces to be primed and painted.

8.4 Prime the unit and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.

8.5 Thereafter paint using two coats of premium quality twin pack automotive paint

8.6 Paint film thickness (color coat) must not be less than 80 microns each.

8.7 The paintwork shall be covered by a ten-year corrosion guarantee.

9. Colors

Underside of Body and chassis	Black
Cab	Yellow
Cab, Superstructure, boom and under lift	Yellow
Rims and Bulbar	Black

10. Electrical and coupling requirements

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

10.1 Taillight and indicator units to be premium quality equal light unit incorporating 30 LEDs or more approx. 100 mm in diameter that are screwed into position with a stainless-steel flange. Two pairs of each taillight and indicator is expected on either side.
10.2 Bolt on taillight and headlight guards to be installed.
10.3 Battery isolator switch.
10.4 Winch isolator switch.
10.5 Hydraulic control panel lock out switch.
10.6 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
10.7 Electrical connector complying to SANS 1327: Electrical connectors for towing and towed vehicles.
10.8 Rockinger type trailer coupling to comply with DIN 74054, ECE R55-01 for on road use for to tow trailers with 40/50 mm tow eyes.
10.9 Pneumatic connections complying to SANS 1477-3: Pneumatic braking system connections between drawing and drawn vehicles, Part 3: The arrangement of connections on vehicles, using contact type or palm type couplings.
10.10 All exposed electrical wiring looms of the chassis cab and superstructure shall be fully encased in a flexible protective metallic conduit and securely clamped with fasteners.

11. Signage and Markings

11.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary:

a) The hydraulic system indicating tank capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

b) Safe working loads to be clearly labeled on the structure on both sides.

c) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

11.2 Instructional data plates shall be fit close to the hydraulic control panel.

11.3 Chevron board to be fitted on the tailboard and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard (see chapter 16).

11.4 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

11.5 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

11.6 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

11.7 Registration number to be clearly labelled on the roof from left to right, 80-90% actual roof size.

12. Miscellaneous items

12.1 Bolt on covers for safety where parts are rotating, swinging or of high temperature.
12.2 A 4.5kg and a pair of 6 kg fire extinguishers should be supplied and fitted in an accessible position in the cab and rear body respectively.
12.3 Bolt on head, fog and tail light guards for the towing chevron board lights as well.

12.4 Front and rear mud flaps.
12.5 Pair of wheel chocks and suitable holders to be installed for them to be stored in transit.

Item 2: Technical specification for a Rear Load body with crane

1. Scope

This specification is for a rear body that has three pairs of drop side panels and a tailgate. The payload will vary from to 10-15 tons (10-15 000 kg). It will primarily be used to transport construction equipment, concrete piping and building supplies for the water department. Furthermore, storage boxes and other structures are required and the mass of these units and the equipment storage volumes must be accommodated in the design and supply of the completed vehicle.

2. Vehicle

The chassis cab/vehicle for this item shall be a single chassis cab, with a minimum Gross Vehicle Mass (GVM) of 24 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure, vehicle and the customisation shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) The end of Section 7 covers other specifications/standards that shall be adhered to.

3. Material specification

The rear body and structures shall be constructed of Corten or Domex corrosion resistant steel. Furthermore, the inner floor of the body shall have wear plates made of Hardox steel seated on top of the Corten steel structure.

4. Construction requirements

4.1 Chassis mounting

All mounting to be in accordance with directives specified by the Original Equipment Manufacturer. A separator insert shall be fitted to the rear most axle in case of uneven mass distribution.

4.2 Sub Frame

The sub frame shall extend the full body length.

4.3Drop side body

4.3.1 The rear body shall be the fill length and width of the chassis
4.3.2 The headboard shall be extended to a height above the cab which will not interfere with the crane and its functions.
4.3.3 The rear tailgate for offloading shall be a box section and/or strengthened using stiffeners/gussets if flat plate. The height of the tailgate shall be higher than the sides and bottom hinged.
4.3.4 The sides of the loading box shall be three pairs of drop sides. Height shall be sufficient to handle the transported commodity and access shall be made for workers to safely release and close the drop side panels. There shall be generous tie down hooks on the drop side panels and tailgate.
4.3.5 The geometry and shape of the body shall afford maximum capacity in terms of volume and mass.
4.3.6 The rear load body floor shall have generous tie down points.
4.3.7 The rear tailgate shall have the option of chains to hold it in place when open.
4.3.8 A heavy duty 150 mm engineering vice shall be mounted (using fasteners) on the tailgate.

4.3.9 The headboard and rear tailgate will have multiple “U” holder brackets to hold long cylindrical items like pipes and poles used for street lighting.

4.4 Storage box

4.4.1 Two lockable storage boxes (one on each side) approximately 600 mm longitudinally shall be fixed on the chassis under the bodywork.

4.4.2 Hinges for the doors must be fitted to the exterior of the front doors.

4.4.3 There should be seals to prevent ingress of water.

4.5 Crane

4.5.1 The crane shall be mounted between the cab and rear body on a suitable subframe for the application.

4.5.2 There shall be a pair of hydraulic outriggers mounted at the crane and the rear body.

4.5.3 The crane and the outriggers shall be a single unit including sub systems and components to power it.

4.5.4 The crane shall have a minimum lifting capacity of 13 tons/metre and an outreach of 10 meters.

4.5.5 Crane shall be ergonomically designed with an agile profile and low tare mass.

4.5.6 The crane shall have the following interchangeable options for the lift accessories:

4.5.6.1 13 000 kg Rotator knuckle with a hook and safety catch.

4.5.6.2 Lifting tackle (SANS 10388) to remove various equipment.

4.5.6.3 Log/pole grapple.

4.5.7 Shall comply to DIN 15018.

4.5.8 Shall comply to shall the South African Occupational Health and Safety Act, Act 85 of 1993, Driven Machinery Regulations 2015.

4.5.9 Shall comply to SANS 1599 with particular attention to Part 2: Power driven mobile cranes.

4.5.10 The crane should have a light illuminating its hydraulic controls and adjustable light on the sides of the vehicle to illuminate the reached work area.

4.6 Crane Controls

4.6.1 Should have controls for complete articulation and movement in all degrees of freedom except movement that can inflict damage to itself and the chassis/driver’s cab.

4.6.2 Load sensing devices to warn when maximum payload and dimensional limits are reached.

4.6.3 Crane must only be operable with hydraulic outriggers in their extended position.

4.6.4 The operation of the tipping must be constrained such that the chassis cab in no way can be damaged.

4.6.5 A hold valve/ safety device shall be installed to hold the crane in the raised position in case of hydraulic failure. An alternative method (manual, pneumatic, electric) shall be used to return the crane to “home” position.

4.6.6 Manual and remote-control system to operate the crane.

4.7 *Miscellaneous items*

4.7.1 Front and rear mud flaps shall be installed.

4.7.2 Rear underrun device shall be installed according to SANS 1055.

4.7.3 Safety access ladders and handrails to the rear body.

4.7.4 Protective structures over fuel tank and pneumatic cylinders.

4.7.5 Lockable protective cover for the batteries.

4.7.6 Wire mesh covers for the front, fog and rear lights.

4.7.7 A pair of heavy-duty wheel chocks to be mounted and easily accessible.

4.7.8 A 50l water tank/caddy to be mounted in a position below the body with a tap.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5.Hydraulic system

5.1 In respect of the hydraulic tank the following shall be required:

5.2 To be constructed of steel.

5.2.1 To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.

5.2.2 To be fitted with a bump guard from externalities.

5.2.3 To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.

5.2.4 Must have a filler cap strainer & filter into filler base and filler cap assembly.

5.2.5 Oil capacity shall be double that of the oil capacity of the hydraulic cylinder.

5.3 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the tipper / solenoid valve system.

5.4 The hydraulic valves shall be grouped together for ease of maintenance.

5.5 Test points for testing hydraulic pressures shall be fitted and grouped together.

5.6 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.

5.7 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.

5.8 Safety hold valve for the cylinder/s in case of hydraulic system failure.

5.9 There shall be supply points at the rear of the truck close to the tow bar for trailers with hydraulic functions.

5.10 Leak-free quick couplers shall be used for all connections and hoses (to supply trailer).

6. Power Take Off (PTO)

6.1 The close coupled PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.

6.2 The engine and transmission must not be harmed by use of the PTO.

6.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

6.4 Electronic control module and wiring harness which incorporates the “Rev Up Limiter” must be integrated into the existing OEM vehicle using the OEM 24 Volt system.

6.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.

6.6 The accelerator pedal cannot be used, while the PTO is engaged.

6.7 PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

7. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

7.1 Descale all metal surfaces

7.2 Grind down & smooth all rough edges

7.3 Thoroughly clean all surfaces and shot/bead blast to correct surface roughness for primer application

7.4 Prime the superstructure using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.

7.5 Thereafter paint using a coat of premium quality twin pack automotive paint.

7.6 Paint film thickness must not be less than 80 microns each. Two coats of primer and one-color coat.

8. Colors

- Underside of Body: Black
- Deck: Black
- Cab and Body: Yellow/White or Verdi Green

9. Electrical and coupling requirements

9.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100mm in diameter that are screwed into position with a stainless-steel flange.

9.2 Reversing camera with monitor installed in cab, buzzer and warning flashing light to be installed when reverse gear is engaged.

9.3 A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on an aluminum bracket closest to cab. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber colored polycarbonate lenses to be fitted to the top of the headboard behind the cab with on/off switch with random flash pattern positioned in the cab.

9.4 Rear LED work lights to be installed with switch installed in the cab.

9.5 Each side of the load body shall have at least two pairs of 3 head generation 3 or 4, 3 Watt or better amber marker LED lights. Control switch shall be clearly marked in the driver's cab.

9.6 Six of 4 head generation 3 or 4, 3 Watt or better emergency LED amber modules with random flashing pattern to be supplied and mounted as required. Control switch shall be clearly marked in the driver's cab.

9.7 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

9.8 Electrical connector complying to SANS 1327: Electrical connectors for towing and towed vehicles.

9.9 40/50 mm Rockinger type trailer coupling to comply with DIN 74054, ECE R55-01 for on road use.

9.10 Pneumatic connections complying to SANS 1477-3: Pneumatic braking system connections between drawing and drawn vehicles, Part 3: The arrangement of connections on vehicles, using contact type or palm type couplings.

9.11 The rear underrun device according to SANS 1055 shall also be a step to the rear loading body.

9.12 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

10. Signage and Markings

10.1 Data plates shall be fitted for:

a) The hydraulic system indicating tank capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

b) Safe working load (SWL) decals shall be clearly visible on the sides of the tipping body.

c) The crane system indicating capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

d) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

10.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

10.3 Chevron board and durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

10.4 Retro-reflective tape shall be fitted to both sides and the rear of the tip- body as well as the rear bumper and the items in chapter 4 that make up the perimeter of the vehicle.

10.5 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

11. Fire Extinguisher

A 4.5kg dry powder type extinguisher to be mounted in a suitable exterior position preferably close to the generator storage box.

Item 3: Technical specification for an insulated aerial platform superstructure

1. Scope

The intent of this specification is to provide for a fully operational vehicle which has an insulated aerial platform mounted on the rear loading area of the chassis cab. The primary use of the vehicle is to maintain high voltage structures within the eThekwini area.

2. Vehicle

The chassis cab/vehicle for this item shall be a single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 13 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet. The chassis could be a 4x2 or 4x4 variant depending on the service department's needs.

The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The load bearing items shall be made out of structural steel to withstand the payload. Corten steel for the structural rolled sections and floor is recommended. Whilst Hardox for the wearing surfaces.

4. Construction requirements

4.1 Main Deck Body

4.1.1 A full length sub frame to be manufactured with four out rigger hydraulic legs. The outrigger legs shall have large adjustable floor pads for uneven terrain.

4.1.2 A full deck shall be constructed for the rear loading bed with accommodation for the aerial platform.

4.1.3 A support frame shall be manufactured on the head board behind the cab, to support the aerial platform boom structure.

4.1.4 Chassis mounting method to conform to original equipment manufacturer (OEM) body mounting directive.

4.2 Storage Boxes

4.2.1 The outer perimeter of the deck shall accommodate tool boxes that shall enclose the rear body. The longitudinal tool boxes shall be 400 mm laterally and 400 mm high. There shall be two lockable lids opening from the inside of the deck.

The rear of the deck shall have two storage boxes opening outwards to the rear. The boxes shall extend the full lateral length with and be 700 mm longitudinally and 700 mm high. The space in between the two boxes shall accommodate the aerial platform bucket.

4.2.2 Access steps and safety railings shall be installed for the entrance to the rear deck which shall be positioned behind the passenger side of the cab.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Aerial Platform

5.1 Minimum 28-meter, 300 kV insulated aerial platform, with a two-man basket with a minimum safe working load of 250 kg.
To be designed according to SANS 16368 Mobile elevating work Platforms-Design calculations, safety requirements and test methods (latest revision).
5.2 Opening access to have a safety gate with a safety type slam/latch lock and safety handles for ease of entry and exiting.
5.3 Floor of bucket to be lined with a non-slip material and to have drain holes for easy drainage of water.
5.4 The bucket or boom shall have safety points for connections of safety restraining harnesses (included).
5.5 The aerial platform shall have controls such that the aerial platform will not damage the cab in its full rotation and movements.
5.6 Controls available on the basket and turret with emergency stop at both locations.
5.7 Outriggers shall be fit around the body to allow stable operation of the aerial platform for entire movement range.

6. Hydraulic system

6.1 In respect of the hydraulic tank the following shall be required:
- 6.1.1 To be constructed of steel.
- 6.1.2 To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.
- 6.1.3 To be fitted with a bump guard from externalities.
- 6.1.4 To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.
- 6.1.5 Must have a filler cap strainer & filter into filler base and filler cap assembly.

6.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the solenoid valve system.
6.3 The hydraulic valves shall be grouped together for ease of maintenance.
6.4 Test points for testing hydraulic pressures shall be fitted and grouped together.
6.5 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.
6.6 Safety hold valves to hold the booms in place in case of failure.
6.7 Emergency system: manual pump shall be installed to lower the aerial platform in case of system failure.
6.8 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.
6.9 Outrigger hydraulic legs controls to be located near the turret. System shall be self-equalizing in terms of pressure and force.
6.10 Aerial platform shall only operate if outriggers have been deployed. This shall be incorporated as a safety device.

7. Power Take Off (PTO)

7.1 The PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.
7.2 The engine and transmission must not be harmed by use of the PTO.
7.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

7.4 Electronic control module and wiring harness which incorporates the “Rev Up Limiter” must be integrated into the existing OEM vehicle using the OEM 24 Volt system.
7.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.
7.6 The accelerator pedal cannot be used, while the PTO is engaged.
7.7 PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

8. Lighting

8.1 A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.

8.2 Six of 4 head generation 3 or 4, 3 Watt or better emergency LED amber modules with random flashing pattern to be supplied and mounted as required. Control switch shall be clearly marked in the driver’s cab.

8.3 There shall be three adjustable waterproof LED work lamps (20-25W) installed at the aerial platform near the bucket. Two shall face upwards to illuminate the structure being worked on and the third shall illuminate the superstructure/vehicle underneath the bucket. The controls shall be on the control panel in 5.6.

9. Metal Preparation and Painting Procedure

The following procedure must be adhered to:
9.1 Descale all metal surfaces
9.2 Grind down & smooth all rough edges
9.3 Thoroughly clean all surfaces and shot/bead blast to correct surface roughness for primer application
9.4 Prime the superstructure using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
9.5 Thereafter paint using a coat of premium quality twin pack automotive paint.
9.6 Paint film thickness must not be less than 80 microns each. Two coats of primer and one-color coat.

10. Colors

Underside of body and chassis	Black
Cab exterior	Blue/Yellow
Superstructure and deck	Blue/Yellow

11. Electrical

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

11.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100 mm in diameter that are screwed into position with a stainless-steel flange.
11.2 There shall be a safety device installed to not allow driving of the vehicle when the aerial platform is raised.
11.3 When movement limits of the platform are reached there shall be a light and buzzer to give warning to the user.
11.4 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

12. Signage and Markings

12.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary:

a) The aerial platform hydraulic system indicating tank capacity, system pressure, fluid type/grade specifications and test criteria where applicable.

b) Safe working loads to be clearly labeled on the structure on both sides.

c) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

12.2 Instructional data plates shall be fit close to all the hydraulic control panels.

12.3 Chevron board to be fitted section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.

12.4 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

12.5 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

12.6 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

12.7 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

13. Miscellaneous items

13.1 The batteries to have a lockable weather proof cover to prevent debris and moisture ingression.
13.2 Fuel tank, batteries, pneumatic cylinders and hydraulic tank to have structures built around them for safety.
13.3 Bolt on covers for safety where parts that are rotating, swinging or of high temperature.
13.4 A 4.5 kg fire extinguisher should be supplied and fitted in an accessible position in the cab.
13.5 Bolt on head and tail light guards.
13.6 Front and rear mud flaps.
13.7 Wheel chocks to be included with carry straps.
13.8 Levelling pads for the outriggers to aid levelling on uneven surfaces.

Item 4: Technical specification for a high-pressure street cleaning superstructure

1.Scope

The intent of this specification is to provide for a fully operational combination dual water jetting vehicle to clean streets and other structures. The water supply to the pump will come from the vehicles' water tank.

2. Vehicle

The chassis cab/vehicle for this item shall be a single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 13 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.
The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a. SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b. SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c. At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The tank and tank ends shall be made out 3CR12 steel with a minimum thickness of 4.5 mm.

4. Construction requirements

4.1Tank

4.1.1 A minimum 6 500-litre baffled water tank designed to withstand the additional rigours of road transport is required.

4.1.2 The tank's mounting shall be so designed to eliminate any vehicle chassis flex being transmitted to the tank. Preferably rubber block type to allow for movement when negotiating rough road

4.1.3 The following should be incorporated;

a) A large manhole with a hinged cover approximately 450 mm diameter at the rear of the tank.

b) Access ladder with steps constructed from non-slip tread plate to be positioned adjacent to manhole from the rear platform.

a) Suitable ventilation to ensure that there is an uninterrupted supply to the pump.
b) Small mounted platform at rear to suit equipment.
c) Tank over flow, draining to the left-hand side of the vehicle.
d) Sight glass to view tank contents.
e) Tank level indicator with increments marked from empty to full.
f) Provision to fill the tank on the left-hand side from a hydrant. A two-stage water level alarm system shall be installed to protect the pump. The first stage should initiate an audible alarm and the second stage should deactivate the pump.
All tanks shall be expected to be nondestructive tested, 10x x-ray, water fill and pressure tested.

4.2 Cleaning System and Hose reels

4.2.1 Water from the high pressure pump must be fed to a pair of easily accessible hose reels mounted at the rear platform. The hose reel should be mounted on a rotating platform allowing at least a 30° rotation laterally.

4.2.2 The hose reel must have a suitable method of locking it in position or in the left or right 30° position as well as the transport position.

4.2.3 The hose reel must be fitted with a suitable rotary joint to reel back up and operate freely in both directions.

4.2.4 The hose reel must be capable of holding 40 m of 25 mm high pressure hose and be supplied with 30 m of suitable urethane covered reinforced hose.

4.2.5 There shall be three valves at the rear, one to operate the water supply to both hoses and the others to operate the supply for each.

4.2.6 There shall be a concentration tank of approx. 50 litres that can allow cleaning agents to be fed into the hoses at 4.2.5 with a coupling valve. This shall be incorporated with no backward flow into the main water tank.

4.2.7 Each hose shall be supplied with a higher pressure spray gun, spray broom and rotary/cyclone spray broom for cleaning.

4.4 Tool Boxes

4.4.1 The unit shall have a suitable lockable toolbox mounted on the passenger side of the vehicle.

4.5 Road Cones and Portable Signs

Provision must be made to safely secure large road cones and typically used 900 mm road signage within the body.

4.6 Controls

All controls for the operation of the machine shall be fitted to an illuminated, lockable, water resistant control panel on the left side of the engine. The design shall be such that the operator will be able to operate the unit whilst standing in front of the control panel.

The unit must have the following controls as a minimum:
a) Water pressure gauge (Mounted externally)
b) Light switches
c) Water level gauge
d) Engine start/stop, fuel level, oil level and pressure, coolant temperature and variable speed control with read out.
e) Low level water alarm that sounds when the water reaches the 1000 litres level with a relay to switch off the alarm after 30 seconds and automatically resets itself when tank is filled.
f) A low level cut out device that disengages the high pressure pump when the water in the tank reaches 200 litres and automatically resets itself when the tank is filled.
All functions must be clearly marked. Control panel shall have a lock-out feature to protect against unwarranted use.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5.High Pressure Pump

5.1 The high-pressure water pump must be capable of producing a flow of not less than 1000-2000 litres per hour at a constant pressure variable from 65 to 200 bar.
5.2 The pump shall be durable enough to handle recycled water.
5.3 High quality materials such as stainless steel on the inlet and outlet valves, ceramic coated internals of the pump, hardened materials for the internals and pump head, double bearing and seal system is recommended for the pump.
5.4 The pump's oil level shall be easily visible with an indicator.
5.5 Should be robust, high volume, high pressure, gear driven, three piston pump or better.
5.6 It must be fitted as per manufacturer's specifications in an easily accessible place with all relevant safety features i.e. regulator, secondary filtration, tank returns etc.
5.7 The fitment of the high pressure pump should not negatively impact on the vehicles ground clearance.
5.8 The pump should include an adjustable by-pass valve and pressure release valve. A three way change over valve should redirect the flow from the hose reel to a manual by-pass or to an auxiliary take off point.

6. Auxiliary Engine for driving the pump

6.1 The pump should be driven by an air cooled, diesel engine with a power output approximately 50 kW @ 2500 rpm and a torque exceeding 120 Nm @ 1500 rpm. The engine shall be an industry proven "popular" model with easily available service and spare parts support in the country and region by the bidder and other agents.

6.2 The engines exhaust should be directed down or up and out to the side of the vehicle.

6.3 Engine is to be fitted with efficient air, fuel and lubricating oil filters. A dry type air cleaner, with replaceable paper elements of South African manufacture, is required.

6.4 The engine should be direct coupled to the pump by a suitable flexible coupling.

6.5 All rotating drive systems and locations on the engine that dissipate excessive heat should be guarded in accordance with the Occupational Health and Safety Act Regulations (Act 85 of 1993).

6.6 The engine must produce the required speed and power to drive the pump and produce the required flow and pressure.

6.7 A suitable in-line disc filtration system should be incorporated to protect the pump from contaminated water.

6.8 The engine shall achieve its fuelling requirements from a standalone 50 litre supply mounted on the vehicle.

6.9 A locking fuel cap for the fuel tank and an anti-siphon device.

6.10 A roofed enclosure shall be built for the engine (4.1) such that it is protected. There shall be lockable removable ventilated doors to access the engine and tank for maintenance. The design shall allow maximum ventilation.

7. Lighting

7.1 A flood light should be installed in a suitable position illuminating the working area at the rear of the truck.

7.2 Suitable lighting should be installed within the body providing light for the toolbox area.

7.3 LED hazard lights should be mounted as follows;

a) A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.

b) Six of 4 head generation 3 or 4, 3 Watt or better emergency LED amber modules with random flashing pattern to be supplied and mounted as required. Control switch shall be clearly marked in the driver's cab.

c)There shall be rear and side scene lights to illuminate the vehicle and its surroundings. The controls shall be on the control panel in 4.6.

8. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

8.1 Descale all metal surfaces

8.2 Grind down & smooth all rough edges

8.3 Thoroughly clean all surfaces and shot/bead blast to correct surface roughness for primer application

8.4 Prime the superstructure using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.

8.5 Thereafter paint using a coat of premium quality twin pack automotive paint.

8.6 Paint film thickness must not be less than 80 microns each. Two coats of primer and one-color coat.

9. Colors

Underside of Body	: Black
Cab and Body	: White/Blue
Tank	: Black epoxy tar protective coating

10. Electrical requirements

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

10.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100 mm in diameter that are screwed into position with a stainless steel flange.

10.2 Dual indicator, stop and taillight units to be fitted.

10.3 Reversing camera, buzzer and warning flashing light to be installed when reverse gear is engaged in an optimum position. Monitor to be part of the vehicles multimedia system with Bluetooth hands free cellphone connectivity.

10.4 An additional set of rear light units to be installed on top of the tank.

10.5 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring systems.

10.6 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

11. Signage and Markings

11.1 Data plates shall be fitted for:

a) The tank and jetting systems indicating tank capacity, system pressures, fluid type/grade, and other relevant data.

b) The auxillary engine indicating engine make and model, capacity, serial number, oil type and grade etc.

c) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

11.2 Chevron board with rear lights to be fitted on a steel channel (3CR12) section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.

11.3 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

11.4 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

11.5 Retro-reflective tape shall be fitted to both sides and the rear of the tank as well as the rear bumper.

11.6 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to either side of the vehicle.

12. Miscellaneous items

12.1 A locking fuel cap and anti-siphon device for the fuel tank.

12.2 The battery box is to be lockable (lock to be provided).

12.3 A 4.5 kg fire extinguisher should be supplied and fitted in an accessible position in the cab.

Item 5: Technical specification for a Rear Tipping Sludge Tank superstructure

1. Scope

This specification is for a rear tipping body that has a cylindrical mounted tank. The tank shall be able to carry a minimum payload of 17 500 kg. It will primarily be used to transport slurry sludge. Furthermore, the tank shall have a hydraulically opening/closing top hinged rear lid with multiple sealing points over the pcd of the rear lid to the rest of the tank. The slurry sludge volume and mass shall be accommodated in the design and supply of the completed vehicle.

2. Vehicle

The chassis cab/vehicle for this item shall be an 8x4 single chassis cab, with a minimum Gross Vehicle Mass (GVM) of 32 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.

b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.

c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The tank outer and inner skin shall be constructed of chromium corrosion resistant steel (3CR12 and stainless steel respectively). A minimum thickness of 4.5 mm shall be used for the tank and a minimum thickness of 6 mm shall be used for end domes of the tank.

4. Construction requirements

4.1 Tank and Chassis mounting

4.1.1 All mounting to be in accordance with directives specified by the Original Equipment Manufacturer.

4.1.2 The tank's mounting shall be so designed to eliminate any vehicle chassis flex being transmitted to the tank. Preferably rubber block type to allow for movement when negotiating rough roads.

4.1.3 Hydraulically controlled stabiliser legs shall be installed to allow levelling of chassis on uneven terrain when loading/unloading.

4.1.4 Protection of the fuel tank, hydraulic tank and air tanks shall be provided by structural frames bolted to the chassis. The batteries shall have a top cover to prevent debris and water ingression.

4.2 Sub Frame

The sub frame shall extend the full body length if necessary.

4.3 Tank Body

4.3.1 The tank body shall be mounted at the most effective position of the rear chassis such that the mass distribution over the axles, and the center of gravity shall allow optimum operation.

4.3.1 Minimum payload of 17 500 kg and volumetric capacity of 12 500 liters shall be expected.

4.3.2 Rolled circumference sections and internal baffles shall be installed for reinforcement, structural integrity and longevity of the structure.

4.3.3 Structural members to reinforce the length of the tank when carrying the payload and tipping shall be required.

4.3.4 There shall be sight glasses mounted strategically around the tanker (one on each side and one at the rear) to indicate level of the tank. The sight glasses should indicate with markings from empty, half to full capacity.

4.3.5 The tank shall have a fully opening top hinged rear door with hydraulic opening and closing. Hinges should be self-adjustable.

4.3.6 The door shall have a minimum of 6 hydraulic operated clamps around the pcd of the rear door with mechanical locking to prevent accidental opening while driving.

4.3.7 The door shall be secured when in the open position by a mechanical safety mechanism.

4.3.8 The tank rear door shall be designed with a heavy-duty replaceable EPDM seal that is corrosion resistant and offers high mechanical wear resistance. The seal shall be an off-the-shelf component and mounted in a user-friendly method. A double seal shall be used if necessary one on the lid and one on the body of the tank.

4.3.9 There shall be a rear guide outside the tank for control of the offloading to avoid spillage. This guide shall be a box section or strengthened using stiffeners/gussets if flat plate.

4.3.10 A large manhole with hinged cover approximately 600 mm diameter shall be used to fill the tank on the top. It should be strategically placed to allow even distribution loading of tank contents.

4.3.11 The height of the manhole opening shall be 3 800 mm from the ground to accommodate the lowest loading chute.

4.3.12 An adjustable funnel shall be supplied to accommodate 4 500 mm loading chutes. The component shall be made of lightweight yet structurally adequate non corrosive material. There shall be an easy method to slot and remove the funnel such that its stable when loading. A suitable holder shall also be made to accommodate the funnel when the vehicle is in motion.

4.3.13 There shall be a primary opening mechanism to release built pressure before the manhole lid is safe to open using a secondary system.

4.3.14 Accessible and safe ladders with full length walkways and safety railings to be constructed for the longitude of the tank.

4.3.15 There shall be easy access to the manhole lid. Safety harness attachment points where working at-heights is required.

4.3.16 Platforms, walkways, tank roof (manhole lid) and ladder steps shall be covered with tread plate (Vastrap).

4.3.17 Nondestructive testing, water-fill and pressure test shall be performed on tank.

4.4 Tipping

4.4.1 The tipping operation shall be achieved by means of a hydraulic cylinder mounted at the front of the tank (behind the cab). It shall be a multi stage hydraulic cylinder which is mounted upon a suitably reinforced full-length sub frame. Tipping angle shall not be less than 45˚.

4.4.2 An electrical switch shall be mounted on the sub frame which automatically activates a buzzer and light fitted inside the cabs dashboard when the tank is being raised.

4.4.3 The raising of the body shall only occur when the rear door is in the full open position. A control device shall ensure this method of operation.

4.4.4 The raising action shall be done gradually or in a staged process to avoid the full laden capacity to be raised at maximum height at once.

4.4.5 The tipping controls shall incorporate the process mentioned in 4.4.3 and 4.4.4.

4.4.6 When released the control must automatically enter the “Hold” position.

4.5 Headboard

4.5.1 Supply of frame type headboard raised approx. 100 mm high above the cab. 3 mm 3CR12 mesh shall be installed over the headboard surface area.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Hydraulic system

5.1 In respect of the hydraulic tank the following shall be required:

5.1.1 To be constructed of steel.

5.1.2 To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.

5.1.3 To be fitted with a bump guard from externalities.

5.1.4 To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.

5.1.5 Must have a filler cap strainer & filter into filler base and filler cap assembly.

5.1.6 Oil capacity shall be double that of the oil capacity of the hydraulic cylinder.

5.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the tipper / solenoid valve system.

5.3 The hydraulic valves shall be grouped together for ease of maintenance.

5.4 Test points for testing hydraulic pressures shall be fitted and grouped together.

5.5 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.

5.6 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.

6. Power Take Off (PTO)

6.1 The PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the

vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.

6.2 The engine and transmission must not be harmed by use of the PTO.

6.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

6.4 Electronic control module and wiring harness which incorporates the “Rev Up Limiter” must be integrated into the existing OEM vehicle using the OEM 24 Volt system.

6.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.

6.6 The accelerator pedal cannot be used, while the PTO is engaged.

7. Storage boxes

8.1 One lockable storage box shall be mounted for safety equipment, PPE and miscellaneous tools.

8. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

8.1 Descale all metal surfaces
8.2 Grind down & smooth all rough edges
8.3 Thoroughly clean all surfaces and shot/bead blast to correct surface roughness for primer application
8.4 Prime the superstructure using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
8.5 Thereafter paint using a coat of premium quality twin pack automotive paint.
8.6 Paint film thickness must not be less than 80 microns each. Two coats of primer and one-color coat.

9. Colors

- Underside of Body: Black
- Deck: Black
- Tank inner: Black
- Superstructure exterior and cab body: Yellow

10. Electrical

10.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100mm in diameter that are screwed into position with a stainless-steel flange above the rear bumper/ underrun device.

10.2 Extra indicator, stop and taillight (as per specification in 10.1) units to be fitted on top of the tank with a stainless steel flange/ bracket holder.

10.3 A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on headboard. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber colored polycarbonate lenses to be fitted to the top of the headboard behind the cab with on/off switch with random flash pattern positioned in the cab.

10.4 The manhole, and the rear tank door shall have a buzzer and light fitted inside the cab’s dashboard which shall be activated in case the doors are not closed.

11. Signage and Markings

11.1 Data plates shall be fitted for:

a) The hydraulic system indicating tank capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

b) The main tank indicating capacity and details.

c) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

d) Safe work load/capacity of the main tank on either side.

11.2 Chevron board with rear lights, underrun and rear mudguards (constructed of 3CR12) conforming with the appropriate SABS/SANS standard laid out at the end of the chapter.

11.3 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

11.4 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

11.5 Retro-reflective tape shall be fitted to both sides and the rear of the tip- body as well as the rear bumper and the items in chapter 4 that make up the perimeter of the vehicle.

11.6 Hazardous chemical transporting signage to be placed at the sides and rear of the tank/vehicle according to SANS 10232.

11.7 Registration number to be clearly marked on roof (left to right, 80-90% size of the roof).

12. Fire Extinguisher

A pair of 4.5kg dry powder type extinguisher to be mounted in a suitable exterior position.

13. Agitator, water system and cleaning apparatus

An agitator shall be installed in the tank together with a water feeding system such that the sludge viscosity can be controlled to assist the tipping process when off-loading. The water system shall also serve as a cleaning apparatus for cleaning of the tank. It shall be fed via a high-pressure water and/or steam supply. The apparatuses should be installed in the tank without damaging the structure and shall assist the longitude of the tank. It should have a multivalve system optimally positioned to spread the steam/water effectively over the surface area of the tank. Apparatus should be constructed of suitable non corrosive materials for the application. The agitator will be variable speed and hydraulically/electrically driven and will form part of the hydraulic/electrical system and hydraulic/electric controls.

Item 6: Technical specification for a Hook lift 13-16 000-liter water tanker superstructure

1. Scope

The intent of this specification is to provide for a fully operational superstructure which can be mounted onto the rear of hook lift chassis cab. The superstructure shall be able to transport the specified amount of drinking water as per highway and off-road conditions. Furthermore, a self powered pump shall be mounted onto the superstructure.

2. Vehicle

The chassis cab/vehicle for this item shall be an 6x4 single chassis cab, with a minimum Gross Vehicle Mass (GVM) of 22 to 28 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The sub chassis of the superstructure shall be made of high strength corrosion resistant structural steel. Corten or Domex is recommended. The water tank, tank ends and water ways will be made out 3CR12 steel.

4. Construction requirements

4.1 Sub chassis for water tank

4.1.1 The sub chassis must have a low centre of mass design as it will be seated on a construction type chassis.

4.1.2 The main structural longitudinal members shall be adequately reinforced laterally to cope with the torsion of the payload and tank structure.

4.1.3 The A frame headboard shall be built such that it can be structural sound to efficiently load and offload the superstructure. The frame shall be designed to conceal the hook lift arm when loaded on the rear of the chassis cab. The structural member to lift the structure shall be a hardened machine steel

4.1.4 There shall be heavy duty rollers at the rear and legs with wear pads at the front and centre underneath the sub chassis such that when the superstructure is offloaded it is not damaged. The superstructure must take into account the locking mechanism of the hook lift and when the superstructure is offloaded onto the ground.

4.1.5 The underneath of the sub chassis must have a full belly plate, so no part of the tank is exposed.

4.1.6 The top of the sub chassis shall have a fully enclosed top late. Only where the tank is mounted to the sub chassis it shall have a minimal opening. Top plate to be lined with a slip resistant material (Vastrap).

4.2 Tank

4.2.1 The tank must have a low centre of mass design.

4.2.2 Baffled water tank designed to withstand the additional rigours of road transport.

4.2.3 The tank's mounting shall be so designed to eliminate any sub chassis flex being transmitted to the tank. 6-8 heavy duty rubber block type to allow for movement when negotiating rough road and offloading on uneven terrain.

4.2.4 The following shall be incorporated;

a) A large manhole with hinged cover approximately 450 mm diameter.
b) Rear access ladder with steps covered from non-slip tread plate to be positioned to access the manhole. Accommodation for safety harnesses to be made along and on top of the tank.
c) Suitable ventilation to ensure that there is an uninterrupted supply to the pump.
d) Rear mounted enclosed platform with bolt on safety rails and a safety door/straps for access from the passenger side.
e) Tank over flow, draining to the left-hand side of the tank outside the superstructure.
f) Mounted sight glass to view tank contents and level in increments. Sight glass can be mounted in front of the tank such that it is viewable from the driver's cab. Must incorporate a float indicator.

4.3 Tank plumbing, valves and hoses

4.3.1 The piping for the pump will be of a permanent nature and will be so arranged that by means of quick operating valves, the pump can be used for filling the tank as well as discharge.
4.3.2 Single 2-inch outlet tap for general use shall be installed.
4.3.3 Water outlets for the tank shall be from the floor of the tank to utilise all of the tank contents and it must have no issues distributing water if parked on a gradient. It shall consist of 6 outlets on each side of the tank with detachable 600-800 mm long hoses and 1-inch ball valves shall be supplied. The valves shall be mounted in an easy to reach position on the superstructure either on or off a chassis cab. If required two sets of valves per outlet shall be used, one at the tank itself feeding the outlet hose and the other in a reachable position for the user with a hose as well.
4.3.4 Note: The hoses shall be mounted using brackets to hold them safely and accessible to the persons using it. The 1-inch ball valves shall be easily reachable, and a person should have to not go in between any vehicle components or parts to access the valve. The hoses must be mounted clearing the fuel tank, battery cover, exhaust system and any other of the critical vehicle components.
4.3.5 Ø 50 mm Perspex sight tube indicator with protective cover.
4.3.6 Pair off flexible non-corrosive metallic hoses (5-6 000 mm each) with aluminium/stainless steel agricultural couplings and strainer foot valves to be supplied. This shall be mounted on the passenger side of the vehicle in a galvanised tray. Tray must incorporate holders such that the hoses are safe when transported.

4.4 Storage Boxes

4.3.1 An appropriate size lockable storage box with a removable lid shall be installed adjacent to the tank to hold spares, valves and miscellaneous items.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Self driven water pump

5.1 To supply and mount a self driven 3-inch self-priming centrifugal pump, suitable for clean water.
5.2 Should be a minimum of 3.5kW, electronic start system, 800 litre/min pump capacity and 3 litre fuel tank.
5.3 Should be robust, high volume and high pressure and piped to allow for pumping in and discharging out.
5.4 It must be installed at the rear of the passenger side of the superstructure. It shall be mounted on top of the superstructure base and shall be enclosed in a lockable and vented locker.
5.5 There should be an additional in line filter from the water tank to the pump for additional safety.
5.6 The pump should include an adjustable by-pass valve and pressure release valve.

7. Lighting

7.1 One waterproof rubber encased, adjustable light, with operating switch, shall be installed in the locker of the self driven pump to illuminate the controls and coupling of the pump.

7.2 Waterproof LED scene lights (20-25W, minimum of two) shall be installed on each side of the tank to provide ambient lighting on both sides. This is for visibility on site where persons will be filling water from the superstructure. The lights shall be overhead and illuminate the surrounding area/ground. Operating switches shall be installed and labelled inside the pump locker.

8. Metal Preparation and Painting Procedure

The following procedure must be adhered to:
8.1 Descale all metal surfaces
8.2 Grind down & smooth all rough edges
8.3 Thoroughly clean all surfaces and shot blast the tank as specified for epoxy coating (see epoxy coating OEM specification sheet for details).

8.4 Prime the tank and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
8.5 Thereafter paint using a premium quality twin pack automotive paint.
8.6 Two coats of primer and single-color coat is expected as minimum.
8.7 Coating film thickness must not be less than 80 microns each.

9. Colors

Sub chassis	: Black
Tank exterior	: White/Yellow/Verdi Green/CSW Blue
Tank interior	: Solvent free, amine cured epoxy coating in white

10. Electrical

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

10.1 The battery to power the pump and lighting shall be a high capacity low maintenance unit with a minimum 36-month warranty. It shall be installed in the pump locker. There should be a solar panel of sufficient voltage and amperage installed on top of the water tank to charge the battery.
10.2 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

11. Signage and Markings

11.1 Data plates shall be fitted for:

a) The water pump system indicating capacity, system pressure, fluid type/grade, specifications, operation and test criteria.

b) The tank detailing safe working load, material specification, operation and general maintenance.

c) Safe working load (SWL) decals shall be clearly visible on the sides of the tank.

d) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

11.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the superstructure that impose a danger to persons.

11.3 Chevron board and durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the structure.

11.4 Retro-reflective tape shall be fitted to both sides and the rear of the tank as well as the items in chapter 4 that make up the perimeter of the structure.

11.5 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the superstructure and two pairs of amber prismatic retroreflectors shall be fitted to each side of the superstructure.

12. Fire Extinguisher

A 4.5kg dry powder type extinguisher to be mounted in a suitable exterior position preferably close to the pump locker.

Item 7: Technical specification for a Hook lift 13-16 000-liter vacuum tanker superstructure

1. Scope

The intent of this specification is to provide for a fully operational superstructure which can be mounted onto the rear of hook lift chassis cab. The superstructure shall be able to transport the specified amount of septic and sewage waste as per highway and off-road conditions. Furthermore, a self powered pump shall be mounted onto the superstructure.

2. Vehicle

The chassis cab/vehicle for this item shall be an 6x4 single chassis cab, with a minimum Gross Vehicle Mass (GVM) of 22 to 28 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.

b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.

c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The sub chassis of the superstructure shall be made of high strength corrosion resistant structural steel. Corten or Domex is recommended. The vacuum tank, tank ends and water ways will be made out 3CR12 steel.

4. Construction requirements

4.1 Sub chassis for vacuum tank

4.1.1 The sub chassis must have a low centre of mass design as it will be seated on a construction type chassis.

4.1.2 The main structural longitudinal members shall be adequately reinforced laterally to cope with the torsion of the payload and tank structure.

4.1.3 The A frame headboard shall be built such that it can be structural sound to efficiently load and offload the superstructure. The frame shall be designed to conceal the hook lift arm when loaded on the rear of the chassis cab. The structural member to lift the structure shall be a hardened machine steel

4.1.4 There shall be heavy duty rollers at the rear and legs with wear pads at the front and centre underneath the sub chassis such that when the superstructure is offloaded it is not damaged. The superstructure must take into account the locking mechanism of the hook lift and when the superstructure is offloaded onto the ground.

4.1.5 The underneath of the sub chassis must have a full belly plate, so no part of the tank is exposed.

4.1.6 The top of the sub chassis shall have a fully enclosed top late. Only where the tank is mounted to the sub chassis it shall have a minimal opening. Top plate to be lined with a slip resistant material (Vastrap).

4.2 Tank

4.2.2 The tank must have a low centre of mass design.

4.2.3 Baffled vacuum tank designed to withstand the additional rigours of road transport.

4.2.4 The tank's mounting shall be so designed to eliminate any sub chassis flex being transmitted to the tank. Rigid or 6-8 heavy duty rubber block type to allow for movement when negotiating rough road and offloading on uneven terrain.

4.2.5 The following shall be incorporated;

a) A large manhole with a hinged cover approximately 450 mm diameter at the rear.
b) Access ladder with steps and railings constructed from non-slip tread plate to be positioned adjacent to manhole.
c) Suitable ventilation to ensure that there is an uninterrupted supply.
d) Mounted platform at rear to suit equipment.
e) Tank over flow, draining to the left-hand side of the vehicle.
f) Sight glass to view tank contents.
g) There shall be a protective sectioned guide at the ball type discharge valve at the rear of the tank.

4.2.6 All tanks shall be expected to be nondestructive tested, 10x x-ray, water fill and pressure tested.

4.3 Solids bin

A 70 liter refuse bin complete with lid shall be supplied, securely mounted in a tipping mechanism on the rear, right hand side platform. The drum must be replaceable and should be able to tip to the right hand side enabling the contents to be discharged. In the upright position the drum lid must be secured in the closed position.

4.4 Hoses

Eight 100mm x 3000mm and two 150mm x 3000mm suction hose each complete with a male and female Perrot type coupling should be supplied. The Perrot couplings should be adequately secured in the hose.

4.5 Tool Boxes

4.5.1 An externally mounted lockable toolbox with a volume of approximately 0.50 m^3 and length 2200 mm shall be provided.

4.5.2 A steel storage box incorporating two hinged lids and running the length of the tank to be positioned on both sides of the tank. The depth of the boxes to be approx. 300 mm. Hasp and staple fittings to be fitted for locking purposes.

4.5.3 In between the lockable boxes and the tank, shall be a slimline storage compartment to hold solid bar material which range in length from 6 000-7 500 mm.

4.5.4 There shall be a suitable lockable holder system to accommodate an extension ladder.

4.6 Road Cones and Portable Signs

Provision must be made to safely secure large road cones and typically used 900 mm road signage within the body.

4.7 Control Panel

All controls for the operation of the machine shall be fitted to an illuminated, lockable, water resistant control panel on the left side of the structure. The design shall be such that the operator will be able to operate the unit whilst standing in front of the control panel.

The controls and actions will be fully adjustable at variable speeds for the operation of the machine. A plug in, modular type, control panel is preferred for ease of maintenance.

All servos and valves to be mounted in a safe and easily accessible place for ease of maintenance.
All electrical devices must be water resistant.
The unit must have the following controls as a minimum:
a) Pressure gauge (Mounted externally)
b) Light switches
c) Tank level gauge

Access to the components should be through suitable doors with adequate weather proof ventilation (interlocking louver slats) and the layout should be designed to enhance maintenance of the unit. Steps should be installed to provide access to the tool box area from the left-hand side of the vehicle.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5.Vacuum System

5.1 A suitable self driven exhauster shall be suitably mounted on the superstructure. The exhauster should be capable of raising a vacuum in the tank of- 60kPa in not more than 10 minutes and should have a capacity of not less than 3.5 cubic metres per minute. The exhauster control should be ergonomically positioned on the left-hand side of the superstructure. A pre-set vacuum relief valve should be incorporated.

5.2 The blower must create and maintain a suitable vacuum for the application. This air flow shall have the necessary velocity to meet the design criteria and to ensure that the ancillary equipment (cyclones etc.) has the ability to remove the debris and water from the system before it reaches the blower.

5.3 The vacuum shall be fitted as per manufacturer's specifications and in an easily accessible location with all adequate relevant safety features i.e. vacuum breakers, primary and secondary filtration, exhaust/silencer etc. It must be self driven from a power source on the superstructure and will be capable of 100 % duty at 50 kPA. All exposed drives must be suitably guarded.
The system should incorporate a sifter valve with moisture separator and odour control, vacuum release and unloader ball valves. All non-return valves must be positioned for ease of maintenance. A 100mm diameter, glycerine fill vacuum gauge shall be mounted in a suitable position on the left-hand side of the structure. A suitable vacuum breaker should be mounted on the left-hand side in an accessible position.

5.4 The system must be protected as per the manufacturer's specification and for the specific application.

5.5 The vacuum system and the power source shall be in a lockable locker that can enclose the system whilst providing adequate ventilation whilst operating.

6. Lighting

6.1 One waterproof rubber encased, adjustable light, with operating switch, shall be installed in the locker of the self driven pump to illuminate the controls and coupling of the pump.

6.2 Waterproof LED scene lights (20-25W, minimum of two) shall be installed on each side of the tank to provide ambient lighting on both sides. This is for visibility on site where persons will be filling water from the superstructure. The lights shall be overhead and illuminate the surrounding area/ground. Operating switches shall be installed and labelled inside the pump locker.

7. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

7.1 Descale all metal surfaces

7.2 Grind down & smooth all rough edges

7.3 Thoroughly clean all surfaces and shot blast the tank as specified for epoxy coating (see epoxy coating OEM specification sheet for details).

7.4 Prime the tank and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.

7.5 Thereafter paint using a premium quality twin pack automotive paint.

7.6 Two coats of primer and single color coat is expected as minimum.

7.7 Coating film thickness must not be less than 80 microns each.

8. Colors

Sub chassis	: Black
Tank exterior	: White/Yellow/Verdi Green/CSW Blue
Tank interior	: Solvent free, amine cured/tar epoxy coating in white/black

9. Electrical

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

9.1 The battery to power the pump and lighting shall be a high capacity low maintenance unit with a minimum 36-month warranty. It shall be installed in the pump locker. There should be a solar panel of sufficient voltage and amperage installed on top of the water tank to charge the battery.

9.2 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

10. Signage and Markings

10.1 Data plates shall be fitted for:

a) The vacuum pump system indicating capacity, system pressure, fluid type/grade, specifications, operation and test criteria.

b) The tank detailing safe working load, material specification, operation and general maintenance.

c) Safe working load (SWL) decals shall be clearly visible on the sides of the tank.

d) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

10.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the superstructure that impose a danger to persons.

10.3 Chevron board and durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the structure.

10.4 Retro-reflective tape shall be fitted to both sides and the rear of the tank as well as the items in chapter 4 that make up the perimeter of the structure.

10.5 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the superstructure and two pairs of amber prismatic retroreflectors shall be fitted to each side of the superstructure.

11. Fire Extinguisher

A 4.5kg dry powder type extinguisher to be mounted in a suitable exterior position preferably close to the pump locker.

Item 8: Technical specification for a Hook lift Rear Tipping body

1. Scope

The specification is for a hook lift rear tipping body that has a top hinged tailgate. The tip-body shall be able to carry a volume of 10-16 m^3 and a payload of 14-16 tons (14 000-16 000 kg). It will primarily be used to transport asphalt and other construction commodities.

2. Vehicle

The chassis cab/vehicle for this item shall be an 6x4 single chassis cab, with a minimum Gross Vehicle Mass (GVM) of 22 to 28 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The rear tipping body and structures shall be constructed of Corten corrosion resistant steel. Furthermore, the inner floor and the bottom side panels of the tipping body shall have wear plates made of Hardox steel seated on top of the Corten steel structure.

4. Construction requirements

4.1 Sub Frame

The sub frame shall extend the full body length.

4.2 Tip Body

4.2.1 The hook lift lifting point shall be integrated into the headboard shall be extended 100 mm to a height above the cab.

4.2.2 The tailgate shall be top hinged which will open automatically when the body is tipped. The height of the tailgate shall be higher than the sides.

4.2.3 The rear guide outside the tailgate for offloading shall be a box section and/or strengthened using stiffeners/gussets if flat plate.

4.2.4 The geometry and shape of the tip body shall afford maximum capacity in terms of volume and mass with no areas that will hold the commodity when offloading.

4.2.5 The main pair of structural channels must have stiffeners/gussets evenly installed over the length.

4.2.6 Lateral support shall be provided using structural members throughout the base of the tipping body floor. Supports and guides shall be installed underneath the tipping body with heavy duty rollers at the rear and wear pads at the front and mid-section.

4.2.7 At the front of the tip body a centrally located support shall be mounted on the lateral member of the sub chassis to hold the tip body in place on top of the hook lift load bed.

4.2.8 The sides of the loading box shall also be reinforced with structural members.

4.2.9 All box sections and structural channels shall have stiffeners/gussets installed for reinforcement.

4.2.10 The tailgate locking mechanism shall be self-adjusting and easily maintainable.

4.2.11 The inner wear plates shall be installed such that maintenance of these components can be carried out when minimum thickness is reached.

4.3 Covering system

4.3.1 A covering system shall be installed for the entire longitudinal and lateral dimensions of the open top of the tip body.

4.3.2 The material shall be flexible and robust enough to handle the commodity being transported in terms of geometry (if heap loaded) and the chemical composition.

4.3.3 The material shall be stored in a self reeling housing unit on the tip body closest to the cab. Top/side mounted guides and runners shall be used to spread the material over the tip body.

4.3.4 Tie downs shall be available on the sides to hold the material if needed.

4.3.5 Design must not inhibit loading (from the sides) and off-loading.

4.3.6 System shall be either electrical or hydraulically operated.

4.3.7 Operation must be such that the rear tailgate does not damage the system when offloading.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

5.1 Descale all metal surfaces

5.2 Grind down & smooth all rough edges

5.3 Thoroughly clean all surfaces, rear/side tip body/skip shall be shot blasted.

5.4 Prime the tip body and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.

5.5 Thereafter paint using premium quality automotive finish paint.

5.6 Two coats of primer and one coat of colour shall be minimum.

5.7 Paint film thickness (color coat) must not be less than 100 microns each.

6. Colors

- Underside of Superstructure Body: Black
- Deck: Black
- Superstructure Body: Yellow/White/Blue/Verdi Green/CSW Blue

7. Signage and Markings

7.1 Data plates shall be fitted for:

a) The rear tip body detailing safe working load, material specification, tailgate operation and general maintenance.

b) Safe working load (SWL) decals shall be clearly visible on the sides of the tipping body.

c) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

7.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the structure that impose a danger to persons.

7.3 Chevron board and durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the structure.

7.4 Retro-reflective tape shall be fitted to both sides and the rear of the tip- body as well as the rear bumper and the items in chapter 4 that make up the perimeter of the vehicle.

7.5 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

8. Fire Extinguisher

A 4.5kg dry powder type extinguisher to be mounted in a suitable exterior position preferably close to the driver's cab.

Item 9: Technical specification for a hook lift 12 m aerial platform body

1.Scope

The intent of this specification is to provide for a fully operational superstructure which has an aerial platform mounted with a loading area. The primary use of the vehicle is to cut trees, maintain street lights, store tools and remove the flora from recreational parks and gardens in the eThekwini area.

2. Vehicle

The chassis cab/vehicle for this item shall be an 4x2 single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 7 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The load bearing items shall be made out of structural steel to withstand the payload. Corten steel for the structural rolled sections and floor is recommended. Whilst Hardox for the wearing surfaces.

4. Construction requirements

4.1Main Deck Body

4.1.1 A full-length sub frame to be manufactured with a headboard that must double as the hook lift lifting arm and the safety rest for the main boom of the aerial structure.

4.1.2 A full top deck shall be constructed for the rear loading sub chassis with accommodation for the aerial platform.

4.1.3 Aerial platform mounting method to conform to original equipment manufacturer (OEM) to the sub chassis.

4.1.4 The underneath of the sub chassis shall have heavy duty rollers at the rear and wear pads located at the front and mid-section.

4.2 Storage Boxes

4.2.1 The outer perimeter of the deck shall accommodate tool boxes that shall enclose the rear body and the centrally located aerial controls. The longitudinal tool boxes shall be 400 mm laterally and 400 mm high. There shall be two lockable lids opening from the inside of the deck.

The rear of the deck shall have two storage boxes opening outwards to the rear. The boxes shall extend the full lateral length with and be 700 mm longitudinally and 700 mm high. The space in between the two boxes shall accommodate the aerial platform bucket.

4.2.2 Access steps and safety railings shall be installed for the entrance to the rear deck which shall be positioned behind the passenger side of the cab.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Aerial Platform

5.1 12 m aerial platform, with a two-man basket with a minimum safe working load of 250 kg.
To be designed according to SANS 16368 Mobile elevating work Platforms-Design calculations, safety requirements and test methods (latest revision).
5.2 Opening access to have a safety gate with a safety type slam/latch lock and safety handles for ease of entry and exiting.
5.3 Floor of bucket to be lined with a non-slip material and to have drain holes for easy drainage of water.
5.4 The bucket or boom shall have safety points for connections of safety restraining harnesses (included).
5.5 The aerial platform shall have controls such that the aerial platform will not damage the cab in its full rotation and movements.
5.6 Controls available on the basket and turret with emergency stop at both locations.

6. Hydraulic system

6.1 In respect of the hydraulic tank the following shall be required:

6.1.1 To be constructed of steel.

6.1.2 To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.

6.1.3 To be fitted with a bump guard from externalities.

6.1.4 To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.

6.1.5 Must have a filler cap strainer & filter into filler base and filler cap assembly.

6.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the solenoid valve system.
6.3 The hydraulic valves shall be grouped together for ease of maintenance.
6.4 Test points for testing hydraulic pressures shall be fitted and grouped together.
6.5 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.
6.6 Safety hold valves to hold the booms in place in case of failure.
6.7 Emergency system: manual pump shall be installed to lower the aerial platform in case of system failure.
6.8 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.
6.9 Outrigger hydraulic legs controls to be located near the turret. System shall be self-equalizing in terms of pressure and force.
6.10 Aerial platform shall only operate if outriggers have being deployed. This shall be incorporated as a safety device.

7. Self driven electrical system for hydraulic system

7.1 The hydraulic system shall be driven by a power pack mounted at the rear of the superstructure.
7.2 The engine and transmission must not be harmed by use of the system.
7.3 The system should be either 12V or 24V and compatible with commercial chassis.
7.4 Electronic control module and wiring harness which incorporates safety cut off for overload and thermal protection for overheating.
7.5 Must come equipped with a robust connector and cable of sufficient length. Recommended connectors according to;
SANS 1327: Electrical connectors for towing and towed vehicles and,
SANS 11446/ lSO 11446: Passenger cars and light commercial vehicles with 12 V systems -3-pole connectors between towing vehicles and trailers - Dimensions and contact allocation.

8. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

8.1 Descale all metal surfaces
8.2 Grind down & smooth all rough edges
8.3 Thoroughly clean all surfaces
8.4 Prime the unit and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
8.5 Thereafter paint using two coats of premium quality twin pack automotive paint
8.6 Paint film thickness (color coat) must not be less than 80 microns each.

9. Colors

Underside of sub chassis	Black
Superstructure and deck	Verdi grass green/Blue/Yellow

10. Electrical

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

1.1 There shall be a safety device installed to not allow driving of the vehicle when the aerial platform is raised.
1.2 When movement limits of the platform are reached there shall be a light and buzzer to give warning to the user.
1.3 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

11. Signage and Markings

11.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary:

a) The aerial platform hydraulic system indicating tank capacity, system pressure, fluid type/grade specifications and test criteria where applicable.

b) Safe working loads to be clearly labeled on the structure on both sides.

c) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

11.2 Instructional data plates shall be fit close to all the hydraulic control panels.

11.3 Chevron board to be fitted section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.

11.4 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the structure and vehicle that impose a danger to persons.

11.5 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the structure/vehicle.

11.6 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

11.7 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

12. Miscellaneous items

12.1 Bolt on covers for safety where parts that are rotating, swinging or of high temperature.
12.2 A 4.5 kg fire extinguisher should be supplied and fitted in an accessible position near the driver's cab.

Item 10: Technical specification for a 20 m hook lift aerial platform body

1.Scope

The intent of this specification is to provide for a fully operational superstructure which has an aerial platform mounted with a loading area. The primary use of the vehicle is to cut trees, maintain street lights, store tools and remove the flora from recreational parks and gardens in the eThekwini area.

2. Vehicle

The chassis cab/vehicle for this item shall be an 4x2 single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 13 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The load bearing items shall be made out of structural steel to withstand the payload. Corten steel for the structural rolled sections and floor is recommended. Whilst Hardox for the wearing surfaces.

4. Construction requirements

4.1Main Deck Body

4.1.1 A full-length sub frame to be manufactured with a headboard that must double as the hook lift lifting arm and the safety rest for the main boom of the aerial structure.

4.1.2 A full top deck shall be constructed for the rear loading sub chassis with accommodation for the aerial platform.

4.1.3 Aerial platform mounting method to conform to original equipment manufacturer (OEM) to the sub chassis.

4.1.4 The underneath of the sub chassis shall have heavy duty rollers at the rear and wear pads located at the front and mid-section.

4.2 Storage Boxes

4.2.1 The outer perimeter of the deck shall accommodate tool boxes that shall enclose the rear body and the centrally located aerial controls. The longitudinal tool boxes shall be 400 mm laterally and 400 mm high. There shall be two lockable lids opening from the inside of the deck.

The rear of the deck shall have two storage boxes opening outwards to the rear. The boxes shall extend the full lateral length with and be 700 mm longitudinally and 700 mm high. The space in between the two boxes shall accommodate the aerial platform bucket.

4.2.2 Access steps and safety railings shall be installed for the entrance to the rear deck which shall be positioned behind the passenger side of the cab.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Aerial Platform

5.1 20 m aerial platform, with a two-man basket with a minimum safe working load of 250 kg.
To be designed according to SANS 16368 Mobile elevating work Platforms-Design calculations, safety requirements and test methods (latest revision).
5.2 Opening access to have a safety gate with a safety type slam/latch lock and safety handles for ease of entry and exiting.
5.3 Floor of bucket to be lined with a non-slip material and to have drain holes for easy drainage of water.
5.4 The bucket or boom shall have safety points for connections of safety restraining harnesses (included).
5.5 The aerial platform shall have controls such that the aerial platform will not damage the cab in its full rotation and movements.
5.7 Controls available on the basket and turret with emergency stop at both locations.

6.Hydraulic system

6.1 In respect of the hydraulic tank the following shall be required:

6.1.1 To be constructed of steel.

6.1.2 To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.

6.1.3 To be fitted with a bump guard from externalities.

6.1.4 To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.

6.1.5 Must have a filler cap strainer & filter into filler base and filler cap assembly.

6.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the solenoid valve system.
6.3 The hydraulic valves shall be grouped together for ease of maintenance.
6.4 Test points for testing hydraulic pressures shall be fitted and grouped together.
6.5 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.
6.6 Safety hold valves to hold the booms in place in case of failure.
6.7 Emergency system: manual pump shall be installed to lower the aerial platform in case of system failure.
6.8 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.
6.9 Outrigger hydraulic legs controls to be located near the turret. System shall be self-equalizing in terms of pressure and force.
6.10 Aerial platform shall only operate if outriggers have being deployed. This shall be incorporated as a safety device.

7. Self driven electrical system for hydraulic system

7.1 The hydraulic system shall be driven by a power pack mounted at the rear of the superstructure.
7.2 The engine and transmission must not be harmed by use of the system.
7.3 The system should be either 12V or 24V and compatible with commercial chassis.
7.4 Electronic control module and wiring harness which incorporates safety cut off for overload and thermal protection for overheating.
7.5 Must come equipped with a robust connector and cable of sufficient length. Recommended connectors according to;
SANS 1327: Electrical connectors for towing and towed vehicles and,
SANS 11446/ lSO 11446: Passenger cars and light commercial vehicles with 12 V systems -3-pole connectors between towing vehicles and trailers - Dimensions and contact allocation.

8. Metal Preparation and Painting Procedure

The following procedure must be adhered to:
8.1 Descale all metal surfaces

8.2 Grind down & smooth all rough edges
8.3 Thoroughly clean all surfaces
8.4 Prime the unit and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
8.5 Thereafter paint using two coats of premium quality twin pack automotive paint
8.6 Paint film thickness (color coat) must not be less than 80 microns each.

9. Colors

Underside of sub chassis	Black
Superstructure and deck	Verdi grass green/Blue/Yellow

10. Electrical

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

10.1 There shall be a safety device installed to not allow driving of the vehicle when the aerial platform is raised.
10.2 When movement limits of the platform are reached there shall be a light and buzzer to give warning to the user.
10.3 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

11. Signage and Markings

11.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary:

a) The aerial platform hydraulic system indicating tank capacity, system pressure, fluid type/grade specifications and test criteria where applicable.

b) Safe working loads to be clearly labeled on the structure on both sides.

c) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

11.2 Instructional data plates shall be fit close to all the hydraulic control panels.

11.3 Chevron board to be fitted section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.

11.4 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the structure and vehicle that impose a danger to persons.

11.5 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the structure/vehicle.

Item 11: Technical specification for a mobile stage superstructure

1. Scope

This specification is for a rear body that is mobile stage. The superstructure shall be fully enclosed with solid sides and an actuated passenger side opening platform stage. There shall also be a rear door entrance. It will primarily be used for community shows and corporate speeches for a period of up to 6-8 hours to an audience of approx. 2000 persons. Furthermore, multimedia equipment and systems including monitor screens, audio and video equipment and power systems shall be installed into the vehicle.

2. Vehicle

The chassis cab/vehicle for this item shall be a single chassis cab, with a minimum Gross Vehicle Mass (GVM) of 7 000 - 13 500 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

a) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
b) The end of Section 7 covers other specifications/standards that shall be adhered to.

3. Major/Overall dimensions of stage body:

Description	Dimensions (mm)
Body length	Full length of subframe 5 000 to 6 000
Width	2 500
Sides	Solid enclosed body and drop down stage
Rear	Full length rear door 2 000
Total height to roof	4 000

4. Material specification

The superstructure frame shall be constructed of corrosion resistant structural steel (Corten, Domex, 3CR12 or similar/better is recommended).The body panels shall be insulated type have a metallic finish like aluminum or chromadek. All joins of the paneling shall have proprietary fasteners and/or tongue and groove fits. Minimum thickness shall be sufficient for the payload with safety factors for the design.

5. Construction requirements

5.1 Chassis mounting

All mounting to be in accordance with directives specified by the Original Equipment Manufacturer. The sub frame shall extend the full body length.

5.2 Superstructure

5.2.1 The rear superstructure shall encase the entire chassis and the vehicles subsystems like fuel tank, pneumatics, batteries etc. Access to these subsystems shall be made via lockable waterproof outside hinged doors with an EPDM seal. Mechanical hinged locking systems shall be installed to hold these doors in the fully opened position. Container door stainless steel locks shall be fit.

5.2.2 The rear entry door shall have a slide out stair case mounted and shall have safety railings at either side of the body. Galvanised full length container door lock with a heavy-duty case-hardened lock to be included.

5.2.3 On the driver's side of the body there shall be a low noise generator (75 dB or better) with an electronic ignition and minimum capacity of 7.5kVA. It shall be mounted such that the generator can be removed for maintenance and be easily refuellable. Enclosure shall be louvered allow heat dissipation and to deflect water ingression. Access to the generator shall be made via a lockable waterproof outside hinged door with an EPDM seal. Mechanical hinged locking systems shall be installed to hold these doors in the fully opened position. Container door stainless steel lock shall be fit.

5.2.4 The passenger side of the body shall be made of a single large opening. Two slimline lockers on either side shall house the speaker array and there shall be a protective removable panel mesh on the front.

5.2.5 drop-down stage shall be the entire longitudinal length as far as possible. There shall be sufficient legs underneath to hold the stage sturdily in place. Legs shall have rubber feet to cope with uneven terrain. The top of the stage shall be seamless and smooth. The retracting system for the stage shall have a minimal footprint and be space efficient.

5.2.6 Two staircases shall be manufactured for access to the stage from either side. Demountable hand railings for the stage and for the stage shall be included.

5.3 Interior of the superstructure

5.3.1 There shall be a custom manufactured workstation specific to the equipment being supplied. The top tier of this workstation shall have a cover that encloses the equipment. Other tiers shall have roller doors. The workstation shall be the full longitudinal length and shall be at a user-friendly height.

5.3.2 Storage lockers shall also be incorporated to store media and other AV equipment.

5.3.3 Four-fold out chairs and one table shall be included.

5.3.4 A 60 liter 12/24V operated fridge large enough for beverages to be installed.

5.3.5 The roof shall have a slide out panel on electrical telescopic actuators to act as an awning for the stage. It shall be full length and width of the roof.

5.4 Audio Video equipment

5.4.1 Supply and fitment of distribution board with surge arrest circuit breakers and line filter for all power points. Network set up for TV, computers and sound system. Supply and fit 220 volt plug points as required for the safe operation of the audio/visual equipment listed below and additional plug points as stipulated by Municipal representative.

5.4.2 Supply and fit four monitor/television screens that are compatible to the audio/visual equipment specified below. The service provider must ensure that the television sets are fitted in manner that renders the installation water proof and it can withstand the rigours of road transport.

A) The 55 inch screen to be fitted at the rear, it has to be recessed and have a lockable door fitted with struts.

B) The 3 x 32 inch screens have to be installed on swing brackets at the front as required.

5.4.3 There shall be two premium maintenance free 55Ah deep cycle batteries mounted in a compartment with suitable ventilation. A 12/24V DC input, 220-230 V AC output inverter with a capacity of 3 000 W with a surge double the capacity shall be supplied. South African plug receptacle 15-20A output. The inverter is expected to supply the workstation av equipment and screens. The generator shall be used for the main active speakers and lighting.

5.4.4 There shall be solar panels on the roof of the superstructure with a regulator to charge the batteries in 5.4.3. The generator should also be available to supply a charge to the batteries to charge them when in use.

5.4.5 Supply and fitment of Sound system that is suitable for live broadcast and Road shows that is normally attended by + - 2000 community members, as per specifications below:

Equipment Type	Equipment Specification	Equipment Quantity
Speakers	JBL PRX825 active Loudspeaker or equivalent full range system	2
Microphone Receiver	Beyerdynamic – Rack Mount Receiver or equivalent, Capable of handling 2 wireless handheld microphones and 5 x wireless microphones	1
Wireless Microphone	BeyerdynamicTG500 – Wireless Handheld Microphone or equivalent	2
Wireless Neck worn Microphone	Beyerdynamic neck worn wireless microphone or equivalent	5

Handheld Microphone	BeyerdynamicTGV50D – Handheld Microphone or equivalent	2
Microphone Stand	GST 500 5/8" Microphone stand or equivalent	2
Mixer	Allen & Heath ZED 16FX 10 mic/ 1 line Mixer or equivalent	1
Matrix Switcher	Alfatron MUH44A-N 4x4 HDMI Matrix or equivalent	1
Audio De-embedder	Alfatron CHAk2 Audio De-embedder or equivalent	1
Laptop (minimum 15" screen)	This will serve also as a multimedia player capable of playing DVD's, USB devices, SD Cards and compatible to components in the av system. Shall have an adequate solid-state drive with latest Microsoft windows and office and a secondary hard drive of minimum 1TB such that presentations, videos and pictures can be displayed through the screens. Videos and music shall also be able to play through the screens and main audio system simultaneously. Multi file playback including mkv, avi and other high-resolution formats. WIFI enabled and must be able to configure the JBL speaker settings and DSP with the software preloaded. DVD/Blu-ray drive can be external mounted. Minimum of four usb interfaces which can be external mounted as a hub. Mouse and charger to be included.	1
Network Cabinet	For the Secure Mounting and capsulation of components listed above	1
PTZ dome camera with DVR	Full High definition 1080p, minimum of 2MP and zoom of 12X. Low light compatible and should be water resistant. DVR capability via a standalone system or laptop above with a hard drive that can record and save multiple 6-8-hour video and audio streams. Camera to be mounted on the retractable roof.	1
Cables/ Wiring, Plugs & Adaptors	All power and av cables with fittings terminated shall be supplied for all components as per manufacturers requirements. All wiring shall be trunked throughout the interior of the superstructure.	As Required
Mounting Brackets	Where necessary the bidder shall be required to fabricated and install mounting brackets for the installation of components as per operational requirement. Material shall be minimum	As required

	glavanised if not corrosion resistant with chromium and shall be powder coated.	
Fasteners	All Nuts, Bolts, Screws and fasteners must be stainless steel.	As Required

All items in chapter 5 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor including the stage that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap). All lockers, storage areas and work areas that may house or be used for equipment shall be lined with a non slip insertion rubber.

6. Colors

Underside of Body	Black
Cab	Yellow
Superstructure	White/Yellow with custom branding on the entire superstructure. User department will provide the theme for the vehicle at time of order.

7. Electrical

7.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100mm in diameter that are screwed into position with a stainless-steel flange.

7.2 Reverse buzzer and camera when reverse gear is engaged.

7.3 Four LED amber 3 watt cluster strobe lights with random flashing pattern shall be installed on top of the superstructure (one pair on rear end of the body and one pair on the front end). Each shall be placed in the extreme point of the corner.

7.4 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

7.5 Scene lighting to be supplied all around the body. The lighting shall be hooded to focus and illuminate the stage and the surroundings of the vehicle. Minimum of six (6) LED lights shall be installed.

7.6 Interior of the superstructure shall have LED strip lights. One to be mounted directly over the workstation. One to illuminate the rear entrance. Lockers shall also be illuminated.

7.7 All exposed electrical wiring looms of the chassis cab and superstructure shall be fully encased in a flexible protective metallic conduit and securely clamped with fasteners.

8. Signage and Markings

8.1 Data plates shall be fitted for:

a) The hydraulic/pneumatic/electrical system indicating tank capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

b) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

c) Safe working load (SWL) of stage shall be clearly labelled on both sides of the body and on the stage itself.

8.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

8.3 Chevron board and durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the superstructure/vehicle.

8.4 Retro-reflective tape shall be fitted to both sides and the rear of the tip- body as well as the rear bumper and the items in chapter 5 that make up the perimeter of the superstructure/vehicle.

8.5 Registration number to be clearly marked on roof (left to right, 80-90% size of the roof).

12. Maintenance

The vehicle and equipment must be supplied with detailed maintenance, operating, training and spares manuals (in English), including technical data for each spare, as well as general arrangement drawings and a bill of materials. There must be sufficient information to allow the capture of maintenance schedules in terms of inspections, servicing and replacement of parts. Three hardcopies and three electronic copies of the operating, maintenance, training and spare parts manuals shall be provided, as well as a training manual for each trainee (operator, driver and maintenance staff). The av equipment training shall be fully comprehensive and be given to five participants on site.

13. Miscellaneous items

13.1 Front mud flaps and full rear mudguards constructed from rubber or a durable polymer.
13.2 Bolt on covers for safety where parts are rotating, swinging or of high temperature.
13.3 Two 4.5 kg fire extinguishers should be supplied and fitted. One in an accessible position close to the driver when exiting the cab and the other inside the superstructure.
13.4 Bolt on head and tail light guards.
13.5 Rear underrun according to SANS 1055
13.6 Jerry can mounted in a safe position for refuelling of the generator.

Item 12: Technical specification for a mobile kitchen superstructure

1. Scope

This specification is for a rear body that is a mobile kitchen. The superstructure shall be fully enclosed with solid sides and one side serving window. There shall also be a rear door entrance. It will primarily be used for community feeding schemes of approx. 800 persons. Furthermore, kitchen equipment and appliances including a stove, fridge, freezer, double bowl sink and other items shall be installed into the vehicle.

2. Vehicle

The chassis cab/vehicle for this item shall be a single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 7 000 - 13 500 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

a) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
b) The end of Section 7 covers other specifications/standards that shall be adhered to.

3. Major/Overall dimensions of kitchen body:

Description	Dimensions (mm)
Body length	Full length of subframe 5 000 to 6 000
Width	2 500
Sides	Solid enclosed body and side serving entrance
Rear	Full length rear door 2 000
Total height to roof	4 000

4. Material specification

The superstructure frame shall be constructed of corrosion resistant structural steel (Corten, Domex, 3CR12 or similar/better is recommended).The body panels shall be insulated type have a metallic finish like aluminum or chromadek. All joins of the paneling shall have proprietary fasteners and/or tongue and groove fits. Minimum thickness shall be sufficient for the payload with safety factors for the design.

5. Construction requirements

5.1 Chassis mounting

All mounting to be in accordance with directives specified by the Original Equipment Manufacturer. The sub frame shall extend the full body length.

5.2 Superstructure

5.2.1 The rear superstructure shall encase the entire chassis and the vehicles subsystems like fuel tank, pneumatics, batteries etc. Access to these subsystems shall be made via lockable waterproof outside hinged doors with an EPDM seal. Mechanical hinged locking systems shall be installed to hold these doors in the fully opened position. Container door stainless steel locks shall be fit.

5.2.2 The rear entry door shall have a slide out stair case mounted and shall have safety railings at either side of the body. Galvanized full length container door lock with a heavy-duty case-hardened lock to be included.

5.2.3 On the driver's side of the body there shall be a low noise generator (75 dB or better) with an electronic ignition and minimum capacity of 7.5kVA. It shall be mounted such that the generator can be removed for maintenance and be easily refuellable. Enclosure shall be louvered allow heat dissipation and to deflect water ingression. Access to the generator shall be made via a lockable waterproof outside hinged door with an EPDM seal. Mechanical hinged locking systems shall be installed to hold these doors in the fully opened position. Container door stainless steel lock shall be fit.

5.2.4 The passenger side of the body shall be made of a single large side serving entrance approx. one third the side panel. It shall be low enough for the employees in the superstructure to serve a meal and beverage to persons adjacent on the ground. It shall be a top hinged aluminum window system opening outwards. Glass shall be safety glass with a drop down lockable burglar shutter mounted on the inside.

5.2.5 All equipment and storage items shall be rigid and/or shockproof mounted in location. The vehicle and superstructure shall have the ability to maneuver in uneven terrain.

5.4 Interior of the superstructure

5.4.1 There shall be a custom manufactured kitchen workstation specific to the equipment being supplied. The top shall tier of this workstation shall serve as a preparation counter and shall be stainless steel. Storage lockers, drawers and shelving shall be installed with premium hinges and roller systems with locking capability. The workstation shall be the full longitudinal length and shall be at a user-friendly height.

5.4.2 Four-fold out chairs and one table shall be included.

5.5 Kitchen equipment

5.5.1 Supply and fitment of a kitchen appliances and equipment as in 5.5.3. There shall be a distribution board with surge arrest circuit breakers and for all power points. Supply and fit 220 volt plug points as required for the safe operation of kitchen equipment listed below and additional plug points as stipulated by Municipal representative.

5.5.2. There shall be solar panels on the roof of the superstructure with a regulator to charge the batteries for the generator.

5.5.3 Supply and fitment of kitchen equipment and appliances, as per specifications below:

Equipment Type	Equipment Specification	Equipment Quantity
Gas Stove	Four plate industrial gas boiling stove. Shall be mounted such that it can be removed. Regulator and safety valve cut off.	1
Gas Grill	3-4 burner. Reversible cast iron grill top. Stainless steel construction. Easy maintainable drip tray. Adjustable feet.	1
Gas Deep fryer	Double tray fryer, individual controls, stainless steel, minimum fryer basket capacity of 12 liters each.	1
Gas/electric Fridge	Minimum capacity of 100 liters	2
Gas/electric Freezer	Minimum capacity of 100 liters	2
Gas Food Warmer/Bain Marie	Minimum of three trays. Stainless steel construction. Trays and lids should be easily removable for cleaning. Drain valve with hose for water draining can be incorporated with the sink waste tank.	3
Sink and water system	Double sink bowl with a gravity fed water dispensing system. Two taps which can be coupled directly to a water tank/s. Minimum of 40 liters. Collection tank to be easily removable/drainable outside the superstructure.	1
Gas distribution	Pair of 20kg gas bottles in a ventilated outside locker with distributor, safety valve. Gas certificate shall be provided.	1
Lockers and shelving	Unallocated spaces in the rear body shall be used for storage of kitchen and food supplies. There shall be shelves with non slip surfaces and safety doors for kitchen crockery and consumables. Lockers shall be for the storage of food and perishables. Final design will be discussed with bidder at the time of order based on current user department requirements.	As required
Cables/ Wiring, Piping, Plugs & Adaptors	All power, cables, piping with fittings terminated/coupled shall be supplied for all components as per manufacturers requirements. All shall be trunked throughout the interior of the superstructure.	As Required
Mounting Brackets	Where necessary the bidder shall be required to fabricated and install mounting brackets for the installation of equipment, appliance and components as per operational requirement. Material shall be stainless steel.	As required
Fasteners	All Nuts, Bolts, Screws and fasteners must be stainless steel.	As Required

All items in chapter 5 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap). All lockers, storage areas and work areas that may house or be used for equipment shall be lined with a non slip insertion rubber.

6. Colors

Underside of Body	Black
Cab	Yellow
Superstructure	White with custom branding on the entire superstructure. User department will provide the theme for the vehicle at time of order.

7. Electrical

7.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100mm in diameter that are screwed into position with a stainless-steel flange.

7.2 Reverse buzzer and camera when reverse gear is engaged.

7.3 Four LED amber 3-watt cluster strobe lights with random flashing pattern shall be installed on top of the superstructure (one pair on rear end of the body and one pair on the front end). Each shall be placed in the extreme point of the corner.

7.4 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

7.5 Scene lighting to be supplied all around the body. The lighting shall be hooded to focus and illuminate the serving area and the surroundings of the vehicle. Minimum of six (6) LED lights shall be installed.

7.6 Interior of the superstructure shall have LED lights and strip lights. The lighting shall be sufficient to illuminate the work surfaces and appliances with no overhang or shadow. One to illuminate the rear entrance. Lockers shall also be illuminated.

7.7 All exposed electrical wiring looms of the chassis cab and superstructure shall be fully encased in a flexible protective metallic conduit and securely clamped with fasteners.

8. Signage and Markings

8.1 Data plates shall be fitted for:

a) The gas/hydraulic/pneumatic/electrical system indicating capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

b) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

c) Safe working load (SWL) of kitchen occupants shall be clearly labelled on both sides of the body.

8.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

8.3 Chevron board and durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the superstructure/vehicle.

8.4 Retro-reflective tape shall be fitted to both sides and the rear of the tip- body as well as the rear bumper and the items in chapter 5 that make up the perimeter of the superstructure/vehicle.

8.5 Registration number to be clearly marked on roof (left to right, 80-90% size of the roof).

12. Miscellaneous items

12.1 Front mud flaps and full rear mudguards constructed from rubber or a durable polymer.

12.2 Bolt on covers for safety where parts are rotating, swinging or of high temperature.
12.3 Two 4.5 kg fire extinguishers should be supplied and fitted. One in an accessible position close to the driver when exiting the cab and the other inside the superstructure.
12.4 Bolt on head and tail light guards.
12.5 Rear underrun according to SANS 1055
12.6 Jerry can mounted in a safe position for refuelling of the generator.

Item 13: Technical specification for a mobile clinic superstructure

1. Scope

This specification is for a rear body that is a mobile clinic. The superstructure shall be fully enclosed with solid sides. There shall also be a rear door entrance. It will primarily be used for providing healthcare and dispensing medication to communities. Furthermore, medical equipment, appliances and other items shall be installed into the vehicle.

2. Vehicle

The chassis cab/vehicle for this item shall be a single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 7 000 - 13 500 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

a. SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
b. The end of Section 7 covers other specifications/standards that shall be adhered to.

3. Major/Overall dimensions of clinic body:

Description	Dimensions (mm)
Body length	Full length of subframe 5 000 to 6 000
Width	2 500
Sides	Solid enclosed body
Rear	Full length rear door 2 000
Total height to roof	4 000

4. Material specification

The superstructure frame shall be constructed of corrosion resistant structural steel (Corten, Domex, 3CR12 or similar/better is recommended).The body panels shall be insulated type have a metallic finish like aluminum or chromadek. All joins of the paneling shall have proprietary fasteners and/or tongue and groove fits. Minimum thickness shall be sufficient for the payload with safety factors for the design.

5. Construction requirements

5.1 Chassis mounting

All mounting to be in accordance with directives specified by the Original Equipment Manufacturer. The sub frame shall extend the full body length.

5.2 Superstructure

5.2.1 The rear superstructure shall encase the entire chassis and the vehicles subsystems like fuel tank, pneumatics, batteries etc. Access to these subsystems shall be made via lockable waterproof outside hinged doors with an EPDM seal. Mechanical hinged locking systems shall be installed to hold these doors in the fully opened position. Container door stainless steel locks shall be fit.

5.2.2 The rear and passenger side entry door shall have a slide out stair case mounted and shall have safety railings at either side of the body. Galvanized full length container door lock with a heavy-duty case-hardened lock to be included. The rear entrance shall also allow entry for a wheelchair, the system is described as in 5.3.

5.2.3 On the driver's side of the body there shall be a low noise generator (75 dB or better) with an electronic ignition and minimum capacity of 7.5kVA. It shall be mounted such that the generator can be removed for maintenance and be easily refuellable. Enclosure shall be louvered allow heat dissipation and to deflect water ingression. Access to the generator shall be made via a lockable waterproof outside hinged door with an EPDM seal. Mechanical hinged locking systems shall be installed to hold these doors in the fully opened position. Container door stainless steel lock shall be fit.

5.2.4 All equipment and storage items shall be rigid and/or shockproof mounted in location. The vehicle and superstructure shall have the ability to maneuver in uneven terrain.

5.2.5 The interior of the superstructure shall be partitioned into two medical examination rooms. The partitions shall still allow circulation of the air-conditioning system if full height of the superstructure. Around each examination table shall be a removable medical curtain mounted on a free running rail that can enclose the examination area with a nurse/doctor and patient.

5.3 Wheelchair access system

5.3.1 The ramp shall be made of a lightweight non corrosive structural steel.

5.3.2 Quick and easy deployment using electrical (12V) actuators and controls.

5.3.3 Surface shall be slip resistant and lined with a wear and weather resistant insertion type rubber.

5.3.4 Safe, durable and reliable with minimal maintenance.

5.3.5 There shall be mechanical safety features in case of a powered system failure.

5.3.6 Dimensionally shall accommodate a variety of wheelchairs including electric types with a minimum safe working load of 300 kgs.

5.3.7 The system shall be integrated into the chassis/sub chassis/superstructure of the vehicle and shall be operational in any condition and protected against any externalities when in operation.

5.3.8 The system shall have a safe working load sensor that will allow safe operation and no self-damage.

5.3.9 Guard and hand rails shall be fit strategically for safe operation.

5.4 Interior of the superstructure

5.4.1 There shall be a custom manufactured workstation specific to the medical equipment being supplied. The top shall tier of this workstation shall serve as a counter and shall be stainless steel. Storage lockers, drawers and shelving shall be installed with premium hinges and roller systems with locking capability as required by the user department. The workstation shall be the full longitudinal length and shall be at a user-friendly height.

5.4.2 Four-fold out chairs shall be included.

5.5 Medical equipment

5.5.1 Supply and fitment of medical appliances and equipment as in 5.5.3. There shall be a distribution board with surge arrest circuit breakers and for all power points. Supply and fit 220 volt plug points as required for

the safe operation of appliances and equipment listed below and additional plug points as stipulated by Municipal representative.

5.5.2. There shall be solar panels on the roof of the superstructure with a regulator to charge the batteries for the generator.

5.5.3 Supply and fitment of equipment and appliances, as per specifications below:

Equipment Type	Equipment Specification	Equipment Quantity
Air-conditioning	A split unit type air-conditioning unit of 12 000 BTU to be mounted at the top of the superstructure panel closest to the driver's cab.	1
Examination table	Full length adjustable examination table. The mattress should be a high-density foam covered with a premium quality vinyl material with. Must be chemically resistant to medications and sanitizers.	2
Fridge	A 100L fridge for medication.	1
Desk and chair	A desk with three drawers and a premium padded guest chair for the nurse/doctor/pharmacist.	2
Table on castors	A stainless-steel top tray table with a pair of drawers and an open bottom shelf. Top tier shall have a safety border so items cannot roll off. Castors to be heavy duty metal type with brakes.	2
Sink and water system	Single sink bowl with a gravity fed water dispensing system. Two taps which can be coupled directly to a water tank/s. Minimum of 40 liters. Collection tank to be easily removable/drainable outside the superstructure.	1
Lockers and shelving	Unallocated spaces in the rear body shall be used for storage of supplies. Lockers shall be for the storage of medicine and consumables. Final design will be discussed with bidder at the time of order based on current user department requirements.	As required
Cables/ Wiring, Piping, Plugs & Adaptors	All power, cables, piping with fittings terminated/coupled shall be supplied for all components as per manufacturers requirements. All shall be trunked throughout the interior of the superstructure.	As Required
Mounting Brackets	Where necessary the bidder shall be required to fabricated and install mounting brackets for the installation of equipment, appliance and components as per operational requirement. Material shall be stainless steel.	As required

Fasteners	All Nuts, Bolts, Screws and fasteners must be stainless steel.	As Required

All items in chapter 5 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces. Any floor including that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap). All lockers, storage areas and work areas that may house or be used for equipment shall be lined with a non slip insertion rubber.

6. Colors

Underside of Body	Black
Cab	Yellow
Superstructure	White with custom branding on the entire superstructure. User department will provide the theme for the vehicle at time of order.

7. Electrical

7.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100mm in diameter that are screwed into position with a stainless-steel flange.

7.2 Reverse buzzer and camera when reverse gear is engaged.

7.3 Four LED amber 3-watt cluster strobe lights with random flashing pattern shall be installed on top of the superstructure (one pair on rear end of the body and one pair on the front end). Each shall be placed in the extreme point of the corner.

7.4 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

7.5 Interior of the superstructure shall have LED lights and strip lights. The lighting shall be sufficient to illuminate the examination areas and the desk with no overhang or shadow. One to illuminate the rear entrance. Lockers shall also be illuminated.

7.6 Battery, Generator, Airconditioning and Wheelchair system isolator switches for each shall be installed.

7.7 All exposed electrical wiring looms of the chassis cab and superstructure shall be fully encased in a flexible protective metallic conduit and securely clamped with fasteners.

8. Signage and Markings

8.1 Data plates shall be fitted for:

a) The gas/hydraulic/pneumatic/electrical system indicating capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

b) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

c) Safe working load (SWL) of kitchen occupants shall be clearly labelled on both sides of the body.

8.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

8.3 Chevron board and durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the superstructure/vehicle.

8.4 Retro-reflective tape shall be fitted to both sides and the rear of the tip- body as well as the rear bumper and the items in chapter 5 that make up the perimeter of the superstructure/vehicle.

8.5 Registration number to be clearly marked on roof (left to right, 80-90% size of the roof).

12. Miscellaneous items

12.1 Front mud flaps and full rear mudguards constructed from rubber or a durable polymer.
12.2 Bolt on covers for safety where parts are rotating, swinging or of high temperature.
12.3 One 4.5 kg fire extinguishers should be supplied and fitted. One in an accessible position close to the driver when exiting the cab and the other inside the superstructure.
12.4 Bolt on head and tail light guards.
12.5 Rear underrun according to SANS 1055
12.6 Jerry can mounted in a safe position for refuelling of the generator.

Item 14: Technical specification for a 12-14 m scissors lift body

1.Scope

The intent of this specification is to provide for a fully operational superstructure which has a scissors lift mounted with a loading area. The primary use of the vehicle is to maintain commercial properties in the eThekwini area.

2. Vehicle

The chassis cab/vehicle for this item shall be an 4x2 single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 7 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.
The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The load bearing items shall be made out of structural steel to withstand the payload. Corten steel for the structural rolled sections and floor is recommended. Whilst Hardox for the wearing surfaces.

4. Construction requirements

4.1Main Deck Body

4.1.1 A full-length sub frame to be manufactured with a headboard that must double as the platform for the lift structure.
4.1.2 A full top deck shall be constructed for the rear loading sub chassis with accommodation for the lift platform.
4.1.3 Platform mounting method to conform to original equipment manufacturer (OEM) to the sub chassis.
4.1.4 There shall be outriggers at the rear and front of the superstructure to aid stability when the platform is raised.

4.2 Storage Boxes

4.2.1 The outer perimeter of the deck shall accommodate tool boxes that shall enclose the rear body and the centrally located lift controls. The longitudinal tool boxes shall be 400 mm laterally and 400 mm high. There shall be two lockable lids opening from the inside of the deck.

The rear of the deck shall have two storage boxes opening outwards to the rear. The boxes shall extend the full lateral length with and be 700 mm longitudinally and 700 mm high.

4.2.2 Access steps and safety railings shall be installed for the entrance to the rear deck which shall be positioned behind the passenger side of the cab.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Scissors Platform

5.1 12-14 m scissors platform, with a working of minimum safe working load of 250 kg.
To be designed according to SANS 16368 Mobile elevating work Platforms-Design calculations, safety requirements and test methods (latest revision).
5.2 Opening access to have a safety gate with a safety type slam/latch lock and safety handles for ease of entry and exiting. Entire platform should be enclosed with safety railings and panels.
5.3 Floor of the platform to be lined with a non-slip material and to have drain holes for easy drainage of water.
5.4 The platform shall have two safety points for connections of safety restraining harnesses (included).
5.5 Controls available on the platform and the base of the superstructure with emergency stop at both locations.
5.6 There shall be two high powered LED adjustable work lamps mounted at the platform/bucket controls such that workers can illuminate the area that is being worked on when raised by the platform.

6.Hydraulic system

6.1 In respect of the hydraulic tank the following shall be required:
- 6.1.1 To be constructed of steel.
- 6.1.2 To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.
- 6.1.3 To be fitted with a bump guard from externalities.
- 6.1.4 To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.
- 6.1.5 Must have a filler cap strainer & filter into filler base and filler cap assembly.

6.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the solenoid valve system.
6.3 The hydraulic valves shall be grouped together for ease of maintenance.
6.4 Test points for testing hydraulic pressures shall be fitted and grouped together.
6.5 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.
6.6 Safety hold valves to hold the booms in place in case of failure.
6.7 Emergency system: manual pump shall be installed to lower the aerial platform in case of system failure.
6.8 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.
6.9 Outrigger hydraulic legs controls to be located near the base of the platform. System shall be self-equalizing in terms of pressure and force.
6.10 Lift platform shall only operate if outriggers have been deployed. This shall be incorporated as a safety device.

7. Power Take Off (PTO)

7.1 The PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.

7.2 The engine and transmission must not be harmed by use of the PTO.

7.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

7.4 Electronic control module and wiring harness which incorporates the “Rev Up Limiter” must be integrated into the existing OEM vehicle using the OEM 24 Volt system.

7.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.

7.6 The accelerator pedal cannot be used, while the PTO is engaged.

8. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

8.1 Descale all metal surfaces
8.2 Grind down & smooth all rough edges
8.3 Thoroughly clean all surfaces
8.4 Prime the unit and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
8.5 Thereafter paint using two coats of premium quality twin pack automotive paint
8.6 Paint film thickness (color coat) must not be less than 80 microns each.

9. Colors

Underside of sub chassis	Black
Chassis Cab, Superstructure and deck	Verdi grass green/Blue/Yellow

10. Electrical

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

10.1 There shall be a safety device installed to not allow driving of the vehicle when the scissors platform is raised.
10.2 When movement limits of the platform are reached there shall be a light and buzzer to give warning to the user.
10.3 Reverse camera, buzzer and warning light to be installed.
10.4 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

11. Signage and Markings

11.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary:

a) The lift platform hydraulic system indicating tank capacity, system pressure, fluid type/grade specifications and test criteria where applicable.

b) Safe working loads to be clearly labeled on the structure on both sides.

c) Safety, operation, technical data, dates of manufacture, manufacturer’s details etc.

11.2 Instructional data plates shall be fit close to all the hydraulic control panels.

11.3 Chevron board to be fitted section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.

11.4 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the structure and vehicle that impose a danger to persons.

11.5 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the structure/vehicle.

11.6 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

11.7 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

12. Miscellaneous items

12.1 Bolt on covers for safety where parts that are rotating, swinging or of high temperature.
12.2 A 4.5 kg fire extinguisher should be supplied and fitted in an accessible position near the driver's cab.

Item 15: Technical specification for various hook lift superstructures

1.Scope

The intent of this specification is to provide for a fully operational vehicle, which has the capability to load and offload superstructures sand containers by means of a hook lift mechanism.

2. Vehicle

Item 15.1 shall have a hook lift mechanism fitted to the chassis cab that can lift the capacity of 10-ton. The chassis cab/vehicle for this item shall be a single chassis cab, with a Gross Vehicle Mass (GVM) of 7 000 – 18 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

Item 15.2 shall have a hook lift mechanism fitted to the chassis cab that can lift the capacity of 20-ton. The chassis cab/vehicle for this item shall be an 6x4 single chassis cab, with a minimum Gross Vehicle Mass (GVM) of 22 to 38 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The vehicle and the customisation shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.

b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.

c)The end of Section 7 covers other specifications/standards that shall be adhered to.

3. Material specification

The load baring items including the main boom, ladder frame and goose neck shall be made out of structural steel to withstand the payload. Corten steel and Domex for the structural rolled sections and flat plate is recommended. Whilst Hardox for the wear pads and the floor.

4. Construction requirements

4.1 Rear body loading area

4.1.1 A minimum of 4.5 mm thickness is recommended for the structural members.
4.1.2 Rear and front outriggers shall be installed for stability.
4.1.3 Maximum container length to be accommodated shall be 5 000 mm and 6 500 mm for the 4x2 and 6x4 chassis respectively.
4.1.4 Superstructures and containers shall have overhang over the chassis in line with NRTA.
4.1.5 Areas of the floor that shall be used as access walkways shall have a hard wearing, slip resistant material (Vastrap).

4.1.6 Access ladder and railings/grabs shall be installed in a suitable position behind the cab and rear/side.
4.1.7 The twin mounted hydraulic cylinders shall be suitable for the application and lift the laden container at the applicable angle to the rear load bed. Maintenance free bushings/bearings shall be used.
4.1.8 The main hoist shall incorporate a hook mount system.
4.1.9 The jib shall have a safety locking system.
4.1.10 The load bearing frame/floor shall have a locking system for the container.
4.1.11 Hooklift mechanism, geometry and safety systems designed and container/skip compliant with DIN 30722.
4.1.12 Adjustable lifting arm, main hoist and jib shall have independent hydraulic controls for adjustments to different containers if not standardised.
4.1.13 A minimum tipping angle of 40° shall be required.
4.1.14 Lateral guides shall be incrementally installed for loading and safety.
4.1.15 The option of a hydraulically operated durable and robust roll up material which can be deployed and retracted automatically over a container shall be installed for open containers.

4.2 Tool Box

A waterproof toolbox constructed from 450 x 450 x 450 mm shall be positioned on near side of chassis. Anti-loose fasteners to be used to close lid.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Lighting

5.1 A waterproof slim line bar light 1200 mm in length and 200 mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.

5.2 One rubber encased spotlight shall be installed to the rear top of the cab facing the container loading area. Switch shall be located on the hydraulics control panel.

6. Hydraulic system

6.1 In respect of the hydraulic tank the following shall be required:
6.1.1 To be constructed of steel.
6.1.2 To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.
6.1.3 To be fitted with a bump guard from externalities.
6.1.4 To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.
6.1.5 Must have a filler cap strainer & filter into filler base and filler cap assembly.
6.1.6 Oil capacity shall be double that of the oil capacity of the hydraulic cylinder.
6.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the tipper / solenoid valve system.
6.3 The hydraulic valves shall be grouped together for ease of maintenance.
6.4 Test points for testing hydraulic pressures shall be fitted and grouped together.
6.5 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.
6.6 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.

6.7 Hydraulic controls for the operation of the loading/offloading shall be fitted in a user friendly manner in the driver's cab and behind the cab allowing for ease of operation. The outside controls shall be protected by means of an enclosure.

6.8 The controls shall where possible be electronic, and activate the necessary servos (either pneumatic or hydraulic) that will activate the operation. All actions will be fully adjustable at variable speeds for the operation of the hydraulics. A plug in, modular type, control panel is preferred for ease of maintenance.

7. Power Take Off (PTO)

7.1 The close coupled PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.

7.2 The engine and transmission must not be harmed by use of the PTO.

7.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

7.4 Electronic control module and wiring harness which incorporates the "Rev Up Limiter" must be integrated into the existing OEM vehicle using the OEM 24 Volt system.

7.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.

7.6 The accelerator pedal cannot be used, while the PTO is engaged.

7.7 PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

8. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

8.1 Descale all metal surfaces
8.2 Grind down & smooth all rough edges
8.3 Thoroughly clean all surfaces
8.4 Prime the unit and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
8.5 Thereafter paint using two coats of premium quality twin pack automotive paint
8.6 Paint film thickness (color coat) must not be less than 80 microns each.

9. Colors

Underside of Body	Black
Cab, Deck and structures	White and Cleansing Solid Waste (CSW) branding with white, blue and green stripes across the front of the cab and CSW Blue Safety yellow White Verdi Green

10. Electrical

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

10.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more of minimum 100 mm in diameter that are screwed into position with a stainless-steel flange.
10.2 Bolt on taillight guards to be installed.

10.3 Reversing camera, buzzer and warning light to be installed when reverse gear is engaged.
10.4 Battery isolator switch.
10.5 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
10.6 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

11. Signage and Markings

11.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary:

a) The hydraulic system indicating tank capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

b) Safe working loads to be clearly labeled on the structure on both sides.

c) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

11.2 Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

11.3 Chevron board to be fitted section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.

11.4 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

11.5 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

11.6 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

11.7 Registration number to be clearly marked on roof.

11.8 Striping: Green, Blue, Green & White – on L/H/S roof and across the front panel, Grille and bottom valance. Green (58 mm), Blue (72 mm), Green (118 mm), White spacing, 1st White (35 mm), 2nd White (45 mm).

11.9 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

12. Miscellaneous items

12.1 Metallic mudguards suitable for the application shall be fitted.
12.2 The batteries to have a weather proof cover to prevent debris and moisture ingression.
12.3 Fuel tank, batteries, pneumatic cylinders and hydraulic tank to have structures built around them for safety.
12.4 Bolt on covers for safety where parts are rotating, swinging or of high temperature.
12.5 A 4.5 kg fire extinguisher should be supplied and fitted in an accessible position close to the driver when exiting the cab.
12.8 Bolt on head and tail light guards.
12.9 Bump rubbers (minimum of 4) to be fit on the front bumper.
12.10 Front mud flaps and full rear mudguards constructed from steel or aluminium.

13. Tow Hitch (for Item 15.2)

13.1 Electrical connector complying to SANS 1327: Electrical connectors for towing and towed vehicles.
13.2 50 mm Rockinger type trailer coupling to comply with DIN 74054, ECE R55-01 for on road use.

13.3 Dual line air braking system and pneumatic connections complying to SANS 1477-3: Pneumatic braking system connections between drawing and drawn vehicles, Part 3: The arrangement of connections on vehicles, using contact type or palm type couplings.

Item 16: Technical specification for a mobile resources center superstructure

1. Scope

This specification is for a rear body that is a mobile resources center. The superstructure shall be fully enclosed with solid sides with a rear door entrance. It will primarily be used for community rollout events and offering mobile services for processing of revenue bills and other corporate services. Furthermore, multimedia equipment and systems including monitor screens, wifi and power systems shall be installed into the vehicle.

2. Vehicle

The chassis cab/vehicle for this item shall be a single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 7 000 - 13 500 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

a. SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
b. The end of Section 7 covers other specifications/standards that shall be adhered to.

3. Major/Overall dimensions of body:

Description	Dimensions (mm)
Body length	Full length of subframe 5 000 to 6 000
Width	2 500
Sides	Solid enclosed body
Rear	Full length rear door 2 000
Total height to roof	4 000

4. Material specification

The superstructure frame shall be constructed of corrosion resistant structural steel (Corten, Domex, 3CR12 or similar/better is recommended).The body panels shall be insulated type have a metallic finish like aluminum or chromadek. All joins of the paneling shall have proprietary fasteners and/or tongue and groove fits. Minimum thickness shall be sufficient for the payload with safety factors for the design.

5. Construction requirements

5.1 Chassis mounting

All mounting to be in accordance with directives specified by the Original Equipment Manufacturer. The sub frame shall extend the full body length.

5.2 Superstructure

5.2.1 The rear superstructure shall encase the entire chassis and the vehicles subsystems like fuel tank, pneumatics, batteries etc. Access to these subsystems shall be made via lockable waterproof outside hinged doors with an EPDM seal. Mechanical hinged locking systems shall be installed to hold these doors in the fully opened position. Container door stainless steel locks shall be fit.

5.2.2 The rear entry door shall have a slide out stair case mounted and shall have safety railings at either side of the body. Galvanised full length container door lock with a heavy-duty case-hardened lock to be included.

5.2.3 On the driver's side of the body there shall be a low noise generator (75 dB or better) with an electronic ignition and minimum capacity of 7.5kVA. It shall be mounted such that the generator can be removed for maintenance and be easily refuellable. Enclosure shall be louvered allow heat dissipation and to deflect water ingression. Access to the generator shall be made via a lockable waterproof outside hinged door with an EPDM seal. Mechanical hinged locking systems shall be installed to hold these doors in the fully opened position. Container door stainless steel lock shall be fit.

5.2.4 There shall be solid windows on the side panels of the body closest to the roof. These shall be provided for natural light to illuminate the internal structure. It shall be made of aluminum, safety glass and an adequate seal.

5.3 Interior of the superstructure

5.3.1 There shall be a custom manufactured workstation specific to the equipment being supplied. The top tier of this workstation shall have a cover that encloses the equipment. Other tiers shall have roller doors. The workstation shall be the full longitudinal length and shall be at a user-friendly height.

5.3.2 Storage lockers shall also be incorporated to store office supplies mainly files and books.

5.3.3 Four fold out chairs and one table shall be included.

5.3.4 A 60 litre 12/24V operated fridge large enough for beverages to be installed.

5.4 Power and Multimedia equipment

5.4.1 Supply and fitment of distribution board with surge arrest circuit breakers and line filter for all power points. Network set up for TV/monitor, computers and WIFI. Supply and fit 220 volt plug points as required for the safe operation of the audio/visual equipment listed below and additional plug points as stipulated by Municipal representative.

5.4.2 Supply and fit monitor/television screens that are compatible to the audio/visual equipment specified below. The service provider must ensure that the television set are fitted in manner that renders the installation water proof and it can withstand the rigours of road transport. The 40 inch screen to be fitted at in the inside of the vehicle's superstructure on a shockproof sturdy bracket.

5.4.3 There shall be two maintenance free 55Ah deep cycle batteries mounted in a compartment with suitable ventilation. A 12/24V DC input, 220-230 V AC output inverter with a capacity of 3 000 W with a surge double the capacity shall be supplied. South African plug receptacle 15-20A output. The inverter is expected to supply the workstation equipment and screen.

5.4.4 There shall be solar panels on the roof of the superstructure with a regulator to charge the batteries in 5.4.3. The generator should also be available to supply a charge to the batteries to charge them when in use.

5.4.5 Supply and fitment of equipment as per specifications below:

Equipment Type	Equipment Specification	Equipment Quantity

WI FI	The eThekwini Municipality will be installing the Wi-Fi system on the superstructure. The Bidder must provide ducting for the installation of two Wi Fi receivers. The bidder must also provide a lockable enclosure to house the Wi-Fi Controller. The enclosure must also contain a power supply/source (either AC or 12V DC).	1
Laptop (minimum 15" screen)	This will serve also as a multimedia player capable of playing DVD's, USB devices, SD Cards and compatible to components onto the supplied 40" screen. Shall have an adequate solid-state drive with latest Microsoft windows and office and a secondary hard drive of minimum 1TB such that presentations, videos and pictures can be displayed through the screens. Videos and music shall also be able to play through the screens and main audio system simultaneously. Multi file playback including mkv, avi and other high-resolution formats. WIFI enabled and DVD/Blu-ray drive can be external mounted. Minimum of four usb interfaces which can be external mounted as a hub. Mouse and charger to be included.	1
Network Cabinet	For the Secure Mounting and capsulation of components listed.	1
Air-conditioning	A roof mounted or split unit type air-conditioning unit to be mounted at the top of the superstructure panel closest to the driver's cab. System shall be adequate for the superstructure.	1
Desk and chair	A desk with three drawers and a padded guest chair for the employee.	1
Lockers and shelving	Unallocated spaces in the rear body shall be used for storage of supplies. Lockers shall be for the storage of books, forms, files, stationery and consumables. Final design will be discussed with bidder at the time of order based on current user department requirements.	As required
Cables/ Wiring, Plugs & Adaptors	All power and av cables with fittings terminated shall be supplied for all components as per manufacturers requirements. All wiring shall be trunked throughout the interior of the superstructure.	As Required
Mounting Brackets	Where necessary the bidder shall be required to fabricated and install mounting brackets for the installation of	As required

	components as per operational requirement. Material shall be minimum glavanised if not corrosion resistant with chromium and shall be powder coated.	
Fasteners	All Nuts, Bolts, Screws and fasteners must be stainless steel.	As Required

All items in chapter 5 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor including that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap). All lockers, storage areas and work areas that may house or be used for equipment shall be lined with a non slip insertion rubber.

6. Colors

Underside of Body	Black
Cab	Yellow
Superstructure	White with custom branding on the entire superstructure. User department will provide the theme for the vehicle at time of order.

7. Electrical

7.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100mm in diameter that are screwed into position with a stainless steel flange.

7.2 Reverse buzzer and camera when reverse gear is engaged.

7.3 Four LED amber 3 watt cluster strobe lights with random flashing pattern shall be installed on top of the superstructure (one pair on rear end of the body and one pair on the front end). Each shall be placed in the extreme point of the corner.

7.4 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

7.5 Scene lighting to be supplied all around the body. The lighting shall be hooded to focus and illuminate the surroundings of the vehicle. Minimum of six (6) LED lights shall be installed.

7.6 Interior of the superstructure shall have LED strip lights. One to be mounted directly over the workstation. One to illuminate the rear entrance. Lockers shall also be illuminated.

7.7 All exposed electrical wiring looms of the chassis cab and superstructure shall be fully encased in a flexible protective metallic conduit and securely clamped with fasteners.

8. Signage and Markings

8.1 Data plates shall be fitted for:

a) The hydraulic/pneumatic/electrical system indicating tank capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

b) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

c) Safe working load (SWL) of superstructure shall be clearly labelled on both sides of the body.

8.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

8.3 Chevron board and durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the superstructure/vehicle.

8.4 Retro-reflective tape shall be fitted to both sides and the rear of the tip- body as well as the rear bumper and the items in chapter 5 that make up the perimeter of the superstructure/vehicle.

8.5 Registration number to be clearly marked on roof (left to right, 80-90% size of the roof).

12. Maintenance

The vehicle and equipment must be supplied with detailed maintenance, operating, training and spares manuals (in English), including technical data for each spare, as well as general arrangement drawings and a bill of materials. There must be sufficient information to allow the capture of maintenance schedules in terms of inspections, servicing and replacement of parts. Three hardcopies and three electronic copies of the operating, maintenance, training and spare parts manuals shall be provided, as well as a training manual for each trainee (operator, driver and maintenance staff). The av equipment training shall be fully comprehensive and be given to five participants on site.

13. Miscellaneous items

13.1 Front mud flaps and full rear mudguards constructed from rubber or a durable polymer.
13.2 Bolt on covers for safety where parts are rotating, swinging or of high temperature.
13.3 Two 4.5 kg fire extinguishers should be supplied and fitted. One in an accessible position close to the driver when exiting the cab and the other inside the superstructure.
13.4 One complete spare wheel and one set of emergency changing tools shall be supplied per vehicle.
13.5 Bolt on head and tail light guards.
13.6 Rear underrun according to SANS 1055
13.7 Jerry can mounted in a safe position for refuelling of the generator.

Item 17: Technical specification for a 28 m hook lift aerial platform body

1.Scope

The intent of this specification is to provide for a fully operational superstructure which has an aerial platform mounted with a loading area. The primary use of the vehicle is to cut trees, maintain street lights, store tools and remove the flora from recreational parks and gardens in the eThekwini area.

2. Vehicle

The chassis cab/vehicle for this item shall be an 4x2 single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 13 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.
The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The load bearing items shall be made out of structural steel to withstand the payload. Corten steel for the structural rolled sections and floor is recommended. Whilst Hardox for the wearing surfaces.

4. Construction requirements

4.1Main Deck Body

4.1.1 A full-length sub frame to be manufactured with a headboard that must double as the hook lift lifting arm and the safety rest for the main boom of the aerial structure.

4.1.2 A full top deck shall be constructed for the rear loading sub chassis with accommodation for the aerial platform.

4.1.3 Aerial platform mounting method to conform to original equipment manufacturer (OEM) to the sub chassis.

4.1.4 The underneath of the sub chassis shall have heavy duty rollers at the rear and wear pads located at the front and mid-section.

4.2 Storage Boxes

4.2.1 The outer perimeter of the deck shall accommodate tool boxes that shall enclose the rear body and the centrally located aerial controls. The longitudinal tool boxes shall be 400 mm laterally and 400 mm high. There shall be two lockable lids opening from the inside of the deck.

The rear of the deck shall have two storage boxes opening outwards to the rear. The boxes shall extend the full lateral length with and be 700 mm longitudinally and 700 mm high. The space in between the two boxes shall accommodate the aerial platform bucket.

4.2.2 Access steps and safety railings shall be installed for the entrance to the rear deck which shall be positioned behind the passenger side of the cab.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Aerial Platform

5.1 28 m aerial platform, with a two-man basket with a minimum safe working load of 250 kg.
To be designed according to SANS 16368 Mobile elevating work Platforms-Design calculations, safety requirements and test methods (latest revision).
5.2 Opening access to have a safety gate with a safety type slam/latch lock and safety handles for ease of entry and exiting.
5.3 Floor of bucket to be lined with a non-slip material and to have drain holes for easy drainage of water.
5.4 The bucket or boom shall have safety points for connections of safety restraining harnesses (included).
5.5 The aerial platform shall have controls such that the aerial platform will not damage the cab in its full rotation and movements.
5.8 Controls available on the basket and turret with emergency stop at both locations.

6.Hydraulic system

6.1 In respect of the hydraulic tank the following shall be required:

6.1.1 To be constructed of steel.

6.1.2 To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.

6.1.3 To be fitted with a bump guard from externalities.

6.1.4 To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.

6.1.5 Must have a filler cap strainer & filter into filler base and filler cap assembly.

6.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the solenoid valve system.

6.3 The hydraulic valves shall be grouped together for ease of maintenance.

6.4 Test points for testing hydraulic pressures shall be fitted and grouped together.

6.5 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.
6.6 Safety hold valves to hold the booms in place in case of failure.
6.7 Emergency system: manual pump shall be installed to lower the aerial platform in case of system failure.
6.8 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.
6.9 Outrigger hydraulic legs controls to be located near the turret. System shall be self-equalizing in terms of pressure and force.
6.10 Aerial platform shall only operate if outriggers have being deployed. This shall be incorporated as a safety device.

7. Self driven electrical system for hydraulic system

7.1 The hydraulic system shall be driven by a power pack mounted at the rear of the superstructure.
7.2 The engine and transmission must not be harmed by use of the system.
7.3 The system should be either 12V or 24V and compatible with commercial chassis.
7.4 Electronic control module and wiring harness which incorporates safety cut off for overload and thermal protection for overheating.
7.5 Must come equipped with a robust connector and cable of sufficient length. Recommended connectors according to;
SANS 1327: Electrical connectors for towing and towed vehicles and,
SANS 11446/ lSO 11446: Passenger cars and light commercial vehicles with 12 V systems -3-pole connectors between towing vehicles and trailers - Dimensions and contact allocation.

8. Metal Preparation and Painting Procedure

The following procedure must be adhered to:
8.1 Descale all metal surfaces
8.2 Grind down & smooth all rough edges
8.3 Thoroughly clean all surfaces
8.4 Prime the unit and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
8.5 Thereafter paint using two coats of premium quality twin pack automotive paint
8.6 Paint film thickness (color coat) must not be less than 80 microns each.

9. Colors

Underside of sub chassis	Black
Superstructure and deck	Verdi grass green/Blue/Yellow

10. Electrical

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

10.1 There shall be a safety device installed to not allow driving of the vehicle when the aerial platform is raised.
10.2 When movement limits of the platform are reached there shall be a light and buzzer to give warning to the user.
10.3 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

11. Signage and Markings

11.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary:

a) The aerial platform hydraulic system indicating tank capacity, system pressure, fluid type/grade specifications and test criteria where applicable.

b) Safe working loads to be clearly labeled on the structure on both sides.

c) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

11.2 Instructional data plates shall be fit close to all the hydraulic control panels.

11.3 Chevron board to be fitted section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.

11.4 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the structure and vehicle that impose a danger to persons.

11.5 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the structure/vehicle.

Item 17: Technical specification for a 28 m aerial platform superstructure

1. Scope

The intent of this specification is to provide for a fully operational vehicle which has an aerial platform mounted on the rear with a loading area. The primary use of the vehicle is to cut trees, maintain street lights, store tools and remove the flora from recreational parks and gardens in the eThekwini area.

3. Vehicle

The chassis cab/vehicle for this item shall be an 4x2 single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 13 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The load bearing items shall be made out of structural steel to withstand the payload. Corten steel for the structural rolled sections and floor is recommended. Whilst Hardox for the wearing surfaces.

4. Construction requirements

4.1 Main Deck Body

4.1.1 A full length sub frame to be manufactured with four out rigger hydraulic legs.

4.1.2 A full deck shall be constructed for the rear loading bed with accommodation for the aerial platform.

4.1.3 A support frame shall be manufactured on the head board behind the cab, to support the aerial platform boom structure.

4.1.4Chassis mounting method to conform to original equipment manufacturer (OEM) body mounting directive.

4.2 Storage Boxes

4.2.1 The outer perimeter of the deck shall accommodate tool boxes that shall enclose the rear body. The longitudinal tool boxes shall be 400 mm laterally and 400 mm high. There shall be two lockable lids opening from the inside of the deck.

The rear of the deck shall have two storage boxes opening outwards to the rear. The boxes shall extend the full lateral length with and be 700 mm longitudinally and 700 mm high. The space in between the two boxes shall accommodate the aerial platform bucket.

4.2.2 Access steps and safety railings shall be installed for the entrance to the rear deck which shall be positioned behind the passenger side of the cab.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Aerial Platform

5.1 28 m aerial platform, with a two-man basket with a minimum safe working load of 250 kg.
To be designed according to SANS 16368 Mobile elevating work Platforms-Design calculations, safety requirements and test methods (latest revision).
5.2 Opening access to have a safety gate with a safety type slam/latch lock and safety handles for ease of entry and exiting.
5.3 Floor of bucket to be lined with a non-slip material and to have drain holes for easy drainage of water.
5.4 The bucket or boom shall have safety points for connections of safety restraining harnesses (included).
5.5 The aerial platform shall have controls such that the aerial platform will not damage the cab in its full rotation and movements.
5.6 Controls available on the basket and turret with emergency stop at both locations.
5.7 Outriggers shall be fit around the body to allow stable operation of the aerial platform for entire movement range.

6. Hydraulic system

6.1 In respect of the hydraulic tank the following shall be required:
- 6.1.1 To be constructed of steel.
- 6.1.2 To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.
- 6.1.3 To be fitted with a bump guard from externalities.
- 6.1.4 To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.
- 6.1.5 Must have a filler cap strainer & filter into filler base and filler cap assembly.

6.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the solenoid valve system.
6.3 The hydraulic valves shall be grouped together for ease of maintenance.
6.4 Test points for testing hydraulic pressures shall be fitted and grouped together.
6.5 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.
6.6 Safety hold valves to hold the booms in place in case of failure.
6.7 Emergency system: shall be installed to lower the aerial platform in case of system failure.
6.8 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.
6.9 Outrigger hydraulic legs controls to be located near the turret. System shall be self-equalizing in terms of pressure and force.
6.10 Aerial platform shall only operate if outriggers have being deployed. This shall be incorporated as a safety device.

7. Power Take Off (PTO)

7.1 The PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.
7.2 The engine and transmission must not be harmed by use of the PTO.
7.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.
7.4 Electronic control module and wiring harness which incorporates the "Rev Up Limiter" must be integrated into the existing OEM vehicle using the OEM 24 Volt system.
7.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.
7.6 The accelerator pedal cannot be used, while the PTO is engaged.
7.7 PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

8. Lighting

8.1 A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.

8.2 2x4 LED 3/4watt head amber modules to be mounted at the rear of the vehicle with random flashing pattern and switch in the driver's cab.

9. Metal Preparation and Painting Procedure

The following procedure must be adhered to:
9.1 Descale all metal surfaces
9.2 Grind down & smooth all rough edges
9.3 Thoroughly clean all surfaces
9.4 Prime the unit and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
9.5 Thereafter paint using premium quality twin pack automotive paint
9.6 Paint film thickness (color coat) must not be less than 80 microns each. Two coats primer and one coat paint shall be minimum.

10. Colors

Underside of body and chassis	Black
Cab exterior	Verdi grass green/Blue/Yellow
Superstructure and deck	Verdi grass green/Blue/Yellow

11. Electrical

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

11.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100 mm in diameter that are screwed into position with a stainless steel flange.
11.2 Reversing camera, buzzer and warning flashing light to be installed when reverse gear is engaged.
11.3 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
11.4 There shall be a safety device installed to not allow driving of the vehicle when the aerial platform is raised.
11.5 When movement limits of the platform are reached there shall be a light and buzzer to give warning to the user.

11.6 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

12. Signage and Markings

12.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary:

a) The aerial platform hydraulic system indicating tank capacity, system pressure, fluid type/grade specifications and test criteria where applicable.

b) Safe working loads to be clearly labeled on the structure on both sides.

c) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

12.2 Instructional data plates shall be fit close to all the hydraulic control panels.

12.3 Chevron board to be fitted section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.

12.4 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

12.5 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

12.6 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

12.7 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

13. Miscellaneous items

13.1 The batteries to have a weather proof cover to prevent debris and moisture ingression.
13.2 Fuel tank, batteries, pneumatic cylinders and hydraulic tank to have structures built around them for safety.
13.3 Bolt on covers for safety where parts that are rotating, swinging or of high temperature.
13.4 A 4.5 kg fire extinguisher should be supplied and fitted in an accessible position in the cab.
13.5 Bolt on head and tail light guards.
13.6 Front and rear mud flaps.
13.7 Wheel chocks to be included with carry straps.
13.8 Levelling pads for the outriggers to aid levelling on uneven surfaces.

Item 19: Technical specification for converting a panel van to a multi passenger vehicle with disability access

1. Scope

The intent of this specification is to provide for a fully operational vehicle, which has the capability to carry persons with disabilities (wheelchair bound and/or paraplegic). The vehicle is intended to have complete access for the persons to safely help them gain access into and off the vehicle and be safely and comfortably transported. The vehicle and its customization should be user friendly for persons of all ages including children and the elderly.

2. Vehicle

2.1 The vehicle for the customization shall be a large panel van which shall be provided for the customization by eThekwini City Fleet.

2.2 The vehicle shall be strengthened and comply as necessary to comply with the rigors of transporting passengers and the associated equipment according to VC 8023 Compulsory specification for vehicles of category M2 and M3.
2.3 The vehicle shall be converted, homologated, meet compliance and licensed as a charted vehicle.
2.4 The vehicle shall allow a minimum of 4 wheelchair bound persons and a minimum of 6 people who are partially mobile and/or abled bodied persons to be safely transported. All seats (incl. wheelchair bays) to have safety belts for the passengers. Wheelchair restraint system to hold wheelchairs safely in position in their bays (systems to be adjustable).
2.5 Full complement of safety glass windows to be fit to the side panels of the vehicle and tinted with smash and grab tint.
2.6 The vehicle shall be fit with the following;
- 2.6.1 Multi input interface in car entertainment system and speakers (minimum of six full range coaxial) throughout the cabin with controls for sectors of the cabin.
- 2.6.2 Driver assist mirrors for front and passenger side of vehicle.
- 2.6.3 Roof mounted air conditioning system adequate for the vehicle and its occupants.
- 2.6.4 Fuel tank shall have a lockable fuel cap and anti-siphon device.
- 2.6.5 Assist step for all doors including the sliding door.
- 2.6.6 12v charging sockets (drivers cabin and wheelchair bays).
- 2.6.7 First aid emergency kit.
- 2.6.8 Pair of fire extinguishers.

3. Material specification

The load bearing items shall be made of light weight structural steel to withstand the payload and wear.

4. Construction requirements

4.1 Rear access ramp

4.1.1 The ramp shall be made of a lightweight non corrosive structural steel.
4.1.2 Quick and easy deployment using electrical (12V) actuators and controls.
4.1.3 Surface shall be slip resistant and preferably lined with a wear and weather resistant insertion type rubber.
4.1.4 Safe, durable and reliable with minimal maintenance.
4.1.5 There shall be mechanical safety features in case of a powered system failure.
4.1.6 Dimensionally shall accommodate a variety of wheelchairs including electric types with a minimum safe working load of 300 kgs.
4.1.7 The system shall be integrated into the cab of the vehicle and shall be operational in any condition and protected against any externalities when in operation.
4.1.8 The system shall have a safe working load sensor that will allow safe operation and no self-damage.
4.1.9 Guard and hand rails shall be fit strategically for safe operation.

4.2 Wheelchair bay

4.2.1 The areas in the vehicle designated for the wheelchairs shall be designed such that the person is in the same direction as the driver.
4.2.2 There shall be a user friendly support rail below the window.
4.2.3 There shall be a two-piece wheelchair padded backrest. The bottom section of the backrest shall have a fold out seat which can support a minimum of one person with a safety belt.
4.2.4 The back rest structure shall have a collapsible aisle side arm/rail which can safely lock into place. It can either fold downwards or be telescopic.

4.3 Seating and interior

4.3.1 The material for the seats shall be SABS/SANS tested for rub count and ultra violet resistance.

4.3.2 To accommodate passengers who will be using walking aids the seats shall be of a design for easy accommodation. The design shall also have hand and support rails with grab handles strategically positioned to assist the passenger in and out of the seating position.

4.3.3 To further assist 4.3.2 stow away shelves shall be manufactured to safely hold the passengers walking aids.

4.3.4 All seats and wheelchair bays shall be fitted with adjustable seat belts.

4.3.5 The floor shall be robust and a non slip material preferably lined with a wear and weather resistant insertion type rubber.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces. All exposed fasteners shall have a protective encasing. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material. The shelving shall have a non-slip rubber lining to reduce movement of items placed on it.

5. Lighting

5.1 The interior cabin shall have lights positioned throughout to adequately illuminate the vehicle. The centre and sides of the roof shall have lights that will illuminate the entire cabin which shall be controlled from the driver's cabin.

5.2 The floor shall have strip lights and reflective strips.

5.3 The parcel shelves shall also have strip lights.

5.4 Two interior LED lights shall be installed to illuminate the rear ramp loading area.

6. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

6.1 Descale all metal surfaces

6.2 Grind down & smooth all rough edges

6.3 Thoroughly clean all surfaces

6.4 Items shall be powder or epoxy coated.

7. Colors

Structures	Black
Hand rails and passenger aids	Safety yellow
Vehicle exterior	White/Yellow with custom decals at time of order

8.Electrical

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

8.1 Reversing camera, buzzer and warning light to be installed when reverse gear is engaged (shall be integrated into the vehicles in car entertainment center).

8.2 Front fog lamps with switch in driver's cabin.

8.3 Isolator switch for the wheelchair powered system.

8.4 Solar panels to safely regulate and charge vehicles battery system.

8.5 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

9. Signage and Markings

9.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary on the items mention in chapter 4.

9.2 Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

9.3 Chevron board to be fitted section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.

9.4 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

9.5 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

9.6 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

9.7 Registration number to be clearly marked on roof.

9.8 Disabled passenger signs shall be displayed on the vehicle according to the appropriate SABS/SANS standard.

Item 20.1-20.4: Technical specification for various mobile electrical workshops for panel vans

1. Scope

The intent of this specification is to provide for a fully operational vehicle, which has the capability to do on site electrical and electronic repairs and store relevant tools and material for the application.

2. Vehicle

2.1 The chassis/body for the customization for Items 20 shall be a commercial type or large panel van. Vehicles are already in possession by eThekwini's City Fleet Department. The bidder shall use these vehicles to undertake the work.

2.2 The vehicle shall be fit with the following accessories;

- 2.2.1 Multimedia Radio unit with Bluetooth handsfree cellphone capability and speakers and mic.
- 2.2.2 Reverse camera which should integrate with monitor in 2.2.1.
- 2.2.3 2 x 12v charging sockets for front and rear of vehicle.
- 2.2.4 Bolt on nudge bar with fog lamps (should use existing fog lamp switching of vehicle's).
- 2.2.5 All windows (excl. windscreen) to be smash and grab tinted (150 um) to the maximum allowed legal limit.
- 2.2.6 A 20-25-liter 12V low noise powered cooler box.
- 2.2.7 A self-retractable pull out awning which shall be self-standing or have support points mounted on the vehicle. Approx. dimensions 2 600 x 2 000 mm.
- 2.2.8 Rear windows shall have a 3 mm 3CR12 security mesh installed.
- 2.2.9 A 4.5kg fire extinguisher to be installed in a user-friendly manner.

3. Material specification

The load bearing structures shall be made from light weight structural steel to withstand the payload and wear. Aluminium is recommended. For the panels, lightweight composite sandwich panels are recommended. It shall be of suitable strength with wear and noise insulating characteristics for the application.

4. Construction requirements

All items shall be bolted and fastened with lock washers onto the rear body. Adaptor plates/assemblies shall be welded where necessary to create a sub-mounting point for the various storage compartments and equipment. The configuration shall be such that all equipment and structures fitted can be removed to return the vehicle to close to original as possible.

Item 20.1: Wireless Network panel van

6.1 Rear access loading area

6.1.1 The two longitudinal sides of the rear shall have caged structures until the side access door. These shall hold miscellaneous tools and material.

6.1.2 They shall be the full longitudinal length, quarter panel height before the side glass panel and shall be approx. 600 mm laterally.

6.1.3 The caged panel shall be perforated automotive grade stainless steel with a sufficient wall thickness to be fastened and a fine aperture to see through and provide strength. Circular pattern preferred.

6.1.4 On the rear driver's side caged structure there shall be a panel to separate and hold a slip in 25-35 litre reusable water tank/caddy. It shall have a top filler cap and a bottom dispenser tap which must be useable in this position.

6.1.5 There shall be a slot opening at the rear to easily access the tank and tap from the rear of the vehicle.

6.1.6 On the driver's side there shall be brackets mounted on the window quarter panels to hold a 6-8 step ladder. A minimum of three brackets are required.

6.1.7 On the passenger side window quarter panels there shall be a retractable cable reel. The main reel body shall be removable such that cable can be renewed. It should be able to accommodate 25 m of 0.3 m cable. Adjacent to this a portable 300 mm diameter box fan and a self-standing LED flood light shall be mounted for onsite use.

6.1.8 The floors of these storage areas shall be lined with a non-slip insertion rubber with a minimum of 10 mm thickness. The faces of the inner structures (incl. 4.1.6) and the vehicles panel shall also be lined with it to reduce noise of the materials and tools/equipment.

6.1.9 There shall be a flat panel with fold out supports that can be slotted in positioned between the two structures in 4.1.1 as a work table that can be used for onsite equipment. Size should be approx. 400 mm longitudinally. Mounting points to be secure and table should handle at least 50 kg.

6.2 Side access loading area

6.2.1 Behind the seats shall be two storage units with lockable shutter doors. They shall open in the direction from the passenger to the driver.

6.2.2 The bottom storage unit shall be the full lateral length and approx. 600 mm longitudinally. Height shall be approx. 700 mm. This shall house large power tools in cases and loosely.

6.2.3 The top storage unit shall be the same profile of the as 4.2.2 however shall have shelving in it as it will cater for smaller tooling. Shelving configuration will be finalised when ordered based on current tooling requirements. This unit can have the option of a top down closing shutter door.

6.2.4 Storage units in 4.2 shall be completely closed secure units.

6.2.5 The rear and sides of these units shall be configured to the profile of the vehicle. Should the side at the entrance cause an obstruction it shall have the option of being tapered or a round profile.

6.3 Power requirements

6.3.1 On the driver's side in between 4.1 and 4.2 a pair of batteries and 12/24v DC-AC 220-230v inverter shall be installed in a purpose-built stand.

6.3.2 Inverter shall be 3 000 W with a surge double the capacity. South African plug receptacle 15-20A output.

6.3.2.1 Shall have an efficiency greater than 90%.

6.3.2.2 Built in solar and AC charger.

6.3.2.3 Array of self protection and protection indicators such as low battery alarm, low battery shutdown, voltage and temperature overload, incorrect polarity, overload and AC circuit breaker.

6.3.2.4 Cooling fan shall be thermostatically controlled.

6.3.3 There shall be two maintenance free 55Ah deep cycle batteries mounted in a compartment with suitable ventilation. Batteries shall sit above the ground in a rack such that a collapsible trolley/dolly (included) can be inserted underneath to pull them out.

6.3.4 There shall be two AC outlets positioned at each access door with switched receptacles.

6.3.5 On the exterior/interior there shall be a waterproof/splash proof inlet plug to allow use of a generator to be plugged into the vehicle. There shall be a one-way switch mounted in the compartment (4.3.1) that will allow either the use of the inverter through 4.3.4 or to switch to the generator for use of 4.3.4.

6.4 Miscellaneous storage

6.4.1 In the loading area there shall be a holding space which can securely hold a fold up work bench/table and chair.

6.4.2 There shall be cargo internal barrier nets separating the walkway areas as this will be used to tie down material. There shall be generous tie down points on the floor and side panes. A minimum of three nets will be required.

6.4.3 A slimline full-length roof rack shall be installed with rollers at the rear. It shall allow easy loading with lockable points to secure an extension ladder, cable trays and trunking. Generous tie down points to also be made available. The sides and front of the roof rack shall have side structures to prevent loss of items.

6.5 External mounting for antenna

4.5.1 An exterior mount with two clamping points shall be designed to temporarily install an 3m aluminium pole mounted vertically.

4.5.2 The clamps shall be adjustable to mount a poles with diameters between 40 mm and 60 mm

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material, preferably rubber or polyurethane. The shelving shall have a non-slip rubber lining to reduce movement of items placed on it.

5. Lighting

5.1 A waterproof slim line bar light 1200 mm in length and 200 mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab. A pair of emergency LED lights to be installed on the top of the rear door.

5.2 One pair of adjustable rubber encased spotlight shall be installed to the rear top of loading area. A pair of LED scene lights on each side of the vehicle. Switches shall be in an easy reachable position at the side access door.

5.3 A center console shall be installed on the rear loading area roof with a minimum of three interior adjustable LED lights to illuminate the rear loading area.

5.4 Storage boxes in 4.2 shall have interior LED lights. Switches to be installed.

6. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

6.1 Descale all metal surfaces
6.2 Grind down & smooth all rough edges
6.3 Thoroughly clean all surfaces
6.4 Untreated steel should be galvanized, and powder coated.

7. Colors

	Shelving	Cream
8.	Holding brackets for tanks	Signal yellow

Electrical and coupling requirements

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

8.1 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
8.2 Trailer light socket to be fitted adjacent to the slimline tow hitch. Electrical connector complying to; SANS 1327: Electrical connectors for towing and towed vehicles and,
8.3 SANS 11446/ lSO 11446: Passenger cars and light commercial vehicles with 12 V systems -3-pole connectors between towing vehicles and trailers - Dimensions and contact allocation
8.4 Trailer coupling to comply with SABS 1505, Ball type couplings and towing brackets for towing caravans and light trailers.
8.5 The batteries for the inverter shall be charged from the alternator of the vehicle and there shall be a mounted solar panel and regulator for charging when on site.

9. Signage and Markings

9.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary on the items mention in chapter 4.

9.2 Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

9.3 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

9.4 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

9.5 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

9.6 Registration number to be clearly marked on roof.

Item 20.2: Pilot panel van

4.1 Rear access loading area

4.1.1 The two longitudinal sides of the rear shall have caged structures until the side access door. These shall hold miscellaneous tools and material.
4.1.2 They shall be the full longitudinal length, quarter panel height before the side glass panel and shall be approx. 600 mm laterally.
4.1.3 The caged panel shall be perforated automotive grade stainless steel with a sufficient wall thickness to be fastened and a fine aperture to see through and provide strength. Circular pattern preferred.
4.1.4 On the rear driver's side caged structure there shall be a panel to separate and hold a slip in 25-35 litre reusable water tank/caddy. It shall have a top filler cap and a bottom dispenser tap which must be useable in this position.
4.1.5 There shall be a slot and opening at the rear to easily access the tank and tap from the rear of the vehicle.

4.1.6 On the driver's side there shall be brackets mounted on the window quarter panels to hold a 6-8 step ladder. A minimum of three brackets are required.

4.1.7 On the passenger side window quarter panels there shall be a retractable cable reel. The main reel body shall be removable such that cable can be renewed. It should be able to accommodate 25 m of 0.3 m cable. Adjacent to this a portable 300 mm diameter box fan and a self-standing LED flood light shall be mounted for onsite use.

4.1.8 The floors of these storage areas shall be lined with a non-slip insertion rubber with a minimum of 10 mm thickness. The faces of the inner structures (incl. 4.1.6) and the vehicles panel shall also be lined with it to reduce noise of the materials and tools/equipment.

4.2 Side access loading area

4.2.1 Behind the seats shall be two storage units with lockable shutter doors. They shall open in the direction from the passenger to the driver.

4.2.2 The bottom storage unit shall be the full lateral length and approx. 600 mm longitudinally. Height shall be approx. 700 mm. This shall house large power tools in cases and loosely.

4.2.3 The top storage unit shall be the same profile of the as 4.2.2 however shall have shelving in it as it will cater for smaller tooling. Shelving configuration will be finalised when ordered based on current tooling requirements. This unit can have the option of a top down closing shutter door.

4.2.4 Storage units in 4.2 shall be completely closed secure units.

4.2.5 The rear and sides of these units shall be configured to the profile of the vehicle. Should the side at the entrance cause an obstruction it shall have the option of being tapered or a round profile.

4.3 Power requirements

4.3.1 On the driver's side in between 4.1 and 4.2 a pair of batteries and 12v DC-AC 220-230v inverter shall be installed in a purpose-built stand.

4.3.2 Inverter shall be 3 000 W with a surge double the capacity. South African plug receptacle 15-20A output.

4.3.3 There shall be two maintenance free 55Ah deep cycle batteries mounted in a compartment with suitable ventilation. Batteries shall sit above the ground in a rack such that a collapsible trolley/dolly (included) can be inserted underneath to pull them out.

4.3.4 There shall be two AC outlets positioned at each access door with switched receptacles.

4.3.5 On the exterior there shall be a waterproof/splash proof inlet plug to allow use of a generator to be plugged into the vehicle. There shall be a one-way switch mounted in the compartment (4.3.1) that will allow either the use of the inverter through 4.3.4 or to switch to the generator for use of 4.3.4.

4.4 Miscellaneous storage and roof rack

4.4.1 At the rear of the loading area to the extreme passenger side, there shall be a storage housing to securely hold a 9kg lpg tank mounted on the floor. It shall open outwards affording minimal effort for a user to exchange cylinders. It can be incorporated in the design of 4.1.

4.4.2 Above the cylinder shall be a self-retracting reel to hold the blow torch hose which will be coupled to the gas cylinder in 4.4.1.

4.4.3 At the rear of the loading area to the extreme driver side, there shall be a concealed slide out heavy duty 150 mm engineering vice. The structure shall be fastened to the floor and shall clear the vehicle when slid out for easy working access. Water caddy/tank (4.1.4) shall be mounted in a higher position above the vice in a purpose-built structure.

4.4.4 In the loading area there shall be a holding space which can securely hold a fold up work bench/table and chair.

4.4.5 There shall be cargo internal barrier nets separating the walkway areas as this will be used to tie down material. There shall be generous tie down points on the floor and side panels. A minimum of three nets shall be included.

4.4.6 There shall be a storage compartment in the inner roof that can hold conduits and cable trays. It shall be the full length approx. 200 mm (H) and 400 mm (W).

4.4.7 A slimline full-length roof rack shall be installed with rollers at the rear. It shall allow easy loading with lockable points to secure an extension ladder, cable trays and trunking. Generous tie down points to also be made available. The sides and front of the roof rack shall have side structures to prevent loss of items.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material, preferably rubber or polyurethane. The shelving shall have a non-slip rubber lining to reduce movement of items placed on it.

5. Lighting

5.1 A waterproof slim line bar light 1200 mm in length and 200 mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab. A pair of emergency LED lights to be installed on the top of the rear door.

5.2 In the case the roof rack is installed emergency lights shall be installed on the front and rear of the roof rack. One pair for each end.

5.2 One pair of adjustable rubber encased spotlight shall be installed to the rear top of loading area. A pair of LED scene lights on each side of the vehicle. Switches shall be in an easy reachable position at the side access door.

5.5 Additional interior lighting shall be installed in the rear loading area roof with a minimum of three interior adjustable LED lights to illuminate the rear loading area.

5.6 Storage boxes in 4.2 shall have interior LED lights. Switches to be installed.

6. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

6.1 Descale all metal surfaces

6.2 Grind down & smooth all rough edges

6.3 Thoroughly clean all surfaces

6.4 Untreated steel should be galvanized and powder coated.

7. Colors

Storage compartments	Cream
Holding brackets for tanks	Signal yellow

8. Electrical and coupling requirements

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

8.1 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

8.2 Trailer light socket to be fitted adjacent to the tow hitch. Electrical connector complying to; SANS 1327: Electrical connectors for towing and towed vehicles and,

8.3 SANS 11446/ ISO 11446: Passenger cars and light commercial vehicles with 12 V systems -3-pole connectors between towing vehicles and trailers - Dimensions and contact allocation

8.4 Trailer coupling to comply with SABS 1505, Ball type couplings and towing brackets for towing caravans and light trailers. Coupler shall be mounted on a rear step which shall be the full length of the rear. This shall act as a step to aid loading/offloading off the roof rack. It shall be lined with a hard wearing treaded wear plate (Vastrap).

8.5 The batteries for the inverter shall be charged from the alternator of the vehicle and there shall be a mounted solar panel and regulator for charging when on site.

9. Signage and Markings

9.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary on the items mention in chapter 4.

9.2 Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

9.3 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

9.4 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

9.5 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

9.6 Registration number to be clearly marked on roof.

Item 20.3: HV panel van

4.1 Rear access loading area

4.1.1 Behind the first row of seats (passenger and driver) a second row of passenger seats shall be installed with headrests and safety seat belts (fully adjustable inertia reel type for the outer seats and centre seat belt).

4.1.1 Sound insulated rear partition to be installed between driver and passengers and the rear loading area. A safety glass/Perspex screen to be installed to not obstruct rear view.

4.1.2 On the rear driver's side c there shall be a panel to separate and hold a slip in 25-35 litre reusable water tank/caddy. It shall have a top filler cap and a bottom dispenser tap which must be useable in this position.

4.1.3 There shall be a slot and opening at the rear to easily access the tank and tap from the rear of the vehicle.

4.1.4 On the driver's side there shall be brackets mounted on the window quarter panels to hold a 6-8 step ladder. A minimum of three brackets are required.

4.1.5 Between the rear water tank and 4.2 there shall be a work bench with shelving underneath. It shall be maximum longitudinal length without inhibiting access and use of the water tank/caddy, vice and 4.2.The shelves shall be divided and have a edging to allow holding of items in transit.

4.1.6 On the passenger side window quarter panels there shall be a portable 300 mm diameter box fan and a self-standing LED flood light shall be mounted for onsite use.

4.1.7 On the passenger side between the sliding door entrance and rear wheel arch there shall be multiple slide out drawers for storage of tools. It shall be lockable and usable if the vehicle is parkerd on an incline.

4.1.8 The floors of these storage areas shall be lined with a non-slip insertion rubber with a minimum of 10 mm thickness. The faces of the inner structures and the vehicles panel shall also be lined with it to reduce noise of the materials and tools/equipment.

4.2 Side access loading area

4.2.1 Behind the seats shall be two storage units with lockable shutter doors. They shall open in the direction from the passenger to the driver.

4.2.2 The bottom storage unit shall be the full lateral length and approx. 600 mm longitudinally. Height shall be approx. 700 mm. This shall house large power tools in cases and loosely.

4.2.3 The top storage unit shall be the same profile of the as 4.2.2 however shall have shelving in it as it will cater for smaller tooling. Shelving configuration will be finalised when ordered based on current tooling requirements. This unit can have the option of a top down closing shutter door.

4.2.4 Storage units in 4.2 shall be completely closed secure units.

4.2.5 The rear and sides of these units shall be configured to the profile of the vehicle. Should the side at the entrance cause an obstruction it shall have the option of being tapered or a round profile.

4.3 Miscellaneous storage and roof rack

4.3.1 At the rear of the loading area to the extreme passenger side, there shall be a storage housing to securely hold a 9kg lpg tank mounted on the floor. It shall open outwards affording minimal effort for a user to exchange cylinders. It can be incorporated in the design of 4.1.

4.3.2 Above the cylinder shall be a self-retracting reel to hold the blow torch hose which will be coupled to the gas cylinder in 4.4.1.

4.3.3 Next to the lpg cylinder a 4.5 kg fire extinguisher shall be installed.

4.3.4 At the rear of the loading area to the extreme driver side, there shall be a concealed slide out heavy duty 150 mm engineering vice. The structure shall be fastened to the floor and shall clear the vehicle when slid out for easy working access. Water caddy/tank (4.1.2) shall be mounted in a higher position above the vice in a purpose-built structure.

4.3.5 A slimline full-length roof rack shall be installed with rollers at the rear. It shall allow easy loading with lockable points to secure an extension ladder, cable trays and trunking. Generous tie down points to also be made available. The sides and front of the roof rack shall have side structures to prevent loss of items.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material, preferably rubber or polyurethane. The shelving shall have a non-slip rubber lining to reduce movement of items placed on it.

5. Lighting

5.1 A waterproof slim line bar light 1200 mm in length and 200 mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab. A pair of emergency LED lights to be installed on the top of the rear door.

5.2 In the case the roof rack is installed emergency lights shall be installed on the front and rear of the roof rack. One pair for each end.

5.2 One pair of adjustable rubber encased spotlight shall be installed to the rear top of loading area. A pair of LED scene lights on each side of the vehicle. Switches shall be in an easy reachable position at the side access door.

5.7 Additional interior lighting shall be installed in the rear loading area roof with a minimum of three interior adjustable LED lights to illuminate the rear loading area.

5.8 Storage boxes in 4.2 shall have interior LED lights. Switches to be installed

6. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

6.1 Descale all metal surfaces

6.2 Grind down & smooth all rough edges

6.3 Thoroughly clean all surfaces

6.4 Untreated steel should be galvanized and powder coated.

7. Colors

Storage compartments	Cream
Holding brackets for tanks	Signal yellow

8. Electrical and coupling requirements

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

8.1 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

8.2 Trailer light socket to be fitted adjacent to the tow hitch. Electrical connector complying to; SANS 1327: Electrical connectors for towing and towed vehicles and,

8.3 SANS 11446/ lSO 11446: Passenger cars and light commercial vehicles with 12 V systems -3-pole connectors between towing vehicles and trailers - Dimensions and contact allocation

8.4 Trailer coupling to comply with SABS 1505, Ball type couplings and towing brackets for towing caravans and light trailers. Coupler shall be mounted on a rear step which shall be the full length of the rear. This shall act as a step to aid loading/offloading off the roof rack. It shall be lined with a hard wearing treaded wear plate (Vastrap).

8.5 The batteries for the inverter shall be charged from the alternator of the vehicle and there shall be a mounted solar panel and regulator for charging when on site.

9. Signage and Markings

9.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary on the items mention in chapter 4.

9.2 Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

9.3 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

9.4 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

9.5 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

9.6 Registration number to be clearly marked on roof.

Item 20.4: Mobile resources panel van

4.1 Interior of the superstructure

4.1.1 There shall be a custom manufactured workstation specific to the equipment being supplied. The top tier of this workstation shall have a cover that encloses the equipment. Other tiers shall have roller doors. The workstation shall be the full longitudinal length and shall be at a user-friendly height.

4.1.2 Storage lockers shall also be incorporated to store office supplies mainly files and books.

4.1.3 Four fold out chairs and one table shall be included.

4.2 Power and Multimedia equipment

4.2.1 Supply and fitment of distribution board with surge arrest circuit breakers and line filter for all power points. Network set up for TV/monitor, computers and WIFI. Supply and fit 220 volt plug points as required for the safe operation of the audio/visual equipment listed below and additional plug points as stipulated by Municipal representative.

4.2.2 Supply and fit monitor/television screens that are compatible to the audio/visual equipment specified below. The service provider must ensure that the television set are fitted in manner that renders the installation water proof and it can withstand the rigours of road transport. The 40 inch screen to be fitted at in the inside of the vehicle's superstructure on a shockproof sturdy bracket.

4.2.3 There shall be two maintenance free 55Ah deep cycle batteries mounted in a compartment with suitable ventilation. A 12/24V DC input, 220-230 V AC output inverter with a capacity of 3 000 W with a surge double the capacity shall be supplied. South African plug receptacle 15-20A output. The inverter is expected to supply the workstation equipment and screen.

4.2.4 There shall be solar panels on the roof of the superstructure with a regulator to charge the batteries in 4.2.3.

4.3 Supply and fitment of equipment as per specifications below:

Equipment Type	Equipment Specification	Equipment Quantity
WI FI	The eThekwini Municipality will be installing the Wi-Fi system on the superstructure. The Bidder must provide ducting for the installation of two Wi Fi receivers. The bidder must also provide a lockable enclosure to house the Wi-Fi Controller. The enclosure must also contain a power supply/source (either AC or 12V DC).	1
Laptop (minimum 15" screen)	This will serve also as a multimedia player capable of playing DVD's, USB devices, SD Cards and compatible to components onto the supplied 40" screen. Shall have an adequate solid-state drive with latest Microsoft windows and office and a secondary hard drive of minimum 1TB such that presentations, videos and pictures can be displayed through the screens. Videos and music shall also be able to play through the screens and main audio system simultaneously. Multi file playback including mkv, avi and other high-resolution formats. WIFI enabled and DVD/Blu-ray drive can be external mounted. Minimum of four usb interfaces which can be external mounted as a hub. Mouse and charger to be included.	1
Network Cabinet	For the Secure Mounting and capsulation of components listed.	1
Air-conditioning	A roof mounted air-conditioning unit to be mounted at the top of the roof. System shall be adequate for the vehicle and the equipment and occupants.	1
Desk and chair	A desk with three drawers and a padded guest chair for the employee.	1

Lockers and shelving	Unallocated spaces in the rear body shall be used for storage of supplies. Lockers shall be for the storage of books, forms, files, stationery and consumables. Final design will be discussed with bidder at the time of order based on current user department requirements.	As required
Cables/ Wiring, Plugs & Adaptors	All power and av cables with fittings terminated shall be supplied for all components as per manufacturers requirements. All wiring shall be trunked throughout the interior of the superstructure.	As Required
Mounting Brackets	Where necessary the bidder shall be required to fabricated and install mounting brackets for the installation of components as per operational requirement. Material shall be minimum glavanised if not corrosion resistant with chromium and shall be powder coated.	As required
Fasteners	All Nuts, Bolts, Screws and fasteners must be stainless steel.	As Required

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap). All lockers, storage areas and work areas that may house or be used for equipment shall be lined with a non slip insertion rubber.

5. Colors

Storage compartments Cream

6. Electrical

6.1 Four LED amber 3 watt cluster strobe lights with random flashing pattern shall be installed on top of the superstructure (one pair on rear end of the body and one pair on the front end). Each shall be placed in the extreme point of the corner.

6.2 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

6.3 Scene lighting to be supplied all around the body. The lighting shall be hooded to focus and illuminate the surroundings of the vehicle. Minimum of four (4) LED lights shall be installed.

6.4 Interior of the superstructure shall have LED strip lights. One to be mounted directly over the workstation. One to illuminate the rear entrance. Lockers shall also be illuminated.

6.5 All exposed electrical wiring looms of the chassis cab and superstructure shall be fully encased in a flexible protective metallic conduit and securely clamped with fasteners.

7. Signage and Markings

7.1 Data plates shall be fitted for:

a) The inverter and batteries.

b) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

7.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

7.3 Chevron board and durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the superstructure/vehicle.

7.4 Retro-reflective tape shall be fitted to both sides and the rear of the tip- body as well as the rear bumper and the items in chapter 5 that make up the perimeter of the superstructure/vehicle.

7.5 Registration number to be clearly marked on roof (left to right, 80-90% size of the roof).

Item 20.5: Test Officer van

4.1 Rear access loading area

4.1.1 There shall be custom steel structural holders made to hold the test equipment (approx. 650kg) that these vehicles carry. The structures shall bolt onto the existing mounting point in the vehicles, if not available the bidder shall fabricate and weld suitable holders in the rear load floor area.

4.1.2 There shall be storage holders for other equipment as listed below.

4.1.3 The rear loading door shall have a custom slide out awning such that the operator can open the doors and have protection in different weather conditions whilst working at the rear. The cover should be self retractable and be longer than the opened doors and the full width. Preferably mounted on top of the roof with the roof rack. Should the vehicle have a tailgate the bidder shall omit this from the quote at the time of order.

4.1.4 Spare tyre holder to be mounted in a suitable space.

4.2 Power requirements

4.2.1 On the driver's side a pair of batteries and 12v DC-AC 220-230v inverter shall be installed in a purpose-built stand.

4.2.2 Inverter shall be 3 000 W with a surge double the capacity. South African plug receptacle 15-20A output.

4.2.3 There shall be two maintenance free 55Ah deep cycle batteries mounted in a compartment with suitable ventilation. Batteries shall sit above the ground in a rack such that a collapsible trolley/dolly (included) can be inserted underneath to pull them out.

4.2.4 There shall be two AC outlets positioned at each access door with switched receptacles.

4.3 Miscellaneous storage and roof rack

4.3.1 Water caddy/tank shall be mounted in a higher position above in a purpose-built structure at the rear door.

4.3.2 A slimline roof rack shall be installed with a full length and width solar panel. It shall allow easy loading with lockable points to secure an extension ladder, cable trays and trunking when required. Generous tie down points to also be made available. The sides and front of the roof rack shall have side structures to prevent loss of items.

4.3.3 The solar panel must feed a regulator to charge the batteries in 4.2.1.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material, preferably rubber or polyurethane. The shelving shall have a non-slip rubber lining to reduce movement of items placed on it.

5. Lighting

5.1 Eight of 4 head generation 3 or 4, 3 Watt or better emergency LED amber modules with random flashing pattern to be supplied and mounted on the front and rear of the vehicle. They shall be integrated into the body work/panels. Control switch shall be clearly marked in the driver's cab control panel.

5.2 One pair of adjustable rubber encased spotlight shall be installed to the rear top of loading area. A pair of LED scene lights on each side of the vehicle. Switches shall be in an easy reachable position at the side access door. These lights can be mounted on the roof rack system.

5.9 Additional interior lighting shall be installed in the rear loading area roof with a minimum of three interior adjustable LED lights to illuminate the rear loading area.

6. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

6.1 Descale all metal surfaces
6.2 Grind down & smooth all rough edges
6.3 Thoroughly clean all surfaces
6.4 Untreated steel should be galvanized and powder coated.

7. Colors

Storage compartments	Cream
Holding brackets for tanks	Signal yellow

8. Electrical and other requirements

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

8.1 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
8.2 The batteries for the inverter shall be charged from the alternator of the vehicle and there shall be a mounted solar panel and regulator for charging when on site.
8.3 Rear bumper shall be a custom made metallic rear step which shall be the full length of the rear. This shall act as a step to aid loading/offloading off the roof rack and rear. It shall be lined with a hard wearing treaded wear plate (Vastrap).
8.4 Vehicle shall be fitted with underbelly protection of at least 4.5 mm fastened steel plate to protect the engine, radiator and gearbox.
8.5 Items 8.3 and 8.4 shall be painted as chapter 6 in black.
8.6 A minimum four-ton low profile trolley jack to be supplied per vehicle with a pair of wheel chocks.

9. Signage and Markings

9.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary on the items mention in chapter 4.

9.2 Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

9.3 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

9.4 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

9.5 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

9.6 Registration number to be clearly marked on roof.

Item 21: Technical specification for a Riot defense control superstructure

1.Scope

The intent of this specification is to provide for a fully operational defense vehicle to control and disperse crowds. The superstructure shall compromise of a high-pressure water cannon, foam system, dye system and multimedia equipment and accessories.

2. Vehicle

The chassis cab/vehicle for this item shall be a single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 13 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

2.1 The doors shall be strengthened to B4 protection level, and the locking systems shall be changed to a specialized robust system that is tamper and shock proof. The doors shall be lockable from inside and outside the vehicle using a mechanical locking system. The access for the keys must be completely concealed.

2.2 Windows and windscreen to be upgraded to B4 protection level protection compliant.

2.3 Side mirrors and driver assist mirrors to be metal encased and remounted to a height that will inhibit a person to reach them from ground level. The reflective mirror glass shall be protected by means of laminated toughened screens.

2.4 Windows and windscreen to be protected by a 3CR12 metal grid with polycarbonate lenses. Aperture should be reasonable such that sight is not inhibited to operate the vehicle. The windscreen guard shall be top hinged with pneumatic/electric actuators to raise and lower the protection grid. The actuators should exert a lifting force such that an obstacle or item can be lifted off. It shall also incorporate windscreen wipers and a high-pressure washing system.

2.5 The front shall have a nudge bar shaped to that of a dozer blade. It shall be hydraulically articulated with the lifting capacity to lift a LDV of one axle and move it in an emergency. Front shall be lined with a wear plate. The articulation and size should allow from ground level to just below the windscreen covering the entire front and side curvature of the driver's cab.

2.6 Front grill to be redesigned to a metallic structure with a fine 3CR12 mesh grid to not allow any damage to the engine components. Minimum thickness of steel and mesh to be 4.5 mm.

2.7 All tyres to be removed (and returned) and rims to be fitted with run flat tyres similar to static Runflat.

3. Material specification

The tanks and tank ends shall be made out 3CR12 steel. Corten or Domex is recommended for structural members. The superstructure sheeting to be a high strength lightweight anti-corrosive material that can offer B4 level of security to all underlying components that the superstructure encloses. Hardox for wearing items. The superstructure shall be mounted on off road type rubber mounting block systems for maximum vigour and robustness. All valves, nozzles, pumps, couplings and piping for the water, foam and additive system shall be a non-corrosive alloy allowing maximum longevity.

4. Construction requirements

4.1 Water Tank

4.1.1 A 6 000-7 500-litre baffled water tank designed to withstand the additional rigours of road transport is required. Anti-swirl plates prevent a funnel formation during suction operation.

4.1.2 The tank's mounting shall be so designed to eliminate any vehicle chassis flex being transmitted to the tank. Preferably rubber block type to allow for movement when negotiating rough road

4.1.3 The following should be incorporated;

a) A large manhole with a hinged cover approximately at the rear top of the tank.

b) Suitable ventilation to ensure that there is an uninterrupted supply to the pump and release of built up pressure.

c) Tank over flow, draining to the left-hand side of the vehicle. 1" ball type drain valve to be mounted in a similar manner.

d) Electronic tank level indicator to be located at the operators console and the tank itself.

e) Provision to fill the tank on the left-hand side from a hydrant. Three (3) hydrant filler inlets, with 2.5" male coupling and female blank coupling and provided with a 2.5 " ball type valve. One to be located at the left, rear and side.

f) A two-stage water level alarm system shall be installed to protect the pump. The first stage should initiate an audible alarm and the second stage should deactivate the pump.
All tanks shall be expected to be nondestructive tested, 10x x-ray, water fill and pressure tested.

4.2 Foam compound tank

4.2.1 A 250-400-litre foam tank designed to withstand the additional rigours of road transport is required. It shall be integrated to be part of the water tank in 4.1.

4.2.2 The tank's mounting shall be so designed to eliminate any vehicle chassis flex being transmitted to the tank. Preferably rubber block type to allow for movement when negotiating rough road.

4.2.3 Thank shall be expected to handle synthetic and protein-based foam compounds including Afff.

4.2.4 The following should be incorporated;

a) A manhole with a hinged cover approximately at the rear top of the tank.

b) Suitable ventilation to ensure that there is an uninterrupted supply to the pump and release of built up pressure.

c) Tank over flow, draining to the left-hand side of the vehicle. 1" ball type drain valve to be mounted in a similar manner.

g) Electronic tank level indicator to be located at the operator's console and the tank itself.

h) One tank filler inlet valve with 2.5" male coupling and female blank coupling.

i) A two-stage foam level alarm system shall be installed to protect the pump. The first stage should initiate an audible alarm and the second stage should deactivate the pump.
All tanks shall be expected to be nondestructive tested, 10x x-ray, water fill and pressure tested.

4.3 Additive tank

4.3.1 A pair of 50-100-litre tanks designed as one tank, to withstand the additional rigours of road transport is required. This tank shall be used to hold two different poly admix additives that can be mixed when dispersing water from the cannon.

4.3.2 The tank's mounting shall be so designed to eliminate any vehicle chassis flex being transmitted to the tank. Preferably rubber block type to allow for movement when negotiating rough road.

4.3.3 The following should be incorporated;

a) A large enough lifting inlet for each section of the tank.

b) Suitable ventilation to ensure that there is an uninterrupted supply to the pump and release of built up pressure.

c) Electronic tank level indicator to be located at the operator's console and the tank itself.

d) A two-stage level alarm system shall be installed to protect the pump. The first stage should initiate an audible alarm and the second stage should deactivate the pump.

e) Adjustable valve such that a mix of 0-2.5% parts can be regulated to the water spray system. Control shall be at the operator's console.
All tanks shall be expected to be nondestructive tested, 10x x-ray, water fill and pressure tested.

4.4 Roof mounted water only cannon

4.4.1 The water cannon shall be automated and shock proof. It shall be operated from the operator's cab control desk electronically/hydraulically/pneumatically.

4.4.2 It shall be mounted at a height such that it can clear the vehicles superstructure and driver's cab. Shall have a minimum throw range of 50 meters.

4.4.3 Flow rate of 1200 l/min at 12bar is expected.

4.4.4 Shall have a rotation minimum of 270 degrees.

4.4.5 There shall be a control valve to adjust the water dispersion in the following modes; short or long pulses and a continuous or spray stream.

4.4.6 There shall be a high-resolution heavy-duty eyeball wide angle camera with a minimum of 9 built-in IR LEDs is incorporated in the cannon with protection grid. Camera minimum specifications; an automatic day and night sensor with a mirror and non mirror function. Wide viewing angle of 30 degrees or better. Minimum of 425000-pixel resolution. IP69K protection class with a minimum 6g vibration resistance. Camera should have a zoom range of 50 meters.

4.5 Front mounted water cannon for water/foam and additives

4.5.1 The water cannon shall be automated and shock proof. It shall be operated from the operator's cab control desk electronically/hydraulically/pneumatically.

4.5.2 It shall be mounted at a height such that it can clearly have a throw range of approx. 40 meters. It shall be mounted and protected on the front of the driver's cab.

4.5.3 Flow rate of 800 l/min at 10bar is expected.

4.5.4 Shall have a rotation minimum of 180 degrees (+/- 90 degrees).

4.5.5 There shall be a control valve to adjust the different selections of water/foam and additive dispersion. Operation shall be selectable at the operator's console.

4.6 Body and ground protection nozzle for water and foam

4.6.1 This system shall protect the vehicle if a fire is to break out on the exterior. System shall have a minimum of five nozzles each mounted on the roof and under the chassis.

4.6.2 Nozzles shall disperse the water/foam in a circular pattern providing maximum coverage of the surface area the nozzle is mounted for. Nozzles dispersion pattern should have minimal overlap.

4.6.3 Flow rate of 70 l/min at pressure for the application is expected.

4.6.4 Shall have a dispersion pattern of 360 degrees.

4.6.5 There shall be a control system to aid selections of water/foam and the dispersion either on roof or under chassis. Operation shall be selectable at the operator's console.

4.7 Controls

All controls for the operation of the machine shall be fitted to an operator's console inside the vehicle. The design shall be such that the operator will be able to operate the unit whilst seated in front of the control panel. All controls shall be clearly labelled, user-friendly accessible and illuminated.

The unit must have the following controls as a minimum:
a) Water tank, Foam tank and additive tank levels with warning lights/indicator when minimum low level reached before cut off with safety system.
b) Joystick for roof mounted water canon with top button for shooting.
c) Water/foam mix adjustment for roof mounted water cannon.
d) Pressure adjustment for throw range for roof mounted water cannon.
b) Joystick for front mounted water canon with top button for shooting.
c) Water/foam/additive mix selection and adjustment for front mounted water cannon.
d) Pressure adjustment for throw range for front mounted cannon.
e) Body and ground protection nozzle controls; one control for under chassis nozzles and one for superstructure nozzles.
f) Light switch for interior lights.
g) Light switch for external scene lights.
h) Light switch for strobe light.
i) Light switch for emergency lights.
j) Joystick for front windscreen guard with top button for spray/washer system. Windscreen wipers to be mounted separately with a minimum two speed setting.
k) Monitors to be mounted clearly elevated in front of operator for the cameras. Minimum 10" in size with a resolution of 1000 x 600. One monitor shall be for the roof mounted water canon camera and the other for the rear camera. Rear camera monitor should be suitably located for the driver and operator as it will assist both users.

All functions must be clearly marked. Control panel shall have a lock-out feature to protect against unwarranted use.

All items in chapter 4 including the primary vehicles pneumatic system, hydraulic system, batteries, fuel tank and any other subsystem must be fully encased by the B4 superstructure. Rear wheels will be enclosed by custom B4 level superstructure doors for added protection. The wheels should have protection exceeding the center hub dimension.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5.High Pressure Pump

5.1 The high-pressure water pump must be capable of producing a flow of 2000-3000 litres per minute at a constant pressure variable from 10 to 15 bar respectively. To meet the following standards;
Certified (normal and high pressure) according to EN1028 FPN 10-3000 and FPN 40-250
5.2 The pump shall be durable enough to handle recycled water.
5.3 High quality materials such as stainless steel on the shaft, inlet and outlet valves, ceramic coated internals of the pump, hardened materials for the internals and pump head, double bearing and seal system is recommended for the pump. Gunmetal option if available.
5.4 The pump's oil level shall be easily visible with an indicator. All read outs should be digital/electronic. Automatic self priming. Overheat thermal automatic protection.
5.6 It must be fitted as per manufacturer's specifications in an easily accessible place with all relevant safety features i.e. regulator, secondary filtration, tank returns etc.
5.7 An automatic "Around-the-Pump" type foam proportioner to induct foam compound to the water at the correct proportioning ratio, independent of pump pressure and/or discharge. After the pump has been engaged, only the foam system shall have to be switched on, and the correct percentage of foam compound

shall be admixed automatically. The automatic foam proportioning shall be done with low pressure loss and shall operate within the pump output range of 200 l/min and maximum pump output, as well as at a pump pressure between 5 bar and maximum pump pressure. The rate of admixing shall be pre-adjusted to 3% and 6%. Once the foam system has been switched on, it shall be possible to produce normal pressure foam.
5.8 One suction line from the additive tank, with electro pneumatically controlled ball type valve for 6%, all time constant independent of discharge.
5.9 Control panel for the pump should include the following;

a. Normal pressure manometer
b. Mano vacuum meter
c. Coolant temperature gauge for pump engine
d. Hour meter for pump engine
e. Revolution counter for pump engine
f. Water tank level indicator
g. Foam tank level indicator
h. Indicator light "Priming pump"
i. Indicator light "Oil pressure"
j. Battery charge indicator light
k. Start and stop button for pump engine
l. Switch for auto prime
m. Switch for water tank suction line
n. Switch for foam tank main valve
o. Switch for admixing rate adjustment
p. Speed control (throttle)
q. Switches for "Additives on"
r. Control lamps for "Additives on"
s. Illumination of control panel
t. Fuel level

6. Auxiliary Engine for driving the pump

6.1 The pump should be driven by an air/water cooled, diesel engine with a power output approximately 120 kW @ 2500 rpm and a torque exceeding 250 Nm @ 1500 rpm. The engine shall be an industry proven “popular” model with easily available service and spare parts support in the country and region by the bidder and other agents.

6.2 The engines exhaust should be directed down or up and out to the side of the vehicle.

6.3 Engine is to be fitted with efficient air, fuel and lubricating oil filters. A dry type air cleaner, with replaceable paper elements of South African manufacture, is required.

6.4 The engine should be direct coupled to the pump by a suitable flexible pump OEM coupling.

6.5 All rotating drive systems and locations on the engine that dissipate excessive heat should be guarded in accordance with the Occupational Health and Safety Act Regulations (Act 85 of 1993).

6.6 The engine must produce the required speed and power to drive the pump and produce the required flow and pressure.

6.7 A suitable in-line disc filtration system should be incorporated to protect the pump from contaminated water.

6.8 The engine shall achieve its fuelling requirements from the vehicles standard fuel tank which shall be modified to a long range type that can accommodate the additional required volume.

6.9 A locking fuel cap for the fuel tank and an anti-siphon device.

6.10 A roofed enclosure shall be built for the engine (6.1) such that it is protected. There shall be lockable removable ventilated doors to access the engine and tank for maintenance. The design shall allow maximum ventilation.

6.11 The engine and pump shall be accessible via drop down doors/panels that are strong enough to act as a work platform. They shall have gas struts of adequate strength and a non slip floor.

7. Lighting

7.1 A minimum 35W LED light with a mechanical guard shall be mounted on the vehicles roof mounted water cannon.

7.2 Suitable lighting should be installed within the body providing light for all areas such as the tanks, pump and engine.

7.3 The front of the vehicle shall have additional lighting mounted on top of the vehicle to illuminate the front area. The combination of lights should have a range to illuminate a 40-50meter area.

7.4 LED hazard lights should be mounted as follows;

a) Six of 4 head generation 3 or 4, 3 Watt or better emergency LED amber modules with random flashing pattern to be supplied and mounted on the front, rear and each side of the vehicle. They shall be integrated into the body work with mechanical guards. Control switch shall be clearly marked in the driver's cab control panel.

b) There shall be a pair of strobe lights with mechanical guards mounted at the front of the vehicle to stun the crowd. The controls shall be on the control panel in 4.7.

8. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

8.1 Descale all metal surfaces

8.2 Grind down & smooth all rough edges

8.3 Thoroughly clean all surfaces and shot/bead blast to correct surface roughness for primer application

8.4 Prime the superstructure using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.

8.5 Thereafter paint using a coat of premium quality twin pack automotive paint.

8.6 Paint film thickness must not be less than 80 microns each. Two coats of primer and one-color coat.

9. Colors

Underside of Body	: Black
Cab and Superstructure Body	: White/Blue/Yellow
Tanks	: Black epoxy tar protective coating

10. Electrical requirements

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

10.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100 mm in diameter that are screwed into position with a stainless-steel flange.

10.2 Dual indicator stop and taillight units to be fitted. Two sets of rear lights required.

10.3 Reversing camera, buzzer and warning flashing light to be installed when reverse gear is engaged in an optimum position. The rear camera shall be mounted at an elevated point to view the entire rear area of the area behind it. Automatic sensing day and night vision wide angle camera with minimum 500 TVL resolution and 10-meter range is a minimum requirement.

10.4 Both cameras to be connected to a DVR system capable of 6-8 hours recording.

10.5 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring systems.

10.6 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

10.7 Batteries to be replaced with high capacity maintenance free units. Roof shall have solar panels mounted to charge the batteries when not in use.

11. Signage and Markings

11.1 Data plates shall be fitted for:

a) The tank and pump systems indicating tank capacity, system pressures, fluid type/grade, and other relevant data.

b) The auxiliary engine indicating engine make and model, capacity, serial number, oil type and grade etc.

c) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

11.2 Chevron board with rear lights to be fitted on a steel channel (3CR12) section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.

11.3 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

11.4 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

11.5 Retro-reflective tape shall be fitted to both sides and the rear of the tank as well as the rear bumper.

11.6 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to either side of the vehicle.

12. Miscellaneous items

12.1 Full size spare wheel with run flat tyre to be mounted in a suitable place.

12.2 A locking fuel cap and anti-siphon device for the fuel tank.

12.3 The superstructure will be a full body type encasing the batteries, pneumatic, hydraulics and tyres.

12.4 A 4.5 kg fire extinguisher should be supplied and fitted in an accessible position in the cab.

Item 22: Technical specification for rapid intervention vehicle customization

1. Scope

The intent of this specification is to provide modifications and customization for a fully operational vehicle, which has the capability to do on site fire, rescue and safety application.

2. Vehicle

2.1 The chassis/body for the customization for this item shall be a heavy-duty van. Vehicles are already in possession by eThekwini's City Fleet Department. The bidder shall use these vehicles to undertake the work.

2.2 The vehicle shall be fit with the following accessories;

- 2.2.1 Multimedia Radio unit with Bluetooth handsfree cellphone capability and speakers and mic.
- 2.2.2 Reverse camera which should integrate with monitor in 2.2.1.
- 2.2.3 2 x 12v charging sockets for cabin of vehicle.
- 2.2.4 Bolt on bull bar with fog lamps (should use existing fog lamp switching of vehicle's).
- 2.2.5 Heavy duty winch (M9000) with safety hook.

2.2.6 All windows (excl. windscreen) to be smash and grab tinted to the maximum allowed legal limit.

2.2.7 Suspension upgrade for front and rear axles including;
Spring toy and bush kit
Dakar/Rally specification leaf springs
Coil spring toy
Sway bar kit
Sport shock absorbers

2.2.8 Tyres to be upgraded to BF Goodrich 285x70x17 (old/original tyres to be returned)

3. Material specification

The load bearing structures shall be made from light weight structural steel to withstand the payload and wear. Aluminium and/or stainless steel is recommended.

4. Construction requirements

All items shall be bolted and fastened with lock washers onto the rear body. Adaptor plates/assemblies shall be welded where necessary to create a sub-mounting point for the various storage compartments and equipment. The configuration shall be such that all equipment and structures fitted can be removed to return the vehicle to close to original as possible.

4.1 Rear access loading area

4.1.1 Aluminium gullwing lockers to be built to height of the driver's cab. Locking system with gas lifts for each door is required. Equipment shelves and brackets to accommodate equipment and tooling as described in chapter 5.

4.1.2 25 kg DCP Fire extinguisher.

4.1.3 First attack 650-750 litre stainless steel tank foam system with water canon system.

4.2 Equipment requirements

4.2.1 Hydraulic tools:

a) Combi tool Gct 5111 Evo
b) RAM GRA 4331 Set with Telescopic Extensions
c) Batteries BPA 285 28V 5Ah
d) Charger BCH3 12 -24V AC 28V DC

4.2.2 Category 3 Equipment

a) Adjustable wrench
b) Axe, Rescue, Large non-Wedge Type
c) Axe, Rescue, Small Non-Wedge or Aircraft Type
d) Bolt cutter 61cm
e) Crowbar 95cm
f) Cold Chisel 2,5cm
g) Flashlight/ Hand Lamps LED Rechargeable 800 Lumen
h) Hammer 1.8kg
i) Hook, Grab or Salving
j) Saw, Metal Cutting or Hacksaw, Heavy Duty, complete with spare blades
k) Fire Resisting Blanket
l) Ladder, 4.2m extending certified appropriate to the aircraft types in use
m) Rope lines, Karabiners, in carry bag
n) Pliers 17.8cm, side cutting

o) Pliers slip joint 25cm
p) Screwdrivers, assorted (set)
q) Tin snippers
r) Chocks 10cm high
s) Powered Rescue Saw Complete with two blades; Hilti Reciprocating Saw – 22v Battery Powered
t) Seat Belt/Harness Cutting Tool
u) Flame resistant pair of gloves
v) Breathing Apparatus Complete with Back Plate, demand valve and 300 bar cylinder
w) Spare 300 bar cylinder
x) Spine board c/w head blocks and spider harness
y) Medical first aid kit – jump bag
z) Tarpaulin salvage sheet
aa) Basket stretcher c/w sling
bb) Rescue Roll
cc) Supply and fit 6.5lb 40" TNT multi-purpose fire tool
dd) High lift jacks
ee) Hooligan tool
ff) Fireman's axe
gg) Tripod with LED lights

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material, preferably rubber or polyurethane. The shelving shall have a non-slip rubber lining to reduce movement of items placed on it.

5. Lighting

5.1 A waterproof slim line bar light 1200 mm in length and 200 mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with red coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab. A pair of emergency LED lights to be installed on the top of the rear tailgate.

5.2 Three adjustable rubber encased 48w LED spotlight shall be installed to the rear top of loading area. A pair of LED scene lights on each side of the vehicle. Switches shall be in an easy reachable position at the side access door.

5.3 A 100-120 w Spot Light 430-450 mm 7560 LM.
5.4 Four amber 3/4watt three head modules to be installed on the side of the vehicle. Two per side. Shall be connected to the existing lighting system of the vehicle.

5.4 Storage boxes in 4.1 shall have interior LED lights, minimum of four. Switches to be installed close to the opening.

6. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

6.1 Descale all metal surfaces
6.2 Grind down & smooth all rough edges
6.3 Thoroughly clean all surfaces
6.4 Untreated steel should be galvanized, and powder coated.

7. Colors

Shelving internal	Rubberized interior

External	Signal yellow
Load Bin internal	Rubberized

8. Electrical and coupling requirements

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

8.1 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

8.2 Trailer light socket to be fitted adjacent to the slimline tow hitch. Electrical connector complying to; SANS 1327: Electrical connectors for towing and towed vehicles and,

8.3 SANS 11446/ lSO 11446: Passenger cars and light commercial vehicles with 12 V systems -3-pole connectors between towing vehicles and trailers - Dimensions and contact allocation

8.4 Trailer coupling to comply with SABS 1505, Ball type couplings and towing brackets for towing caravans and light trailers.

9. Signage and Markings

9.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary on the items mention in chapter 4.

9.2 Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

9.3 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

9.4 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

9.5 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

9.6 Registration number to be clearly marked on roof.

Item 23: Technical specification for a coastal patrol vehicle customization

1. Scope

The intent of this specification is to provide modifications and customization for a fully operational vehicle, which has the capability to do patrols on beach shores and other coastal environments which have a high corrosive environment. This customization consists of fitment of accessories and corrosion protection of the vehicle.

2. Vehicle

2.1 The chassis/body for the customization for this item shall be a heavy-duty LDV. Vehicles are already in possession by eThekwini's City Fleet Department. The bidder shall use these vehicles to undertake the work.

2.2 The vehicle shall be fit with the following accessories;

- 2.2.1 Multimedia Radio unit with Bluetooth handsfree cellphone capability and speakers and mic.
- 2.2.2 Reverse camera which should integrate with monitor in 2.2.1.
- 2.2.3 2 x 12v charging sockets for cabin of vehicle.
- 2.2.4 Bolt on bull bar with fog lamps (should use existing fog lamp switching of vehicle's).
- 2.2.5 Heavy duty winch (M9000) with safety hook.
- 2.2.6 All windows (excl. windscreen) to be smash and grab tinted to the maximum allowed legal limit.

2.2.7 Suspension upgrade for front and rear axles including;

Spring toy and bush kit
Dakar/Rally specification leaf springs
Coil spring toy
Sway bar kit
Sport shock absorbers

2.2.8 Tyres to be upgraded to BF Goodrich 285x70x17 (old/original tyres to be returned)

3. Material specification

The load bearing structures shall be made from light weight structural steel to withstand the payload and wear. Aluminium and/or stainless steel is recommended.

4. Construction requirements

All items shall be bolted and fastened with lock washers onto the rear body. Adaptor plates/assemblies shall be welded where necessary to create a sub-mounting point for the various storage compartments and equipment. The configuration shall be such that all equipment and structures fitted can be removed to return the vehicle to close to original as possible.

4.3 Rear access loading area

4.3.1 Aluminium gullwing lockers to be built to height of the driver's cab. Locking system with gas lifts for each door is required. Equipment shelves and brackets to accommodate equipment and tooling at time of the order.

4.3.2 4.5 kg Fire extinguisher.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material, preferably rubber or polyurethane. The shelving shall have a non-slip rubber lining to reduce movement of items placed on it.

5. Lighting

5.1 A waterproof slim line bar light 1200 mm in length and 200 mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with red coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab. A pair of emergency LED lights to be installed on the top of the rear tailgate.

5.2 Three adjustable rubber encased 48w LED spotlight shall be installed to the rear top of loading area. A pair of LED scene lights on each side of the vehicle. Switches shall be in an easy reachable position at the side access door.

5.5 A 100-120 w Spot Light 430-450 mm 7560 LM.

5.4 Four amber 3/4watt three head modules to be installed on the side of the vehicle. Two per side. Shall be connected to the existing lighting system of the vehicle.

5.6 Storage boxes in 4.1 shall have interior LED lights, minimum of four. Switches to be installed close to the opening.

6. Metal Preparation and Corrosion Protection Procedure

The following procedure must be adhered to:

6.1 Under chassis components (under vehicle protection panels and guards, wheels, suspension, brakes, exhaust, front and rear axle etc.) to be disassembled to component level for preparation

6.2 Descale all metal surfaces

6.3 Grind down & smooth all rough edges
6.4 Thoroughly clean all surfaces
6.5 All components, under carriage and chassis itself shall be treated with Waxoyl Hardwax SF.
6.6 Two coats are required. Thickness shall be a minimum of 200um or better. Care to be taken where interference fits of components are required.
6.7 All components to be reassembled and inspected by OEM for non breach of warranty.
6.8 The vehicle body and panels (bonnet, fenders, doors, all interior panels of the cabin etc.) shall all removed and coated with a 50um Waxoyl Topwax. N.B all metallic items to be coated including lights, brackets etc.)
6.9 Interior of doors, panels, bonnet, fenders, bumpers and other body parts shall be protected with Waxoyl cavity wax where it cannot be coated with Topwax. Adequate amount shall be applied for the application.
6.10 All backing plates (Dust shields) must be sent for sandblasting and galvanizing.

7. Colors

Shelving internal	Rubberized interior
External	Waxoyl treatment for body and chassis
Load Bin internal	Rubberized

8. Electrical and coupling requirements

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

8.1 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
8.2 Trailer light socket to be fitted adjacent to the slimline tow hitch. Electrical connector complying to; SANS 1327: Electrical connectors for towing and towed vehicles and,
8.3 SANS 11446/ lSO 11446: Passenger cars and light commercial vehicles with 12 V systems -3-pole connectors between towing vehicles and trailers - Dimensions and contact allocation
8.4 Trailer coupling to comply with SABS 1505, Ball type couplings and towing brackets for towing caravans and light trailers.

9. Signage and Markings

9.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary on the items mention in chapter 4.

9.2 Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

9.3 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

9.4 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

9.5 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

9.6 Registration number to be clearly marked on roof.

Item 24: Technical specification for an Emulsion Tanker superstructure

1. Scope

This specification is for a rear specialized body that has a cylindrical/elliptical mounted tank with a heating system. The tank shall be able to carry a minimum payload of 13-17 000 kg. It will primarily be used to

transport emulsion asphalt sealant to road work sites. The sealant volume and mass shall be accommodated in the design and supply of the completed vehicle.

2.Vehicle

The chassis cab/vehicle for this item shall be an 6x4 single chassis cab, with a minimum Gross Vehicle Mass (GVM) of 22 to 28 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The tank shall be constructed of chromium content corrosion resistant steel (3CR12 or an automotive grade stainless steel).

4. Construction requirements

4.1 Tank and Chassis mounting

4.1.1 All mounting to be in accordance with directives specified by the Original Equipment Manufacturer.

4.1.2 The tank's mounting shall be so designed to eliminate any vehicle chassis flex being transmitted to the tank. Preferably rubber block type.

4.1.3 Hydraulically controlled stabiliser legs shall be installed to allow levelling of chassis on uneven terrain when loading/unloading.

4.1.4 Protection of the fuel tank, hydraulic tank and air tanks shall be provided by structural shell structures built and bolted to the chassis. The batteries shall have a lockable top cover to prevent debris and water ingression.

4.2 Sub Frame

The sub frame shall extend the full body length.

4.3 Tank Body

4.3.1 The tank body shall be mounted at the most effective position of the rear chassis such that the mass distribution over the axles, and the center of gravity shall allow optimum operation.

4.3.2 Minimum payload of 13-16 000 kg and volumetric capacity of 12-16 000 liters shall be expected.

4.3.3 Rolled circumference sections and internal baffles shall be installed for reinforcement, structural integrity and longevity of the structure.

4.3.4 Structural members to reinforce the length of the tank when carrying the payload and driving on uneven terrain shall be required.

4.3.5 The tank shall be insulated by means of an outer skin with a suitable heat insulated material. The material should aid the convection heat retention for the main tank contents.

4.3.6 There shall be a level indicator for the tank contents in increments every 1 000 liters with a manual dipstick method to verify contents as well.

4.3.7 A large manhole with a hinged cover approximately 600 mm diameter shall be used to fill the tank on the top. It should be strategically placed to allow even distribution loading of tank contents.

4.3.8 There shall be a primary opening mechanism to release built pressure before the manhole lid is safe to open using a secondary system.

4.3.9 A pressure and heat release system/valve shall also be installed to assist the pressures of transport and thermal working range of the contents.

4.3.10 There shall be a rear platform at the tank with access to the roof of the tank. The platform shall be full enclosed with a safety lock entry door from the passenger side.

4.3.11 Accessible and safe ladders with full length walkways and safety railings to be constructed for the longitude of the tank.

4.3.12 There shall be easy access to the manhole lid. Safety harness attachment points where working at-heights is required. Safety harness to be supplied for two persons.

4.3.13 There shall be a rear mounted drain valve mounted clear of the chassis and superstructure to drain the tank of contents when cleaning.

4.3.14 There shall be a drip tray mounted to the superstructure to catch any of the emulsion sealant. The overflow valve, pump outlets, hose outlets and the spray gun holders should all be catered for in this drip tray. The drip tray shall funnel to a catchment tank that can be removed from the superstructure.

4.3.15 Platforms, walkways, tank roof (manhole lid) and ladder steps shall be covered with tread plate (Vastrap).

4.3.16 Nondestructive testing, water-fill and pressure test shall be performed on tank.

4.4 Heating of the tank

4.4.1 The heating operation shall be achieved preferably by the means of immersion heaters located throughout the tank. They shall be strategically positioned to offer maximum heat transfer to the contents of the tank.

4.4.2 The source shall be electric preferably. Flame, gas and any other type of ignite systems is discouraged.

4.4.3 Temperature range of the system shall operate according to the temperature ranges laid out in BS EN 12591:2000 Bitumen and bituminous binders. Specifications for paving grade bitumen.

4.4.4 System shall be thermostatically controlled. Thermostat shall be adjustable such that the user can change the operating range should they wish to.

4.4.5 System shall be dual voltage, such that the vehicles DC source can be used or if the vehicle is parked for a longer period it can be plugged into an AC outlet.

4.5 Dispensing valves and hoses

4.5.1 There shall be two dispensing spray systems mounted on the rear platform. These shall have control valves to engage and disengage them individually. They should have freedom of movement and such that it can also be locked into position if required.

4.5.2 There shall be a pair of self retracting 10 m hoses on the rear platform. They shall be enclosed by protective covers and have a guide such that the hose can freely move with a range of 60 degrees or better behind the vehicle. They shall have couplings at either end; on one end to couple to the pump and the other on the dispensing spray gun.

4.5.3 The spray guns shall be mounted at a user-friendly height with variable settings for spray and pressure/distance. When not in use it shall be securely disengaged/lock out and held in place by a secure clamp and cover. All valve/coupling/nozzles parts shall be premium steel (stainless steel/brass/bronze) and shall be removable for cleaning and easy maintenance.

4.5.4 There shall be one outlet located at the side of the vehicle that can be used to transfer emulsion sealant from the tanker at a site. A pair of eight meter non corrosive hoses for the application to be supplied with couplers. Concealed hose holders to be placed on the side of the tank.

4.7 Controls

All controls for the operation of the machine shall be fitted to an illuminated, lockable, water resistant control panel on the rear of the tank. The design shall be such that the operator will be able to operate the unit whilst standing in front of the control panel.

The unit must have the following controls as a minimum:
a) Temperature gauge (Mounted externally)
b) Light switches
c) Tank level gauge
d) Engine start/stop, oil level, pressure, temperature and variable speed control with read out.
e) Low level tank contents alarm that sounds when the emulsion level reaches 1000 litres with a relay to switch off the alarm after 30 seconds and automatically resets itself when tank is filled.
f) A low level cut out device that disengages the high-pressure pump when the emulsion in the tank reaches 200 litres and automatically resets itself when the tank is filled.
g) Emergency shut off.
All functions must be clearly marked. Control panel shall have a lock-out feature to protect against unwarranted use.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5.Hydraulic system

5.1 In respect of the hydraulic tank the following shall be required:
5.1.1 To be constructed of steel.
5.1.2 To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.
5.1.3 To be fitted with a bump guard from externalities.
5.1.4 To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.
5.1.5 Must have a filler cap strainer & filter into filler base and filler cap assembly.
5.1.6 Oil capacity shall be double that of the oil capacity of the hydraulic cylinder.
5.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the tipper / solenoid valve system.
5.3 The hydraulic valves shall be grouped together for ease of maintenance.
5.4 Test points for testing hydraulic pressures shall be fitted and grouped together.
5.5 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.
5.6 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.

6. Power Take Off (PTO) (if required for the heating system for the tank)

6.1 The PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.

6.2 The engine and transmission must not be harmed by use of the PTO.

6.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

6.4 Electronic control module and wiring harness which incorporates the “Rev Up Limiter” must be integrated into the existing OEM vehicle using the OEM 24 Volt system.

6.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.

6.6 The accelerator pedal cannot be used, while the PTO is engaged.

7. Auxiliary Engine for driving the high-pressure pump

7.1 The pump should be driven by an air cooled, diesel engine with a power output approximately 50 kW @ 2500 rpm and a torque exceeding 120 Nm @ 1500 rpm. The engine shall be an industry proven “popular” model with easily available service and spare parts support in the country and region by the bidder and other agents.

7.2 The engines exhaust should be directed down or up and out to the side of the vehicle.

7.3 Engine is to be fitted with efficient air, fuel and lubricating oil filters. A dry type air cleaner, with replaceable paper elements of South African manufacture, is required.

7.4 The engine should be direct coupled to the pump by a suitable flexible coupling.

7.5 All rotating drive systems and locations on the engine that dissipate excessive heat should be guarded in accordance with the Occupational Health and Safety Act Regulations (Act 85 of 1993).

7.6 The engine must produce the required speed and power to drive the pump and produce the required flow and pressure for a typical shift.

7.7 A suitable in-line disc filtration system should be incorporated to protect the pump.

7.8 The engine shall achieve its fuelling requirements from the existing vehicles fuel tank.

7.9 A roofed enclosure shall be built for the engine such that it is protected. There shall be lockable removable ventilated doors to access the engine and pump for maintenance. The design shall allow maximum ventilation with the addition of cooling fans if and where required.

7.10 Engine to have thermal protection shut off and low oil level and pressure shut off.

7.11 The pump shall be suitable for the application such that it can dispense the product for the required outlets at an adjustable suitable pressure range.

8. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

8.1 Descale all metal surfaces
8.2 Grind down & smooth all rough edges
8.3 Thoroughly clean all surfaces and shot/bead blast to correct surface roughness for primer application
8.4 Prime the superstructure using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
8.5 Thereafter paint using a coat of premium quality twin pack automotive paint.
8.6 Paint film thickness must not be less than 80 microns each. Two coats of primer and one-color coat.

9. Colors

- Underside of Body: Black
- Deck: Black
- Tank inner: Black
- Tank Exterior and cab body: Yellow

10. Electrical

10.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100mm in diameter that are screwed into position with a stainless-steel flange above the rear bumper/ underrun device.
10.2 Extra indicator, stop and taillight (as per specification in 10.1) units to be fitted on top of the tank with a stainless steel flange/ bracket holder.

10.3 A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on headboard. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber colored polycarbonate lenses to be fitted to the top of the headboard behind the cab with on/off switch with random flash pattern positioned in the cab.

10.4 The manholes shall have a buzzer and light fitted inside the driver cab's dashboard which shall be activated in case the doors are not closed.

10.5 There shall be a pair of exterior lights mounted at the rear of the tank to illuminate the rear work area in low light conditions. Switch to be located on the rear control panel.

10.6 There shall be a LED light near the heating systems and outlet valves to illuminate the area in low light conditions. Switches to be placed in the enclosure.

11. Signage and Markings

11.1 Data plates shall be fitted for:

a) The heating and hydraulic system indicating tank capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

b) The main tank indicating SWL, capacity and details.

c) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

d) Safe work load/capacity of the main tank on either side.

11.2 Chevron board with rear lights, underrun and rear mudguards (constructed of 3CR12) conforming with the appropriate SABS/SANS standard laid out at the end of the chapter.

11.3 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

11.4 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

11.5 Retro-reflective tape shall be fitted to both sides and the rear of the tip- body as well as the rear bumper and the items in chapter 4 that make up the perimeter of the vehicle.

11.6 Hazardous chemical transporting signage to be placed at the sides and rear of the tank/vehicle according to SANS 10232.

11.7 Registration number to be clearly marked on roof (left to right, 80-90% size of the roof).

12. Fire Extinguisher

A pair of 4.5kg dry powder type extinguisher to be mounted in a suitable exterior position. One near the engine and one near the driver's door exit.

13. Agitator and cleaning apparatus

An agitator shall be installed in the tank together such that the emulsion viscosity can be controlled to assist the heating and dispensing. There shall be a valve inlet system mounted on the roof along the inside of the tank to serve as a cleaning apparatus for the tank. It shall be fed via a high-pressure water and/or steam supply with chemical products. The apparatuses should be installed in the tank without damaging the structure and shall assist the longitude of the tank. It should have a multivalve system optimally positioned to spread the steam/water/chemicals effectively over the surface area of the tank. Apparatus should be constructed of suitable non corrosive materials for the application. The agitator will be variable speed and hydraulically/electrically driven and will form part of the hydraulic/electrical system and hydraulic/electric controls.

Item 25: Technical specification for Diesel fuel tanker superstructure

1.Scope

The intent of this specification is to provide for a fully operational superstructure that can safely transport diesel fuel with a dispensing system. There shall be two versions quoted for the by the bidder;

Item 25.1 A 2 000 - 4000 liters diesel fuel tanker superstructure

Item 25.2 A 6 000 - 8 000 liters diesel fuel tanker superstructure

2. Vehicle

The chassis cab/vehicle for this item shall be a single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 7 000 and 13 000 kg for items 25.1 and 25.2 respectively. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.
The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) Tank to be designed and manufactured to SANS 10131:2004 Above-ground storage tanks for petroleum products and SANS 1398 Road tank vehicles for petroleum-based flammable liquids
d) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The tank and tank ends shall be made out 3CR12 steel or a similar automotive grade stainless steel.

4. Construction requirements

4.1Tank

4.1.1 A baffled diesel fuel tank designed to withstand the additional rigours of road transport is required.
4.1.2 The tank's mounting shall be so designed to eliminate any vehicle chassis flex being transmitted to the tank. Preferably rubber block type to allow for movement when negotiating rough road.

4.1.3 The following should be incorporated;

a) A large manhole with an EPDM seal approximately 450 mm diameter at the rear of the tank. This shall be used for maintenance of the tank. There shall be a pair of handles to easily remove the lid. Lid shall be secured with fasteners and lock washers. To fill the tank a nozzle with a lockable filler cap shall be mounted centrally on the manhole lid for item 25.1 and in a suitable location for item 25.2.
b) There shall be a pressure relief valve at the top of the tank to control built up pressure when the tank is being filled and the fuel is being transported. Valve shall be automatic and function to safely control the internal pressure.
c) Access ladder with steps constructed from non-slip tread plate to be positioned adjacent to manhole from the rear platform.
d) Sight glass to view tank contents.
e) Tank gauge with increments marked from empty to full. A mechanical or an electronic float system with a waterproof read out gauge shall be mounted on the fuel bowser side of the vehicle.
g) The top of the superstructure shall be a walk on platform.
All tanks shall be expected to be nondestructive tested, 10x x-ray, water fill and pressure tested.

4.2 Bowser system

4.2.1 PTO (close coupled) driven operated pumping system with a self retracting hose and a trigger type nozzle. Hose shall be easily coupled in case it needs to be replaced or extended. Nozzle shall have a holder and cover for the aperture.

4.2.2 The bowser system shall have a canopy built over it to prevent any externalities that may inhibit its operation or life span.

4.2.3 A self retracting hose of at least 20 metres shall be provided for the bowser system.

4.2.4 Pump should have a safety cut off device to prevent damage if run dry.

4.2.5 User friendly filtration system from tank to bowser system.

4.2.6 Analogue or digital read out of litres pumped and tank capacity.

4.2.7 Power Take Off (PTO);

4.2.7.1 The PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.

4.2.7.2 The engine and transmission must not be harmed by use of the PTO.

4.2.7.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

4.2.7.4 Electronic control module and wiring harness which incorporates the “Rev Up Limiter” must be integrated into the existing OEM vehicle using the OEM 12/24 Volt system.

4.2.7.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.

4.2.7.6 The accelerator pedal cannot be used, while the PTO is engaged.

4.3 Tool Boxes

4.3.1 The unit shall have two suitable lockable toolboxes mounted on the platform in a suitable location of the vehicle. One tool box shall house miscellaneous tools and the other shall be designed with partitions to hold 5L motor oil, coolant, hydraulic oil and water canisters.

Tool boxes shall be roller door type with shelves as required.

4.5 Road Cones

Provision must be made to safely secure large road cones. Four shall be included.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Lighting

5.1 A suitable light shall be installed in a suitable position illuminating the filling area at the rear of the truck.

5.2 Suitable lighting should be installed within the body providing light for the toolbox area and the bowser system.

5.3 LED hazard lights should be mounted as follows;

a) A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.

b) Six of 4 head generation 3 or 4, 3 Watt or better emergency LED amber modules with random flashing pattern to be supplied and mounted as required. Control switch shall be clearly marked in the driver’s cab.

c)There shall be rear and side scene lights to illuminate the vehicle and its surroundings. The controls shall be on the control panel in 4.6.

6. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

6.1 Descale all metal surfaces

6.2 Grind down & smooth all rough edges

6.3 Thoroughly clean all surfaces and shot/bead blast to correct surface roughness for primer application

6.4 Prime the superstructure using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.

6.5 Thereafter paint using a coat of premium quality twin pack automotive paint.

6.6 Paint film thickness must not be less than 80 microns each. Two coats of primer and one-color coat.

7. Colors

Underside of Body	: Black
Cab and Superstructure	: Safety Yellow
Tank	: Black

8. Electrical requirements

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

8.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100 mm in diameter that are screwed into position with a stainless-steel flange.

8.2 Dual indicator, stop and taillight units to be fitted.

8.3 Reversing camera, buzzer and warning flashing light to be installed when reverse gear is engaged in an optimum position. Monitor to be part of the vehicles multimedia system with Bluetooth hands free cellphone connectivity.

8.4 An additional set of rear light units to be installed on top of the tank.

8.5 Uninterrupted power supply points shall be made available for the vehicle tracking, two way radio and fuel master monitoring systems for the vehicle and bowser tank.

8.6 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

9. Signage and Markings

9.1 Data plates shall be fitted for:

a) The tank and bowser systems indicating tank capacity, system pressures, fluid type/grade, and other relevant data.

b) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

9.2 Chevron board with rear lights to be fitted on a steel channel (3CR12) section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.

9.3 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

9.4 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

9.5 Retro-reflective tape shall be fitted to both sides and the rear of the tank as well as the rear bumper.

9.6 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to either side of the vehicle.

9.7 Hazardous chemical transporting signage to be placed at the sides and rear of the tank/vehicle according to SANS 10232.

9.8 Branding with eThekwini Municipality domes with department name and City Fleet Call Centre details.

10. Miscellaneous items

10.1 A locking fuel cap and anti-siphon device for the fuel tank.
10.2 The battery box is to be lockable (lock to be provided) with an isolator switch mounted close by.
10.3 A 4.5 kg fire extinguisher should be supplied and fitted in an accessible position in/near the cab.

Item 26: Technical specification for a mobile vehicle service superstructure

1.Scope

The intent of this specification is to provide for a fully operational superstructure that can safely transport diesel fuel, motor vehicle oil, hydraulic system oil, coolant, water, compressor with dispensing systems and other associated mechanical tools. The intent is the superstructure and vehicle can be used as a mobile service workshop for vehicles in remote locations.

2. Vehicle

The chassis cab/vehicle for this item shall be a single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 13 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.
The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) Tank to be designed and manufactured to SANS 10131:2004 Above-ground storage tanks for petroleum products and SANS 1398 Road tank vehicles for petroleum-based flammable liquids
d) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The tanks and tank ends shall be made out 3CR12 steel or a similar automotive grade stainless steel. The superstructure shall be made of corrosion resistant steel with chromium content. Corten is recommended.

4. Construction requirements

4.1 Superstructure and Tanks

4.1.1 The sub chassis of the superstructure shall be so designed to eliminate any vehicle chassis flex being transmitted to the tank. Preferably rubber block type to allow for movement when negotiating rough road.
4.1.2 The entire sub chassis shall have a floor where the tanks are situated. The front and rear of the superstructure shall be solid panels extending to a height clearing the cab and the installed tanks. A solid roof shall join the front and rear solid panels.
4.1.3 The front, sides and rear of the roof shall have angled run off panels to allow water to clear the superstructure. The roof shall be designed to not allow water to stand on it.
4.1.4 A 4000 – 5000 litre baffled diesel fuel tank designed to withstand the additional rigours of road transport is required.
4.1.5 Four 300 – 400 litre baffled oil tankers designed to withstand the additional rigours of road transport is required. There shall be different grades of oil in each.

4.1.6 The diesel and oil tanks shall have an easy to maintain/replace filtration system from the tank to the dispensing system.

4.1.7 A single 200-350 litre baffled coolant/water tank designed to withstand the additional rigours of road transport is required.

4.1.8 A single grease dispensing holder that can accommodate grease drums of various sizes.

4.1.9 Tanks shall have the accommodation to be removed if required via lifting lugs and/or forklift pallet forks. The tanks shall be located optimally for even load distribution and handling of the vehicle. All tanks shall have an individual sight glass to view tank contents and an incrementally marked level gauge optimally situated on the tank. Further, a consolidated gauge pack shall be positioned in the housing mentioned in 4.1.15. No tube type sights shall be accepted.

4.1.10 The floor of the superstructure and each tank shall have a structural border around it which shall act like a catchment for any overflow. There shall be drain holes to a catchment tank with a drain valve. This can be incorporated with 4.1.12.

4.1.11 A 250-300-litre self powered compressor is required for pneumatic air supply. The compressor must be fit with an external automatic water trap before feeding its respectable hose. Electronic start ignition system with automatic cut off.

4.1.12 The rear of the superstructure shall have a lockable aluminium roller locker door facing the exterior of the vehicle to house the all the above dispensing systems on retractable hoses fastener mounted and freely adjustable. The bottom of the opened housing shall have a full-length roller to safely allow the hoses to be used and retracted without wearing them. There shall be non leak type quick couplers located on the roof of this housing which will feed all the hose reels. For maintenance purposes a malfunctioning or bad reel/hose can be easily removed and replaced.

4.1.13 The floor of this housing shall be a removable drip tray with a drain valve.

4.1.14 All hoses shall be clearly and well labelled with the corresponding tank.

4.1.15 All tanks shall have the equivalent dispensing apparatus;

4.1.15.1 The compressor shall feed its hose with a pneumatic tyre pressure filler gauge (with integrated gauge) at the end.

4.1.15.2 The oil tanks shall have trigger type bowser systems.

4.1.15.3 The fuel tank shall have a trigger bowser system with analogue or digital read out of litres pumped and tank capacity.

4.1.15.4 All hoses shall be at least ten metres in length.

4.1.15.5 The coolant/water tank shall be fed through a variable pressure system such that it can be used to top up a vehicles radiator on the low setting and be used as a high-pressure cleaner on the highest setting.

4.1.16 All hoses from the tanks, compressor and electrical labels shall be of different colours or clearly marked and truncated through the roof/floor of the superstructure to the rear housing. The trunking shall be easily removable should the need arise to replace or inspect any of the hoses, pipes and wires.

4.1.17 Access ladder with steps constructed from non-slip tread plate to be positioned one either side of the superstructure.

All tanks shall be expected to be nondestructive tested, 10x x-ray, water fill and pressure tested.

4.2 Bowser/power systems

4.2.1 PTO (close coupled) driven operated pumping system for the diesel, oil, grease and coolant/water systems.

4.2.2 Pump should have a safety cut off device to prevent damage if run dry.

4.2.3 User friendly filtration system from hydraulic tank to dispensing systems.

4.2.4 Power Take Off (PTO);

4.2.4.1 The PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive.

Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.

4.2.4.2 The engine and transmission must not be harmed by use of the PTO.

4.2.4.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

4.2.4.4 Electronic control module and wiring harness which incorporates the "Rev Up Limiter" must be integrated into the existing OEM vehicle using the OEM 12/24 Volt system.

4.2.4.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.

4.2.4.6 The accelerator pedal cannot be used, while the PTO is engaged.

4.3 Tool Boxes

4.3.1 The unit shall have two suitable lockable toolboxes mounted on the platform in a suitable location of the vehicle. One tool box shall house miscellaneous tools and the other shall be designed with partitions to hold 5L motor oil, coolant, degreaser and water canisters.

Tool boxes shall be roller door type with shelves as required.

4.4 Road Cones

Provision must be made to safely secure large road cones. Four shall be included.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Lighting

5.1 A pair of suitable LED lights shall be installed in a suitable position on the roof of the superstructure illuminating the tanks at the rear of the truck.

5.3 Suitable LED lighting should be installed within the toolbox area and compressor and the bowser system housing unit at the rear.

5.3 LED hazard lights should be mounted as follows;

a) A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.

b) Six of 4 head generation 3 or 4, 3 Watt or better emergency LED amber modules with random flashing pattern to be supplied and mounted as required. Control switch shall be clearly marked in the driver's cab.

c)There shall be rear and side scene lights (minimum of two per side) to illuminate the vehicle and its surroundings. The controls shall be on the control panel in the cab. These lights can be integrated underneath the roof run off panels.

6. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

6.1 Descale all metal surfaces

6.2 Grind down & smooth all rough edges

6.3 Thoroughly clean all surfaces and shot/bead blast to correct surface roughness for primer application

6.4 Prime the superstructure using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.

6.5 Thereafter paint using a coat of premium quality twin pack automotive paint.

6.6 Paint film thickness must not be less than 80 microns each. Two coats of primer and one-color coat.

7. Colors

Underside of Body	: Black
Cab and Superstructure	: Safety Yellow
Tank	: Black

8. Electrical requirements

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

8.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100 mm in diameter that are screwed into position with a stainless-steel flange.
8.2 Dual indicator stop and taillight units to be fitted.
8.3 Reversing camera, buzzer and warning flashing light to be installed when reverse gear is engaged in an optimum position. Monitor to be part of the vehicles multimedia system with Bluetooth hands free cellphone connectivity.
8.4 An additional set of rear light units to be installed on top of the superstructure.
8.5 Uninterrupted power supply points shall be made available for the vehicle tracking, two-way radio system and fuel master monitoring systems for the vehicle and bowser tank.
8.6 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

9. Signage and Markings

9.1 Data plates shall be fitted for:
a) The tank and bowser systems indicating tank capacity, system pressures, fluid type/grade, and other relevant data.
b) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.
9.2 Chevron board with rear lights to be fitted on a steel channel (3CR12) section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.
9.3 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons including TREM cards.
9.4 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.
9.5 Retro-reflective tape shall be fitted to both sides and the rear of the tank as well as the rear bumper.
9.6 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to either side of the vehicle.
9.7 Hazardous chemical transporting signage to be placed at the sides and rear of the tank/vehicle according to SANS 10232.
9.10 Branding with eThekwini Municipality domes with department name, Break down vehicle and City Fleet Call Centre details.

10. Miscellaneous items

10.1 Full size spare wheel to be mounted in a suitable place.
10.2 A locking fuel cap and anti-siphon device for the fuel tanks.
10.3 The battery box is to be lockable (lock to be provided) with an isolator switch mounted close by.
10.4 A 4.5 kg fire extinguisher should be supplied and fitted in an accessible position in/near the cab and another in the superstructure.

Item 27: Technical specification for a mobile service workshop superstructure

1.Scope

The intent of this specification is to provide for a fully operational superstructure that can safely transport diesel fuel, motor vehicle oil, hydraulic system oil, coolant, water, compressor with dispensing systems and other associated mechanical tools. The intent is the superstructure and vehicle can be used as a mobile service workshop for vehicles in remote locations.

2. Vehicle

The chassis cab/vehicle for this item shall be a single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 13 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) Tank to be designed and manufactured to SANS 10131:2004 Above-ground storage tanks for petroleum products and SANS 1398 Road tank vehicles for petroleum-based flammable liquids
d) At the end Section 7 other specifications/standards are covered that will be adhered to.
e) Provision to be made for the installation of a bulbar with a hydraulic remote-controlled winch at the front of the vehicle.

The winch shall comply to the following specifications:

- Rated line pull (not less than) 9000kgs
- Gear Reduction of 25.53.1 or similar/better for the intended application
- Weight without cable (not to exceed 180kgs).
- Cable layer (not less than 5 layers)
- Motor (min 8 Cubic Inch Motor)
- Cable lengh (max on spool ,but not less than 25m with a snap hook at the end.
- Cable recommended 9/16”
- Must conform to SAE J 706
- Remote cable length (min 3 m)
- Designed application : Recovery and Towing.

3. Material specification

The tanks and tank ends shall be made out 3CR12 steel or a similar automotive grade stainless steel. The superstructure shall be made of corrosion resistant steel with chromium content. Corten is recommended.

4. Construction requirements

4.1 Superstructure and Tanks

4.1.1 The sub chassis of the superstructure shall be so designed to eliminate any vehicle chassis flex being transmitted to the tank. Preferably rubber block type to allow for movement when negotiating rough road.

4.1.2 The entire sub chassis shall have a floor where the tanks are situated. The front and rear of the superstructure shall be solid panels extending to a height clearing the cab and the installed tanks. A solid roof shall join the front and rear solid panels.

4.1.3 The front, sides and rear of the roof shall have angled run off panels to allow water to clear the superstructure. The roof shall be designed to not allow water to stand on it.

4.1.4 The unit shall have two suitable lockable tool lockers (full width and height) mounted on the platform in a suitable location of the vehicle. One locker shall house miscellaneous mechanical, electrical and pneumatic workshop tools and the other shall be designed with shelves and partitions to hold oils, coolant, degreaser, water canisters and spare parts. Shelves shall be lined with non slip material.

4.1.5 In close proximity to the lockers shall be a metal work bench with a 150 mm engineering vice mounted on it. The bench shall be suitable for the application and removal when required.

4.1.6 A 250-300-litre self powered compressor is required for pneumatic air supply. The compressor must be fit with an external automatic water trap before feeding its respectable hose. Electronic start ignition system with automatic cut off. The compressor shall have outlets near the work bench to allow easy coupling of work tools.

4.1.7 A minimum 3KVA self powered generator welder is required for AC power and welding. The welder/generator must be fit with a pair of RSA AC plug receptacles and have two outlets; one located near the work bench and the other at the rear housing. Electronic start ignition system with automatic cut off. Welding kit to be included (Cables, consumables, welding hand/torch and a PPE kit including self darkening helmet).

4.1.8 A 1500 – 2000 litre baffled diesel fuel tank designed to withstand the additional rigours of road transport is required.

4.1.9 Four 200 – 300 litre baffled oil tankers designed to withstand the additional rigours of road transport is required. There shall be different grades of oil in each.

4.1.10 The diesel and oil tanks shall have an easy to maintain/replace filtration system from the tank to the dispensing system.

4.1.11 A single 200-350 litre baffled coolant/water tank designed to withstand the additional rigours of road transport is required.

4.1.12 A single grease dispensing holder that can accommodate grease drums of various sizes.

4.1.13 Tanks shall have the accommodation to be removed if required via lifting lugs and/or forklift pallet forks. The tanks shall be located optimally for even load distribution and handling of the vehicle. All tanks shall have an individual sight glass to view tank contents and an incrementally marked level gauge optimally situated on the tank. Further, a consolidated gauge pack shall be positioned in the housing mentioned in 4.1.18. No tube type sights shall be accepted.

4.1.14 The floor of the superstructure and each tank shall have a structural border around it which shall act like a catchment for any overflow. There shall be drain holes to a catchment tank with a drain valve. This can be incorporated with 4.1.16.

4.1.15 The rear of the superstructure facing the exterior of the vehicle shall have a lockable aluminium roller locker door to house the all the above dispensing systems on retractable hoses fastener mounted and freely adjustable. The bottom of the opened housing shall have a full-length roller to safely allow the hoses to be used and retracted without wearing them. There shall be non leak type quick couplers located on the roof of this housing which will feed all the hose reels. For maintenance purposes a malfunctioning or bad reel/hose can be easily removed and replaced.

4.1.16 The floor of this housing shall be a removable drip tray with a drain valve.

4.1.17 All hoses shall be clearly and well labelled with the corresponding tank.

4.1.18 All tanks shall have the equivalent dispensing apparatus;

4.1.18.1 The compressor shall feed its hose with a pneumatic tyre pressure filler gauge (with integrated gauge) at the end and have an outlet with quick coupler to connect pneumatic tools.

4.1.18.2 The oil tanks shall have trigger type bowser systems.

4.1.18.3 The fuel tank shall have a trigger bowser system with analogue or digital read out of litres pumped and tank capacity.

4.1.18.4 The generator shall have a dual side waterproof cover RSA AC plug on 25m of 2.5mm^2 three core double insulated electrical cable.

4.1.18.5 All hoses shall be at least ten metres in length and the electrical cable at least twenty-five meters.

4.1.18.6 The coolant/water tank shall be fed through a variable pressure system such that it can be used to top up a vehicles radiator/coolant tank on the low setting and be used as a high-pressure cleaner on the highest setting.

4.1.19 All hoses from the tanks, compressor and electrical labels shall be of different colours or clearly marked and truncated through the roof/floor of the superstructure to the rear housing. The trunking shall be easily removable should the need arise to replace or inspect any of the hoses, pipes and wires.

4.1.20 Access ladder with steps constructed from non-slip tread plate to be positioned one either side of the superstructure.

All tanks shall be expected to be nondestructive tested, 10x x-ray, water fill and pressure tested.

4.2 Bowser/power systems

4.2.1 PTO (close coupled) driven operated pumping system for the diesel, oil, grease and coolant/water systems.

4.2.2 Pump should have a safety cut off device to prevent damage if run dry.

4.2.3 User friendly filtration system from hydraulic tank to dispensing systems.

4.2.4 Power Take Off (PTO);

4.2.4.1 The PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.

4.2.4.2 The engine and transmission must not be harmed by use of the PTO.

4.2.4.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

4.2.4.4 Electronic control module and wiring harness which incorporates the “Rev Up Limiter” must be integrated into the existing OEM vehicle using the OEM 12/24 Volt system.

4.2.4.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.

4.2.4.6 The accelerator pedal cannot be used, while the PTO is engaged.

4.3 Road Cones

Provision must be made to safely secure road cones. Four shall be included.

4.3 Storage boxes

Provision must be made for a large lockable storage box on the passenger side of the vehicle under the superstructure. It shall be used to store trolley jacks, wheel chocks and vehicle stands. Box shall be lined with a non slip material and have adjustable dividers.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Lighting

5.1 A pair of suitable LED lights shall be installed in a suitable position on the roof of the superstructure illuminating the tanks at the rear of the truck.

5.4 Suitable LED lighting should be installed within the toolbox area and compressor and the bowser system housing unit at the rear.

5.3 LED hazard lights should be mounted as follows;

a) A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.

b) Six of 4 head generation 3 or 4, 3 Watt or better emergency LED amber modules with random flashing pattern to be supplied and mounted as required. Control switch shall be clearly marked in the driver's cab.

c)There shall be rear and side scene lights (minimum of two per side) to illuminate the vehicle and its surroundings. The controls shall be on the control panel in the cab. These lights can be integrated underneath the roof run off panels.

6. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

6.1 Descale all metal surfaces
6.2 Grind down & smooth all rough edges
6.3 Thoroughly clean all surfaces and shot/bead blast to correct surface roughness for primer application
6.4 Prime the superstructure using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
6.5 Thereafter paint using a coat of premium quality twin pack automotive paint.
6.6 Paint film thickness must not be less than 80 microns each. Two coats of primer and one-color coat.

7. Colors

Underside of Body	: Black
Cab and Body	: Safety Yellow
Tank	: Black

8. Electrical requirements

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

8.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100 mm in diameter that are screwed into position with a stainless-steel flange.
8.2 Dual indicator, stop and taillight units to be fitted.
8.3 Reversing camera, buzzer and warning flashing light to be installed when reverse gear is engaged in an optimum position. Monitor to be part of the vehicles multimedia system with Bluetooth hands free cellphone connectivity.
8.4 An additional set of rear light units to be installed on top of the superstructure.
8.5 Uninterrupted power supply points shall be made available for the vehicle tracking, two-way radio and fuel master monitoring systems for the vehicle and bowser tank.
8.6 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

9. Signage and Markings

9.1 Data plates shall be fitted for:

a) The tank and bowser systems indicating tank capacity, system pressures, fluid type/grade, and other relevant data.

b) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

9.2 Chevron board with rear lights to be fitted on a steel channel (3CR12) section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.
9.3 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons including TREM cards.
9.4 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.
9.5 Retro-reflective tape shall be fitted to both sides and the rear of the tank as well as the rear bumper.
9.6 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to either side of the vehicle.
9.7 Hazardous chemical transporting signage to be placed at the sides and rear of the tank/vehicle according to SANS 10232.
9.8 Branding with eThekwini Municipality domes with department name, Break down vehicle and City Fleet Call Centre details.

10. Miscellaneous items

10.1 A locking fuel cap and anti-siphon device for the fuel tanks.
10.2 The battery box is to be lockable (lock to be provided) with an isolator switch mounted close by.
10.3 A 4.5 kg fire extinguisher should be supplied and fitted in an accessible position in/near the cab and another in the superstructure.

Item 28: Technical specification for a prisoner transport superstructure

1. Scope

This specification is for a rear body that can securely hold prisoners to transport them from facilities. The superstructure shall be fully enclosed with solid sides, a roof a rear and side entrance. It will primarily be used by the eThekwini Metro Police and Law enforcement department. There shall be accommodation for a minimum of 12 prisoners.

2. Vehicle

The chassis cab/vehicle for this item shall be a single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 13 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

a) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
b) Roof, side and rear panels shall be braced to provide structural integrity for ROPS/FOPS compliance.
c) The end of Section 7 covers other specifications/standards that shall be adhered to.

3. Major/Overall dimensions of body:

Description	Dimensions (mm)
Body length	Full length of subframe
Width	2 500-3 000
Sides	Solid enclosed body with windows and entrance/exit door on the passenger side
Rear	Full length rear door 2 000
Total height to roof	2 000-3 000

4. Material specification

The superstructure frame and panels shall be constructed of corrosion resistant structural steel (Corten, Domex, 3CR12 or similar/better is recommended). Minimum thickness shall be sufficient for the payload with safety factors for the design.

5. Construction requirements

5.1 Chassis mounting

All mounting to be in accordance with directives specified by the Original Equipment Manufacturer. The sub frame shall extend the full body length.

5.2 Superstructure

5.2.1 The rear superstructure shall be fully enclosed. The roof shall have ventilation using rotating vents. Stainless steel or a similar non corrosive rotating vent shall be used. Minimum of six are required.

5.2.2 The side panels shall have sliding safety glass/Perspex windows approx. 300 mm high for the length of the body with solid structural guards completely encasing the EPDM seals on the interior and exterior. The windows shall also have 3CR12 burglar mesh guards over the windows itself on the exterior.

5.2.3 The rear and passenger side (closest to the driver's cab) of the truck shall have a full-length/height door with a container locking system. The rear underrun shall have an extended lateral width such that it can be used as a step. There shall be a hand rail to assist entry. Two windows on either side of the door shall be installed with same specification as in 5.2.2.

5.2.4 There shall be two lockable storage boxes on each side of the exterior of the body. Lids shall be outside hinged with EPDM seals to make sure they are waterproof.

5.3 Interior of the superstructure

5.3.1 The interior of the superstructure shall be shall have a bench type seat installed on each side for the longitudinal length. Each seating point shall have a rectangular U bracket at the base of the seat. This shall serve as a securing point to lock the prisoner in using handcuffs.

All items in chapter 5 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap). All lockers, storage areas and work areas that may house or be used for equipment shall be lined with a non slip insertion rubber.

6. Colors

Underside of Body	Black
Cab	Blue
Superstructure	Blue and White with custom sign writing/branding on the driver's cab and superstructure. User department will provide the exact requirements for the body at time of order.

7. Electrical

7.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100mm in diameter that are screwed into position with a stainless-steel flange.

7.2 Reverse buzzer and camera when reverse gear is engaged.

7.3 Twelve LED blue 3-watt cluster strobe lights with random flashing pattern shall be installed on the front, sides and rear of the superstructure. Placement shall be done with an eThekwini City Fleet Official. Control to be inside the driver's cab.

7.4 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

7.5 Scene lighting to be supplied at the rear of the body. The lighting shall be hooded to focus and illuminate the entrance and the surroundings of the vehicle. Control to be inside the driver's cab.

7.6 Interior of the superstructure shall have LED strip lights recessed into the structure. It shall sufficiently light up the interior. Control to be inside the driver's cab.

7.7 All exposed electrical wiring looms of the chassis cab and superstructure shall be fully encased in a flexible protective metallic conduit and securely clamped with fasteners.

7.8 Rear of the superstructure shall be fitted with a security monitoring CCTV system. Cameras shall provide a full view of the entrance and interior of the vehicle and occupants with a DVR system located in the driver's cab. System shall be able to operate in day/night conditions and up to 30 days recording capability.

Camera type	Automatic sensing day and night vision wide angle with minimum 500 TVL resolution
Quantity	Minimum of four cameras for a clear view of the superstructure interior and rear exterior for reversing/rear entrance
Operating Voltage:	12/24V
Mounting	To be mounted in a manner that will improve and enhance the driver's visibility, monitor inside and at the rear of the superstructure and whilst slowly moving the vehicle in forward or reverse direction. To be mounted on a bracket with a clear protective cover encasing the camera.
Functionality	All cameras shall be clearly visible at any given time via a split screen system. Should any camera need to be viewed completely on the screen it shall be easily identified and selected to be a full screen stream. System to automatically switch to the full screen stream of the rear camera when reverse gear is engaged.
Monitor	Minimum 10" in size with a resolution of 1000 x 600. To be fitted to the vehicle in consultation with a City Fleet representative.
Water proofing	To withstand operating conditions including rain and vehicle pressure washing. Scratch resistant lenses.
Installation	To be completely installed. All wiring to be protected with a non-corrosive metallic conduit and trunked neatly through the vehicle. Where brackets maybe required for mounting purposes, supplier shall have to supply and install these.

8. Signage and Markings

8.1 Data plates shall be fitted for:

a) The number of persons the rear structure can hold indicating capacity and/or safe working load.

b) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

8.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

8.3 Chevron board and durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the superstructure/vehicle.

8.4 Retro-reflective tape shall be fitted to both sides and the rear of the body as well as the rear bumper and the items in chapter 5 that make up the perimeter of the superstructure/vehicle.

8.5 Registration number to be clearly marked on roof (left to right, 80-90% size of the roof).

8.6 Branding with eThekwini Municipality domes with department name, Break down vehicle and City Fleet Call Centre details.

9. Miscellaneous items

9.1 Front mud flaps and full rear mudguards constructed from rubber or a durable polymer.
9.2 Bolt on covers for safety where parts are rotating, swinging or of high temperature.
9.3 Two 4.5 kg fire extinguishers should be supplied and fitted. One in an accessible position close to the driver when exiting the cab and the other on the passenger side.
9.4 Bolt on head and tail light guards.
9.5 Rear underrun according to SANS 1055
9.6 Protective shell structure for fuel tank and lockable water proof battery cover.

Item 29: Technical specification for a field/mobile vehicle customization

1.Scope

The intent of this specification is to provide modifications and customization for a fully operational vehicle, which has the capability to do mobile repairs to other vehicles. This customization consists of fitment of accessories and corrosion protection of the vehicle.

2. Vehicle

2.1 The chassis/body for the customization for this item shall be a LCV/LDV or a heavy duty van. Vehicles are already in possession by eThekwini's City Fleet Department. The bidder shall use these vehicles to undertake the work.

2.3 The vehicle shall be fit with the following accessories;

2.2.1 Multimedia Radio unit with Bluetooth handsfree cellphone capability and speakers and mic.
2.2.2 Reverse camera which should integrate with monitor in 2.2.1.
2.2.3 2 x 12v charging sockets for cabin of vehicle.
2.2.4 Bolt on bull bar with fog lamps (should use existing fog lamp switching of vehicle's).
2.2.5 Heavy duty winch (M9000) with safety hook.
2.2.6 All windows (excl. windscreen) to be smash and grab tinted to the maximum allowed legal limit.

3. Material specification

The load bearing structures shall be made from light weight structural steel to withstand the payload and wear. Aluminium and/or stainless steel is recommended for the canopy and fasteners.

4. Construction requirements

All items shall be bolted and fastened with lock washers onto the rear body. Adaptor plates/assemblies shall be welded where necessary to create a sub-mounting point for the various storage compartments and equipment. The configuration shall be such that all equipment and structures fitted can be removed to return the vehicle to close to original as possible.

4.1 Rear access loading area

4.1.1 Full size aluminium gullwing canopy with lockers to be built to height of the driver's cab. Locking system with gas lifts for each door is required. Equipment shelves and brackets to accommodate equipment and tooling at time of the order. The shelves are expected to be on heavy duty sliders with non slip lined floors that lock into place when closed. The shelves are expected to hold the typical contents of a mechanics toolbox, hand and power tools with miscellaneous items like a multi-meter, tyre inflator etc.

4.1.2 The rear door of the canopy shall allow accommodation and access to a 100L compressor and an inverter system.

4.1.3 Through the rear canopy door a pair of batteries and 12/24v DC-AC 220-230v inverter shall be installed in a purpose-built stand.

4.1.4 Inverter shall be 3 000 W with a surge double the capacity. South African plug receptacle 15-20A output.

4.1.4.1 Shall have an efficiency greater than 90%.

4.1.4.2 Built in solar and AC charger.

4.1.4.3 Array of self-protection and protection indicators such as low battery alarm, low battery shutdown, voltage and temperature overload, incorrect polarity, overload and AC circuit breaker.

4.1.4.4 Cooling fan shall be thermostatically controlled.

4.1.5 There shall be two maintenance free 55Ah deep cycle batteries mounted in a compartment with suitable ventilation. Batteries shall sit above the ground in a rack such that a collapsible trolley/dolly (included) can be inserted underneath to pull them out.

4.1.6 The batteries for the inverter shall be charged from the alternator of the vehicle and there shall be a mounted solar panel and regulator for charging when on site.

4.1.7 Compressor shall be 100 litres with a maximum operating pressure of 8 bar.

4.1.7.1 Minimum 2kW

4.1.7.2 Electronic ignition.

4.1.7.3 Pressure gauge and adjustment.

4.1.7.4 Array of self-protection and protection including; pressure regulator, motor temperature overload, drain valve and pressure cut off.

4.1.7.5 Cooling fan shall be thermostatically controlled.

4.1.7.6 External automated water trap before delivery of air.

4.1.8 The inverter and compressor shall be mounted on a heavy-duty roller type pull-out rack for easy access and maintenance. It shall lock in place when in transit.

4.1.9 The inverter and compressor shall have auxiliary mounted switches for ON/OFF of these devices in an easy to reach position at the rear of the vehicle.

4.1.10 There shall be coupling and RSA 230V AC outlets mounted at the rear and the passenger side gullwing door of the canopy.

4.1.11 There shall be a 12/24V dc boosting cable and switch system supplied to the rear of the canopy from the pair of inverter batteries. This shall be used to jump start vehicles. There shall be a 12/24V switch to a female plug mounted at the rear of the canopy with a pair of 4-meter booster cables with male plugs.

4.1.12 4.5 kg Fire extinguisher to be mounted in an accessible position.

4.1.13 There shall be a slotted storage compartment for four jerry cans.

4.1.14 A 200 mm heavy duty engineering vice to be mounted on the interior of the tailgate. It shall be slide out type mounted and shall be reinforced with structural plates.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material, preferably rubber or polyurethane. The shelving shall have a non-slip rubber lining to reduce movement of items placed on it.

5. Lighting

5.1 A waterproof slim line bar light 1200 mm in length and 200 mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with red coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab. A pair of emergency LED lights to be installed on the top of the rear tailgate.

5.2. Three LED scene lights on each side and rear of the vehicle. Switches shall be in an easy reachable position at the side and rear access door.

5.3 Four amber 3/4watt three head modules to be installed on the side of the vehicle. Two per side. Shall be connected to the existing lighting system of the vehicle.

5.4 Canopy shall have interior LED lights, minimum of four. Switches to be installed close to the opening.

6. Metal Preparation and Corrosion Protection Procedure

The following procedure must be adhered to:

6.1 Descale all metal surfaces
6.2 Grind down & smooth all rough edges
6.3 Thoroughly clean all surfaces
6.4 Untreated steel should be galvanized, and powder coated.

7. Colors

Shelving internal	Rubberized interior
External	Golden Yellow RAL 1004
Load Bin internal	Rubberized

8. Electrical and coupling requirements

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

8.1 Uninterrupted power supply points shall be made available for the vehicle tracking, two way radio and fuel master monitoring system.

8.2 Trailer light socket to be fitted adjacent to a removable/shunting type tow hitch with rear steps on the bumper. Electrical connector complying to; SANS 1327: Electrical connectors for towing and towed vehicles and,

8.3 SANS 11446/ ISO 11446: Passenger cars and light commercial vehicles with 12 V systems -3-pole connectors between towing vehicles and trailers - Dimensions and contact allocation

8.4 Trailer coupling to comply with SABS 1505, Ball type couplings and towing brackets for towing caravans and light trailers.

9. Signage and Markings

9.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary on the items mention in chapter 4.

9.2 Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

9.3 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

9.4 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

9.5 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

9.6 Registration number to be clearly marked on roof.

9.10 Branding with eThekwini Municipality domes with department name, Break down vehicle and City Fleet Call Centre details.

Item 30: Technical specification for a general-purpose rear loading superstructure

1.Scope

The intent of this specification is to provide for a superstructure which has a rear loading area with a rear and passenger side entrance. The primary use of the vehicle is to collect goods and the general transport of items within the eThekwini area.

2. Vehicle

The chassis cab/vehicle for this item shall be an 4x2 single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 7 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Major/Overall dimensions of tip body:

Description	Superstructure dimensions (mm)
Body length (longitudinal)	Full length of subframe/rear chassis
Width (lateral)	Full width of driver's cab in line with NRTA
Sides	Solid enclosed body with one entrance on the passenger side with drop side and caged door.
Passenger side entrance and Tailgate (solid) and rear gates (caged)	Tailgate: 500-550 Pair of rear gates: 1 000
Height	In line with driver's cab

4. Material specification

The superstructure shall be constructed of Corten or a similar corrosion resistant steel. The floor shall have a hard wearing wear plate fitted (Hardox). For the caged sides shall be 3CR12 mesh with a fine aperture. Minimum of 4.5 mm thickness shall be used.

5. Construction requirements

5.1 Chassis mounting

All mounting to be in accordance with directives specified by the Original Equipment Manufacturer. The sub frame shall extend the full body length.

5.2 Rear Body

5.2.1 The rear body shall be mounted at the rear most of the chassis and it shall incorporate a drop-side styled tailgate.

5.2.2 The tailgate shall have cast type corner latches to secure the tailgate.
5.2.3 There shall be holding points that will keep the tailgate in place when opened.
5.2.4 There shall be a replaceable EPDM seal fitted to the tailgate and rear body where they meet when closed on the sides and bottom.
5.2.5 The rear-underrun shall be a step to gain access to the rear body. It shall not interfere with the operation of the tailgate operation.
5.2.6 Platform and steps shall be covered with tread plate (Vastrap).
5.2.7 Two grab handles 400 mm each in length shall be fitted to assist entry on both the right-hand side and the left-hand side of the step.
5.2.8 A tread plate (Vastrap) covered step shall be fitted to the inside of the tailgate for further assistance with access into the body. A pair of grab handles (400 mm) shall also be installed to assist getting onto the step.
5.2.9 The passenger side of the superstructure shall have one side entrance closest to the driver's cab same as 5.2.2 to 5.2.8. However, it shall be half the width of the tailgate (wide enough for a pallet to be loaded/unloaded) with accessible steps instead of the underrun.
5.2.10 The solid sides shall be to the roof height of the driver's cab and mounted on all sides of the vehicle to create an enclosed body. The rear shall be an outside hinged pair of gates opening out to the rear. The gates shall be full lateral width and full vertical height from the tailgate to the roof. Holders on each outer side panel shall be mounted to hold each gate when tipping.
5.2.11 There shall be a retractable tarpaulin cover for the roof of the rear superstructure. It shall completely cover the roof and shall installed over the top of the superstructure. Tie down points shall be made available if the system is installed not using runners and clip in structures. The circumference edges of the tarpaulin covers shall be reinforced using extra material and a backing plate (Steel or PVC).
5.2.12 The 3CR12 fine mesh shall be supported by structural members (lateral, longitudinal and vertical) and shall be fixed in place to create the gates.
5.2.13 Protection of the fuel tank, hydraulic tank and air tanks shall be provided by structural frames with plate/sheet metal enclosing the item and bolted to the chassis where possible. The batteries shall have a lockable weather proof top cover to prevent debris and water ingression.

All items in chapter 5 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

6. Storage boxes

One storage box approximately 1 000 mm longitudinally and 400 mm laterally and high shall be on the underside of the chassis.

7. Tanks

A 50ℓ tank/caddy for drinking water shall be positioned in a convenient position under the chassis. It shall be demountable. A tap shall be installed.

8. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

8.1 Descale all metal surfaces
8.2 Grind down & smooth all rough edges
8.3 Thoroughly clean all surfaces
8.4 Prime the unit and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.

8.5 Thereafter paint using two coats of premium quality twin pack automotive paint
8.6 Paint film thickness (color coat) must not be less than 80 microns each.

11. Colors

- Underside of Body: Black
- Deck: Black
- Chassis Cab and Superstructure: White and blue, Yellow or Green

11. Electrical

11.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100mm in diameter that are screwed into position with a stainless-steel flange.
11.2 Extra indicator, stop and taillight (as per specification in 11.1) units to be fitted on top of rear tail gate headboard.
11.3 Reverse buzzer and warning flashing light to be installed when reverse gear is engaged.
11.4 Four LED amber beacon strobe lights shall be installed on top of the superstructure (one pair on the rear end of the body and one pair on the front end). Each shall be placed in a corner seated on top of a holding bracket for elevated height with an enclosed caged cover fastened down. Switch shall be installed and clearly marked in the driver's cab.
11.5 Three downward facing scene minimum 27W LED lights shall be installed and integrated into the superstructure. Two at the rear tailgate and one at the side entrance. Switch shall be installed and clearly marked in the driver's cab.
11.6 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
11.7 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

12. Signage and Markings

12.1 Data plates shall be fitted for:

a) The rear body including Safe Working Load (SWL) clearly marked on each side.

b) The water tank/caddy indicating capacity and valve/tap details.

c) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

12.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

12.3 Chevron board and durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

12.4 Retro-reflective tape shall be fitted to both sides and the rear of the body as well as the rear bumper and the items in chapter 5 that make up the perimeter of the vehicle.

12.5 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

13. Tow Hitch

13.1 The under-run bumper complying to SANS 1055, shall form part of this assembly.
13.2 Electrical connector complying to SANS 1327: Electrical connectors for towing and towed vehicles.
13.3 Trailer coupling to comply with SABS 1505, Ball type couplings and towing brackets for towing caravans and light trailers.

Item 31: Technical specification for a Horse transport superstructure

1.Scope

The intent of this specification is to provide for a fully operational superstructure that can safely transport six to eight horses. The horses are large and approx. 800 kg each. The superstructure shall have a low enough ride height/ramp angle such that the horses can easily enter and exit the vehicle. The horse bays shall be individual and partitioned and shall be in the most user-friendly comfortable layout. Two entrances shall be employed; one at the rear and another on the passenger side of the vehicle.

2. Vehicle

The chassis cab/vehicle for this item shall be a single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 13 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The load bearing items of the superstructure shall be constructed out of non-corrosive metallic steel suitable for the application. Corten, Domex or another non corrosive steel is recommended. The body panels shall be insulated type have a metallic finish like aluminum or chromadek. All joins of the paneling shall have proprietary fasteners and/or tongue and groove fits. Minimum thickness shall be sufficient for the payload with safety factors for the design. The interior fittings can be constructed from polyester or other composite materials.

4. Construction requirements

4.1 Superstructure for each/dual holding bay for the horses

4.1.1 Quick release breast and breach bars fully adjustable in the enclosure with safe fastening method. Panic lock shall be integrated.
4.1.2 Adjustable centre partition with head partition.
4.1.3 Interior walls, partitioning and bars shall be cushioned for safety and comfort where the horse can be in contact with it.
4.1.4 Drop down bucket holders mounted to accommodate 20-25 litre buckets.
4.1.5 Structurally mounted interior and exterior tie rings.
4.1.6 The floor shall be metallic with an anti-slip rubber lining on the inner surface. Mounted in a manner for easy maintenance.
4.1.7 The roof shall be aerodynamically shaped with adequate insulation to keep the internal temperature comfortable for the animals.
4.1.8 Large entry doors with three-point locking mechanism.
4.1.9 Rear and side ramp lined with anti-slip rubber for loading and offloading. Electrical/hydraulic filled struts for user friendly operation.

4.1.10 The rear door can be a drop down which will serve a dual function as the ramp, or it can be a two-piece door which opens/closes from the centre and has a pull-out ramp in the sub-chassis of the vehicle/superstructure under the floor. Should the door be a two-piece type it shall have internal padding where the horse can come in to contact with it.

4.1.11 Large opening front/side door on the passenger side of the superstructure with a floor ramp such that the horse can enter/exit easily. Ramp shall be lined with anti-slip rubber.

4.1.12 The doors shall be electrical servo/hydraulically assisted to self-close and self-open.

4.1.13 Should the hydraulic assist in 4.1.12 not be strong enough to hold the doors in place when open, holders must be provided to secure the doors.

4.1.14 Windows with protective grids on both sides of the superstructure. Gas struts to assist depending on opening orientation. There shall be a window for each horse holding bay. Windows shall have a guard to not allow water ingression from the side of the body.

4.1.15 Draught and water free interior ventilation system to also be installed adequate for the animals.

4.1.16 Roof mounted air conditioning system adequate for the rear superstructure volume.

4.2 Saddle Box and storage box/compartment

4.2.1 Lockable saddle compartment including saddle holder, snaffle holder and securing net for accessories.

4.2.2 Lockable storage box/compartment for tools such as a spade, clippers etc.

4.3 Water tank

A 200-litre drinking water tank/caddy shall be accommodated in the vehicle with a tap that can accept a hose pipe.

Pair of raised height troughs to be included with holders mounted in the vehicle.

Access to the components and areas should be through suitable spaces with adequate weather proof ventilation and the layout should be designed to enhance maintenance of the unit. Steps should be installed to provide access to the areas that require it. Provision should be made to remove the water tank if needed. All ramps must be completely lined including the edges, there shall be no exposed metallic surfaces which can injure the animal.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces. Drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the trailer should be coated with a non-slip resistant material.

5. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

8.1 Descale all metal surfaces

8.2 Grind down & smooth all rough edges

8.3 Thoroughly clean all surfaces

8.4 Prime using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.

8.5 Thereafter paint using two coats of premium quality twin pack automotive paint

8.6 Paint film thickness must not be less than 80 microns each. Two primer coats and one-color coat.

6. Colors

Underside of Body	Black
Chassis Cab and superstructure	Metro Police blue and white

7. Electrical and coupling requirements

Electrical circuits are to be suitably fused and must not interfere with or adversely affect the prime mover's electrical system.

35.1 Taillight units shall be premium quality equal light units incorporating 30 LEDs or more approx. 100 mm in diameter that are screwed into position with a stainless-steel flange. Two sets required.
35.2 Dual indicator stop and taillight units to be fitted.
35.3 Interior LED lights (minimum of three 27W) with switches easily accessible at both superstructure entrances.
35.4 Reversing warning light to be installed when reverse gear is engaged.
35.5 Four x 4 Head, 3-watt, Mini Blue Cree Linear LED Module to be mounted, rear facing. Shall have random flash pattern with switch clearly marked and installed in the driver's cab.
35.6 CCTV System;

Camera type	Automatic sensing day and night vision wide angle with minimum 500 TVL resolution
Quantity	Minimum of four cameras for a clear view of the superstructure interior and rear exterior for reversing/rear entrance
Operating Voltage:	12/24V
Mounting	To be mounted in a manner that will improve and enhance the driver's visibility, monitor inside and at the rear of the superstructure and whilst slowly moving the vehicle in forward or reverse direction. To be mounted on a bracket with a clear protective cover encasing the camera.
Functionality	All cameras shall be clearly visible at any given time via a split screen system. Should any camera need to be viewed completely on the screen it shall be easily identified and selected to be a full screen stream. System to automatically switch to the full screen stream of the rear camera when reverse gear is engaged.
Monitor	Minimum 10" in size with a resolution of 1000 x 600. To be fitted to the vehicle in consultation with a City Fleet representative.
Water proofing	To withstand operating conditions including rain and vehicle pressure washing. Scratch resistant lenses.
Installation	To be completely installed. All wiring to be protected with a non-corrosive metallic conduit and trunked neatly through the vehicle. Where brackets maybe required for mounting purposes, supplier shall have to supply and install these.

8. Signage and Markings

8.1 Data plates shall be fitted for:

a) The superstructure capacity and safe working load.

b) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

8.2 Chevron board with rear lights to be fitted on a steel channel (3CR12) section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.

8.3 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

8.4 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

8.5 Retro-reflective tape shall be fitted to both sides and the rear of the superstructure as well as the rear bumper (if applicable).

8.6 Horses being transporting signage to be placed at the sides and rear of the superstructure with a speed limit reflective signage at the rear.

9. Miscellaneous items

9.1 A pair of 4.5 kg fire extinguisher should be supplied and fitted in an accessible position.

Item 32: Technical specification for a crowd control vehicle customization

1. Scope

The intent of this specification is to provide modifications and customization for a fully operational vehicle, which has the capability to do patrols when protest action is taking place. This customization consists of fitment of accessories and protective equipment.

2. Vehicle

2.1 The chassis/body for the customization for this item shall be a heavy duty LDV. Vehicles are already in possession by eThekwini's City Fleet Department. The bidder shall use these vehicles to undertake the work.

2.2 The vehicle shall be fit with the following accessories;

- 2.2.1 Multimedia Radio unit with Bluetooth handsfree cellphone capability and speakers and mic.
- 2.2.2 Reverse camera which should integrate with monitor in 2.2.1.
- 2.2.3 2 x 12v charging sockets for cabin of vehicle.
- 2.2.4 All windows to be smash and grab tinted to the maximum allowed legal limit with minimum 200 micron protective film.
- 2.2.5 First aid kit for two persons shall be installed in the vehicle.
- 2.2.6 Mounted Fire extinguisher that can easily fit in the driver's cab without compromising user comfort.

3. Material specification

The load bearing structures shall be made from light weight structural steel to withstand the payload and wear. Aluminium and/or stainless steel is recommended for the canopy. Corten, Domex or a structural steel with chromium for anti corrosion is recommended for the bumpers and protection. Wire mesh and all fasteners shall be 3CR12 or galvanized steel. Minimum thickness of 4.5mm is expected for all material being used.

4. Construction requirements

All items shall be bolted and fastened with lock washers onto the body. Adaptor plates/assemblies shall be welded where necessary to create a sub-mounting point for the various equipment. The configuration shall be such that all equipment and structures fitted can be removed to return the vehicle to close to original as possible and it shall not inhibit the existing vehicle's warranty in any way.

4.1 Rear access loading area

4.1.1 Solid doors aluminium/stainless steel gullwing canopy to be installed to height of the driver's cab. Locking system with gas lifts for each door is required. Equipment /compartments shelves and brackets to accommodate equipment at time of the order. Equipment include; bulletproof vests, riot shields, weapons and ammunition. Weapons and ammunition shall have lockable compartments.

4.1.2 Manufacture and Fitment of an Onca type Front Bumper, or equivalent with a full width and height bulbar with overlap onto the front fenders: A heavy duty front bumper, integrated with a bull bar and a one-piece skid plate (sump guard). The bumper must incorporate two head lights and indicators with mesh guards. Two rescue hooks to be incorporated on to the chassis. The bumper shall be mounted to the chassis as it will be expected to clear and navigate through barricades. The front of the bull bar shall be covered with a wire mesh to protect the front grill and headlights. It shall follow the contour of the front of the vehicle to the side of the fenders. The bottom of the bulbar shall have a strengthened front/forward facing guard plate/structural members such that items cannot easily go under the chassis and it can deflect it to the sides whilst driving.

4.1.3 Manufacture and Fitment of an Onca type Rear Bumper, or equivalent: A heavy-duty rear bumper integrated with two Rescue Hooks on the rear chassis. An adjustable ball type tow bar with electrical harness and female socket to be mounted at the rear bumper with a safety cover. Rear lights to have fastened metallic mesh guards.

4.1.4 Under belly protection for the radiator, engine and drive line of the vehicle. Shall be installed with fasteners and lock washers.

4.1.5 A pair of six-meter chains with hooks to aid clearing obstacles that maybe on the roadway.

4.1.6 4.5 kg Fire extinguisher to be mounted in the canopy/bin with a quick release holding cradle.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material, preferably rubber or polyurethane. The shelving shall have a non-slip rubber lining to reduce movement of items placed on it.

5. Lighting and PA system

5.1 A waterproof slim line bar light 1200 mm in length and 200 mm in width to be installed on bracket on the front of the cab without drilling into the roof. 4 x 4 head, 3-watt, Blue Cree Linear LED Modules, 2 x 4 head, 3-watt, Amber Cree Linear LED Modules and 2 x 4 head, 3-watt, Red Cree Linear LED Modules forward facing. 4 x 4 head, 3-watt Blue Cree linear LED, 2 x 4 head, 3-watt, Amber Cree Linear LED Modules and 3-watt, Red Cree Linear LED Modules rear facing. 2 x End cap modules consisting of a minimum of 8 x 3watt, Blue Cree Linear LED's.

5.2 Two adjustable waterproof rubber encased 48w LED spotlight shall be installed on either side of the light bar or the vehicles canopy as a pair of scene lights on each side of the vehicle.

5.3 Canopy in 4.1 shall have interior 10w LED lights, minimum of two. They shall automatically activate when any of the doors are opened or switches to be installed in close proximity to the opening of the doors.

5.4 Description: Siren, Amplifier incorporating public address system

Type	12-volt operating system. Capable of handling dual parallel speaker connection. Minimum speaker specification of 8 ohms impedance and 120 to 130-watt RMS.

	Built-in Thermo fan to allow for optimal cooling of amplifier. Amplifier should have a slim mounting footprint. Minimum 4 as per applicable legislation for police vehicles including HRT functionality.
Impedance & Output	Impedance to be between 8 ohms to 16 ohms per unit. It is imperative that the amplifier can supply an output, in respect of impedance and wattage, which is compatible to the respective speaker/s fitted with the system.
Functions	Functions to include air horn, independent PA and amplifier to accommodate input and output auxiliary ports. PA volume control to be made easily accessible, either through the microphone or a volume port on the switch box.
Mounting	The amplifier is to be fitted in a concealed area with-in the vehicle in manner which restricts it from being subjected to excessive vibration and allows for the amplifier to optimally cool itself, via its internal fan, during operation. The amplifier must be mounted in a manner in which it does not affect or compromise any of the respective vehicle's operating system or devises.

5.5 Description: Siren/PA Speakers

Type	Standard Round/Square (Bell Compatible), Speaker, Non-fatiguing, self-aligning sound chamber assembly. 100-Watt power handling for high intelligibility and sound penetration. Two of each type required.
Dimensions (approx..)	Standard Round - Diameter 120 mm/ Height 75mm Compact Square Speaker – Length 165mm / Height 60mm
Functionality	Able to supply of 120 to 130 dbs per speaker with minimum sound distortion not exceeding 5%
Application (Based on Vehicle type and application model required)	Standard Round Speaker to be encapsulated into the bar light via speaker housing allowing for maximum sound output without compromise to bar light functionality and visibility. Compact Square speaker to be mounted in suitable and secure location closest to the vehicle Grill without compromise to the vehicle operational systems. (Mounting to be done in consultation with City Fleet Official).

5.6 Description: Control panel

Functions	The various functions including siren, lights, LED Blaster switching and auxiliary to be integrated via touch of a button and also be able to function independently. All switches and control ports must be able to withstand the amperage demand by the components that are to be operated by the respective switches. City Fleet reserves the right to request proof of such data should the need arise.
Switches	Selector switches to include flash pattern selection and a separate switch for operation in the cruise light mode. A main switch must be incorporated into system to shut off system completely, including that of standby mode.
Mounting	Switch box to be mounted in vehicle interior with fasteners enabling easy removal and re-fitment (mounting to be done in consultation with City Fleet Official).
Power/ indicator warning Lights	To provide a visual indicator to the user if the system is in operation stage or shut down state.

6. Metal Preparation and Corrosion Protection Procedure

The following procedure must be adhered to:

6.1 Descale all metal surfaces
6.2 Grind down & smooth all rough edges
6.3 Thoroughly clean all surfaces
6.4 Prime using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
6.5 Thereafter paint using two coats of premium quality twin pack automotive paint
6.6 Paint film thickness must not be less than 80 microns each. Two primer coats and one-color coat.

7. Colors for vehicle

8.

Canopy shelving and storage internal	Rubberized
Canopy and vehicle external	Metro Police Blue and White
Load Bin internal	Rubberized
Bumpers and underbelly protection	Black

Electrical and coupling requirements

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

8.1 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
8.2 Trailer light socket to be fitted adjacent to the slimline tow hitch. Electrical connector complying to; SANS 1327: Electrical connectors for towing and towed vehicles and,
8.3 SANS 11446/ lSO 11446: Passenger cars and light commercial vehicles with 12 V systems -3-pole connectors between towing vehicles and trailers - Dimensions and contact allocation
8.4 Trailer coupling to comply with SABS 1505, Ball type couplings and towing brackets for towing caravans and light trailers.

9. Signage and Markings

9.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary on the items mention in chapter 4.

9.2 Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

9.3 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

9.4 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

9.5 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

9.6 Registration number to be clearly marked on roof.

Item 33: Technical specification for a mobile police station superstructure

1. Scope

This specification is for a rear body that is a mobile police station that can be used at remote sites and roadblocks. The superstructure shall be fully enclosed with solid sides with a side and rear door entrance. Furthermore, multimedia equipment and systems including monitor screens, Wi-Fi and power systems shall be installed into the vehicle.

2. Vehicle

The chassis cab/vehicle for this item shall be a single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 13 500 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

a. SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
b. The end of Section 7 covers other specifications/standards that shall be adhered to.

3. Major/Overall dimensions of body:

Description	Dimensions (mm)
Body length	Full length of subframe approx. 6 000
Width	2 500
Sides	Solid enclosed body
Rear	Full length rear door 2 000
Total height to roof	4 000

4. Material specification

The superstructure frame shall be constructed of corrosion resistant structural steel (Corten, Domex, 3CR12 or similar/better is recommended). The body panels shall be insulated type have a metallic finish like aluminum or chromadek. All joins of the paneling shall have proprietary fasteners and/or tongue and groove fits. Minimum thickness shall be sufficient for the payload with safety factors for the design. Internal storage compartments, cupboards, shelving and workstations shall be made of a lightweight structural material suitable for the application that is waterproof and non corrosive.

5. Construction requirements

5.1 Chassis mounting

All mounting to be in accordance with directives specified by the Original Equipment Manufacturer. The sub frame shall extend the full body length.

5.2 Superstructure

5.2.1 The rear superstructure shall encase the entire chassis and the vehicles subsystems like fuel tank, pneumatics, batteries etc. Access to these subsystems shall be made via lockable waterproof outside hinged doors with an EPDM seal. Mechanical hinged locking systems shall be installed to hold these doors in the fully opened position. Container door stainless steel locks shall be fit.

5.2.2 There shall be storage compartments on the lower passenger side and driver side of the vehicle made with the same specification as in 5.2.1. They shall store lights, road cones and barriers. There shall be one 3 000 mm and 5 000 mm expanding barriers with blue reflective tape and metro police signage supplied and stored in one of these compartments. Another compartment shall store a portable lighting tower with dual 20W LED lights that are adjustable. The barriers and lights shall be supplied with base weights for on road operation and shall have holders in their compartments to safely store them whilst in transit. There shall be a road cones holder and supply of 8 blue and white traffic cones.

5.2.3 The side and rear entry door shall have a slide out stair case mounted and shall have safety railings at either side of the body. Galvanized full length container door lock with a heavy-duty case-hardened lock to be included for each.

5.2.4 On the driver side of the body there shall be a low noise generator (75 dB or better) with an electronic ignition and minimum capacity of 7.5kVA. It shall be mounted such that the generator can be removed for maintenance and be easily refuellable. Enclosure shall be louvered to allow heat dissipation and to deflect

water ingression, an extractor fan shall be added if natural convection cooling is not adequate. Access to the generator shall be made via a lockable waterproof outside hinged door with an EPDM seal. Mechanical hinged locking systems shall be installed to hold these doors in the fully opened position. Container door stainless steel lock shall be fit.

5.2.5 There shall be solid windows on the side panels of the body closest to the roof. These shall be provided for natural light to illuminate the internal structure. It shall be made of aluminum, safety glass and an adequate seal.

5.2.6 Roof mounted air-conditioning unit adequate for the superstructure and its occupants.

5.2.7 Roof of superstructure shall have a gradient to allow easy run off of water into upward facing sills/gutters on either side of the body. The entrance/exits shall have an awning hood to provide protection from the elements.

5.3 Interior of the superstructure

Part 1-Front

5.3.1 The interior shall be partitioned into three different areas with sliding doors to enclose them.

5.3.2 The area portioned closest to the driver's cab shall have a kitchenette with a single bowl stainless steel sink and a cold-water dispensing tap mounted in a counter top with storage cupboards below it. There shall be a gravity fed water tank enclosed in a cupboard and safe holder above the sink. Waste water tank should be mounted externally on the driver side body. It shall be spill proof with a drain valve. Mounting of the waste tank must be such that it can be removed easily to clean.

5.3.3 An Ac outlet shall be connected to the area above the counter for a kitchen appliance such as a microwave or kettle.

5.3.4 The opposite side of the kitchenette shall have storage cupboards above whilst the bottom shall be a cantilever desk/counter. There shall be slimline suitable roller type chairs for the users.

5.3.5 A 60-80-liter fridge large enough for beverages to be installed and connected to the generator using an AC outlet.

5.3.6 The above section of the superstructure should be to the left of the side entrance of the superstructure.

Part 2- Rear

5.3.7 The rear entrance of the superstructure shall be a screening area.

5.3.8 There shall be storage cupboards for breathalyzer kits and testing equipment at an easy reachable height on both sides of the superstructure for the length.

5.3.9 On the lower sides of the superstructure there shall be a bench type seat for the full length for a minimum of four people. Seats shall have padded backrests and seats with premium clear vinyl seat covers. There shall be removable slot in type partitions dividing each seated person on either side preferably made from plexiglass or a high strength Perspex with robust holders. The partitions shall have a storage compartment in the rear of the superstructure.

5.3.10 The base of the seats should be storage compartments if not used as in 5.3.11

5.3.11 There shall be smart desks that can fold or retract from the base of the seats, superstructure, floor or the roof such that both sides can be used as a work area if required. It shall still allow entrance through the superstructure.

Part 3- Centre

5.3.12 This area shall have two workstations on either side with seats on either side of the workstation same specification as 5.3.9.

5.3.13 There shall be a single floor standing cupboard enclosing a rifle safe (included) which will be used to store weapons and ammunition.

5.3.14 The space above the workstations shall have storage cupboards. At the time of order shelving configuration shall be communicated based on user's requirement and current equipment being used.

5.4 Power distribution

5.4.1 Supply and fitment of distribution board with surge arrest circuit breakers and line filter for all power points. This should be fit in Part 1 of the superstructure. Supply and fit 220-240 volt plug points as required for the safe operation of the equipment and additional plug points as stipulated by Municipal representative.

5.4.2 The generator shall supply the air-conditioning system, interior and external superstructure lighting, all appliances in Part 1 of the superstructure, the entrance/exit AC outlets and the auxiliary extension cord. The workstation plug points shall be supplied from an uninterrupted power supply (UPS) being charged from the generator. UPS with 220-240 V AC with a capacity of 1 000 W with surge and overload protection. The UPS is expected to supply the workstation AC outlets for equipment such as laptops, screens, printers, chargers etc.

5.4.4 There shall be solar panels on the roof of the superstructure with a regulator to charge the battery for the generator.

5.4.5 There shall be one switchable embedded double three pin AC outlet per entrance/exit as minimum with extra outlets required requested by eThekwini City Fleet officials when finalising the interior layout and user departments requirements. Each workstation shall have one switchable embedded double three pin and double USB AC outlet. The AC outlets shall be labelled “Generator” or “UPS” such that the user can identify them when plugging in the correct equipment.

5.4.6 Near the generator in a separate compartment shall be a self retracting 25 metre reel extension cord (3 core, 2.5 mm^2) with a double-sided waterproof AC receptacle. This shall be connected to the generator and have a on/off switch in the compartment.

All items in chapter 5 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and must be waterproof.

Where necessary the bidder shall be required to fabricated and install mounting brackets for the installation of components as per operational requirement. Material shall be minimum glavanised if not corrosion resistant with chromium and shall be powder coated. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap). All cupboards, lockers, storage areas and work areas that may house or be used for equipment shall be lined with a non slip insertion rubber and the doors shall have robust hinges and latches for the application.

6. Colors

Underside of Body	Black
Chassis Cab	White/Blue
Superstructure	White with custom branding on the entire superstructure. User department will provide the theme for the body at time of order.

7. Electrical

7.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100mm in diameter that are screwed into position with a stainless-steel flange. Two sets required at the rear (one near the bumper and the other on top of the rear entrance).

7.2 Reverse buzzer and camera when reverse gear is engaged.

7.3 Sixteen LED blue 3/4-watt cluster strobe lights with random flashing pattern shall be installed on the rear and sides of the superstructure (one pair on rear end of the body and one pair on the front end). Each shall be placed in the extreme point of the corner. These lights shall be powered using the vehicle’s power source or the generator (switchable).

7.4 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

7.5 Scene lighting to be supplied all around the body. The lighting shall be hooded to focus and illuminate the entrances/exits and the surroundings of the vehicle. Minimum of six (6) LED 10w lights shall be installed.

7.6 Interior of the superstructure shall have LED lights. One to be mounted directly over the workstation. One to illuminate the rear entrance. Lockers shall also be illuminated. Strip lights are recommended for the storage spaces/cupboards and ambient lighting, whilst a minimum of 6W LED lamps for each user of a workstation. Lighting shall be tested and only seemed suitable in consultation of the City Fleet representative.

7.7 All exposed electrical wiring looms of the chassis cab and superstructure shall be fully encased in a flexible protective metallic conduit and securely clamped with fasteners.

7.8 Rear of the superstructure shall be fitted with a security monitoring CCTV system. Cameras shall provide a full view of the entrance and interior of the vehicle and occupants with a DVR system located in the driver's cab. System shall be able to operate in day/night conditions and up to 30 days recording capability.

Camera type	Automatic sensing day and night vision wide angle with minimum 500 TVL resolution
Quantity	Minimum of four cameras for a clear view of the superstructure interior and rear exterior for reversing/rear entrance
Operating Voltage:	12/24V
Mounting	To be mounted in a manner that will improve and enhance the driver's visibility, monitor inside and at the rear of the superstructure and whilst slowly moving the vehicle in forward or reverse direction. To be mounted on a bracket with a clear protective cover encasing the camera.
Functionality	All cameras shall be clearly visible at any given time via a split screen system. Should any camera need to be viewed completely on the screen it shall be easily identified and selected to be a full screen stream. System to automatically switch to the full screen stream of the rear camera when reverse gear is engaged.
Monitor	Minimum 10" in size with a resolution of 1000 x 600. To be fitted to the vehicle in consultation with a City Fleet representative.
Water proofing	To withstand operating conditions including rain and vehicle pressure washing. Scratch resistant lenses.
Installation	To be completely installed. All wiring to be protected with a non-corrosive metallic conduit and trunked neatly through the vehicle. Where brackets maybe required for mounting purposes, supplier shall have to supply and install these.

8. Signage and Markings

8.1 Data plates shall be fitted for:

a) The generator/UPS/electrical system indicating tank capacity, system pressure, fluid type/grade specifications and test criteria.

b) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

c) Safe working load (SWL) of the body shall be clearly labelled on both sides of the body.

8.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

8.3 Chevron board and durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the superstructure/vehicle.

8.4 Retro-reflective tape shall be fitted to both sides and the rear of the tip- body as well as the rear bumper and the items in chapter 5 that make up the perimeter of the superstructure/vehicle.

8.5 Registration number to be clearly marked on roof (left to right, 80-90% size of the roof).

12. Maintenance

The vehicle and equipment must be supplied with detailed maintenance, operating, training and spares manuals (in English), including technical data for each spare, as well as general arrangement drawings and a bill of materials. There must be sufficient information to allow the capture of maintenance schedules in terms of inspections, servicing and replacement of parts. Three hardcopies and three electronic copies of the operating, maintenance, training and spare parts manuals shall be provided, as well as a training manual for each trainee (operator, driver and maintenance staff). The av equipment training shall be fully comprehensive and be given to five participants on site.

13. Miscellaneous items

13.1 Front mud flaps and full rear mudguards constructed from rubber or a durable polymer.
13.2 Bolt on covers for safety where parts are rotating, swinging or of high temperature.
13.3 Two 4.5 kg fire extinguishers should be supplied and fitted. One in an accessible position close to the driver when exiting the cab and the other inside the superstructure.
13.4 Bolt on head and tail light guards.
13.5 Rear underrun according to SANS 1055
13.6 Jerry can mounted in a safe position for refuelling of the generator.

Item 34: Technical specification for an 8x4 Rear tipping superstructure with the option of it being heated

1. Scope

The specification is for a heavy duty rear tipping body that has a top hinged tailgate. The tip-body shall be able to carry a volume of 18-25 m^3 and a payload of 18-24 tons (18 000-24 000 kg). It will primarily be used to transport asphalt to rehabilitate roads. The rear tip body should be constructed such that it can be heated by the expelled exhaust gases from the chassis cab through the superstructure via convection/conductive heat exchange. This is requested due to the application of the vehicle as it will feed the road rehabilitation paver with preheated asphalt.

2. Vehicle

The chassis cab/vehicle for this item shall be a single chassis cab, with a minimum Gross Vehicle Mass (GVM) of 28 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

a. SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b. SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c. The end of Section 7 covers other specifications/standards that shall be adhered to.

3. Material specification

The rear tipping body and structures shall be constructed corrosion resistant structural steel with good thermal properties due to the application of this superstructure. Furthermore, the inner floor and the bottom

side panels of the tipping body shall have wear plates made of Hardox steel seated on top of the primary carbon steel structure. The wear plate is expected to be welded such that it can be maintained/replaced when it reaches a minimal thickness. A minimum of 4.5 mm thickness is recommended.

4. Construction requirements

4.1 Chassis mounting

All mounting to be in accordance with directives specified by the Original Equipment Manufacturer. A separator insert shall be fitted to the rear most axle in case of uneven mass distribution.

4.2 Sub Frame

The sub frame shall extend the full body length.

4.3Tip Body

4.3.1 The tip body shall be mounted at the rear most of the chassis

4.3.2 The headboard shall be extended 100 mm to a height above the cab.

4.3.3 The tailgate shall be top hinged which will open automatically when the body is tipped.

4.3.4 The geometry and shape of the tip body shall afford maximum capacity in terms of volume and mass with no areas that will hold the commodity when offloading.

4.3.5 The main pair of structural channels must have stiffeners/gussets evenly installed over the length.

4.3.6 Lateral support shall be provided using structural members throughout the base of the tipping body floor. Supports and guides shall be installed underneath the tipping body and on the truck chassis to provide even load distribution and prevent unwanted (lateral, oscillations, vibrations) movement when the vehicle is in motion.

4.3.7 At the front of the tip body a centrally located support shall be mounted on the lateral member of the chassis to hold the tip body in place.

4.3.8 The sides of the loading box shall also be reinforced with structural members.

4.3.9 A tipping stabilizer shall be installed.

4.3.10 The rear tipping body can be constructed in two ways for the heat exchange. It can be a sandwich construction i.e. two skins with structural supports incorporated through the body to achieve the respective payload. Alternatively, the rear tipping body can be a ribbed body design with the surrounding structural supports being the passages for the exhaust gas to heat the tipping body. Heating shall be focused on the floor and immediate/adjacent front and side panels that the commodity will be in contact with.

4.3.11 All box sections and structural channels shall have stiffeners/gussets installed for reinforcement. It shall be adequately perforated if in the path of the exhaust gas travel.

4.3.12 The tailgate locking mechanism shall be self-adjusting and easily maintainable.

4.3.13 The inner wear plates shall be installed such that maintenance of these components can be carried out when minimum thickness is reached.

4.3.14 The rear guide outside the tailgate for offloading shall be a box section and/or strengthened using stiffeners/gussets if flat plate.

4.3.15 The exhaust gas that needs to expel from the rear tip body shall be done at the rear of the body imposing no harm to the vehicle or the road and other road users. Should extractor fans need to be installed to create displacement and airflow of the gases, bidder shall incorporate and supply these.

4.4 Tipping

4.4.1 Tipping operation shall be achieved by means of a multi stage hydraulic cylinder/s which is mounted upon a suitably reinforced full-length sub frame. Tipping angle shall not be less than 45˚.

4.4.2 The sub frame must start as close as possible to the rear of the truck cab in order to spread the stresses imposed.

4.4.3 When operating conditions demand, the hydraulic cylinder shall be capable of continuously handling an overload of up to 25% of the specified payload (including tipping body mass).

4.4.4 An electrical switch shall be mounted on the sub frame which automatically activates a buzzer and light fitted inside the cabs dashboard when the body is raised.
4.4.5 The tipping control must incorporate the following individual positions: Raise, Hold, Lower.
4.4.6 When released the lever must automatically enter the “Hold” position.
4.4.7 Indicators for the rest position and maximum height when tipping shall be installed.
4.4.8 The operation of the tipping must be constrained such that the chassis cab in no way can be damaged.
4.4.9 A mechanical safety device shall be installed to hold the body in the raised position.

4.5 Covering system

4.5.1 A covering system shall be installed for the entire longitudinal and lateral dimensions of the open top of the tip body.
4.5.2 The material shall be flexible and robust enough to handle the commodity being transported in terms of geometry (if heap loaded) and the chemical composition.
4.5.3 The material shall be stored in a self-reeling housing unit on the tip body closest to the cab. Top/side mounted guides and runners shall be used to spread the material over the tip body.
4.5.4 Tie downs shall be available on the sides to hold the material if needed.
4.5.5 Design must not inhibit loading (from the sides) and off-loading.
4.5.6 System shall be mechanically operated.
4.5.7 Operation must be such that the rear tailgate does not damage the system when offloading.

4.6 Storage box

4.6.1 One lockable storage box approximately 1 000 mm longitudinally shall be fixed on the chassis under the bodywork.
4.6.2 Hinges for the doors must be fitted to the exterior of the front doors.
4.6.3 There should be seals to prevent ingress of water.

4.7 *Miscellaneous items*

4.7.1 Steel constructed rear mud flaps shall be installed. Front mud flaps can be a combination steel/composite/polymer type. Mud flaps shall be independently mounted and no to the tip body.
4.7.2 Rear underrun device shall be installed according to SANS 1055.
4.7.3 Safety access ladders and handrails to the rear tipping body and hydraulic system.
4.7.4 Protective shell structures over fuel tank and pneumatic cylinders.
4.7.5 Lockable protective cover for the batteries.
4.7.6 Wire mesh covers for the front and rear lights.
4.7.7 A pair of heavy-duty wheel chocks to be mounted and easily accessible.
4.7.8 A 20l cooling water tank/caddy to be mounted in a user-friendly position in the cab or the option of an in-cab fridge with similar capacity.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5.Hydraulic system

5.1 In respect of the hydraulic tank the following shall be required:
5.1.1 To be constructed of steel.
5.1.2 To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to the tank.
5.1.3 To be fitted with a bump guard from externalities.
5.1.4 To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.
5.1.5 Must have a filler cap strainer & filter into filler base and filler cap assembly.
5.1.6 Oil capacity shall be double that of the oil capacity of the hydraulic cylinder.

5.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the tipper / solenoid valve system.
5.3 The hydraulic valves shall be grouped together for ease of maintenance.
5.4 Test points for testing hydraulic pressures shall be fitted and grouped together.
5.5 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.
5.6 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.
5.7 Safety hold valve for the cylinder/s in case of hydraulic system failure.

6. Power Take Off (PTO)

6.1 The close coupled PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.

6.2 The engine and transmission must not be harmed by use of the PTO.

6.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

6.4 Electronic control module and wiring harness which incorporates the “Rev Up Limiter” must be integrated into the existing OEM vehicle using the OEM 24 Volt system.

6.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.

6.6 The accelerator pedal cannot be used, while the PTO is engaged.

6.7 PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

7. Metal Preparation and Painting Procedure

The following procedure must be adhered to:
7.1 Descale all metal surfaces
7.2 Grind down & smooth all rough edges
7.3 Thoroughly clean all surfaces, the rear tip body shall be shot blasted.
7.4 Prime the tip body and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
7.5 Thereafter paint using premium quality automotive finish paint.
7.6 Two coats of primer and one coat of colour is required.
7.7 Paint film thickness must not be less than 80 microns each.

8. Colors

- Underside of Body: Black
- Interior of tip body: Black
- Body and Chassis cab: Yellow

9. Electrical

9.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100mm in diameter that are screwed into position with a stainless-steel flange. There shall be two sets of lights and it shall be integrated in the tailgate or the rear structure clear off tipping and commodity.
9.2 A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on an aluminum bracket closest to cab. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front

with end cap modules consisting of 1x2 head modules with amber colored polycarbonate lenses to be fitted to the top of the headboard behind the cab with on/off switch with random flash pattern positioned in the cab.

9.3 Rear work light to be installed with switch installed in the cab.

9.4 Reversing buzzer warning and flashing light to be installed when reverse gear is engaged.

9.5 A pair of marker LED amber lights on each side of the vehicle.

9.6 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

9.7 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

10. Signage and Markings

10.1 Data plates shall be fitted for:

a) The hydraulic system indicating tank capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

b) The rear tip body detailing safe working load, material specification, tailgate operation and general maintenance.

c) Safe working load (SWL) decals shall be clearly visible on the sides of the tipping body.

d) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

e) Volumetric capacity of the tip body at $5m^3$, $7m^3$, $10m^3$, $12m^3$, $15m^3$ and maximum. Markings shall be the circumference of the body internally and externally and clearly marked with the capacity.

10.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

10.3 Chevron board and durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

10.4 Retro-reflective tape shall be fitted to both sides and the rear of the tip- body as well as the rear bumper and the items in chapter 4 that make up the perimeter of the vehicle.

10.5 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

10.6 Supply of two eThekwini Municipality vinyl decals (dome and department name) with installation on each door.

11. Fire Extinguisher

A 4.5kg dry powder type extinguisher to be mounted in a suitable exterior position preferably close to the driver upon exit of the cab.

Item 35.1: K-9 dog unit conversion for police response vehicles

1. Scope

The intent of this specification is to provide a customization to existing vehicles for the capability of carrying a pair of police dogs at the rear of the vehicle. The supply, delivery and installation shall include purpose built interior structures and vehicle accessories. This vehicle and customization shall be robust and performed at a premium level of quality as this is a high pursuit vehicle that uses a high level of reliability and performance from its accessories.

The bidder shall also provide Advanced Driver Training for two persons per vehicle ordered. The bidder can sub contract the training to another service provider specializing in this type of training. Please include all costs if it is undertaken outside of the eThekwini region such as travel and accommodation costs including subsistence.

2. Vehicle accessories

2.1 Full rubber/upholstered mat set with holders to prevent movement.

2.2 Underbelly protection for the radiator, engine and transmission. It shall be minimum 4.5 mm thickness minimum, reinforced and mounted with fasteners and lock washers.

2.3 Tinted windows with a safety film that shall be 80% shade level and 200-micron thickness to be applied to all windows and rear glass. Clear film of same specification to be applied to front headlights and four fog lamps.

2.4 ADR compliant nudge bar for the front of the vehicle.

2.5 Four ECE approved 6” LED spotlights to be fitted on the nudge bar. Shall be operated from the existing fog lamp switch in the vehicle and when high beam is applied by the light stalk control.

2.6 Premium Bluetooth double din head unit equipped with upgradeable lifetime satellite navigation system. Speakers/mic (with handsfree cellphone capability) and all trimmings shall be supplied/fabricated and fitted to existing panels-no cutting of the interior will be allowed.

2.7 Reverse camera to be supplied for use with the head unit. Shall be automatically activated when reverse gear is engaged.

2.8 Performance suspension upgrade to springs and shock absorbers for better ride height (low or high depending on the vehicle) and handling.

2.9 12v cigarette lighter/charger sockets. One additional for the driver/passenger and one for the boot.

2.10 Full spare wheel to be supplied as the existing wheels on the vehicle.

3. Material and installation

The interior structural components shall be made of a high strength lightweight material like aluminum, automotive grade stainless steel or a nonmetallic composite. The material shall be formed to encase the contour of the vehicle and its interior panels. It shall be installed using fasteners with lock washers for easy maintenance. The entire system must be completely removal to return the vehicle back to its original form.

4. Interior customization

4.1 For all vehicles, existing rear interior (mainly seats, backrests and associated parts) shall be removed without inhibiting function of the vehicle (electrical and monitoring systems).

4.2 The interior shall be replaced with a removable purpose-built structure with a partition to separate the two police dogs. 60-70% of the structure shall be solid from the floor up. The rest shall be a caged area with windows that can allow ventilation.

4.3 The structure shall be bolt on such that it can be removed to service the vehicle’s fuel tank and clean the kennels.

4.4 The floor shall have a vinyl covered non slip high density padded insert. This shall be attached such that it can be removed for cleaning.
4.5 The floor shall have a gradient into a drain hole with a removable catchment tank.
4.6 The interior of the window area shall also have a non stretchable large aperture premium composite material to facilitate fresh air whilst keeping the dog in the interior of the vehicle. This cover must be for the entire surface area of the window.
4.7 Two fans shall be installed to further provide ventilation to the dogs. The fans shall be completely encased, low noise and slimline units mounted in a suitable position preferably to send cold air from the vehicles air-conditioning. It should have at least two speed settings. Ducting shall be accommodated for by the bidder.
4.8 There shall be stainless steel drop down feeding bowls for each dog. It shall be installed on the enclosure directly behind the front driver and passenger. A full-length storage box/container shall be installed in the in the luggage area of the vehicle for the bowls and other equipment like bulletproof vests.
4.9 A 20-30L removable drinking water caddy shall be installed in a holder with a tap and hose to be used at the rear of the vehicle.
4.10 There shall be a key lock type operated metallic safe to hold ammunition and a hand pistol. Preferably to be a slimline unit that can fit under a seat. To hold at least three sets of ammunition rounds and one hand pistol.
4.11 Rifle locks to be supplied and installed for a pair of high caliber rifles/shotguns. The location for installation shall be done based on the vehicle and with conjunction with the Metro police officers.
4.12 Vehicles with a high step clearance (bakkies and SUVs) shall have a drop-down step/ramp installed to aid the dogs entry and exit. This can be mounted internally or externally on the vehicle. It shall not inhibit the vehicle in any way. It shall be rubber lined completely, no exposed metallic surfaces will be allowed.
4.13 LED lights shall be installed on the roof to illuminate each dogs area.
4.14 All metallic interior items shall be powder coated in white/black.

5. Electrical and coupling requirements

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

5.1 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
5.2 Uninterrupted power supply point and a permanently installed antennae to be accommodated for two-way radio system in the vehicle.

5.3 Siren Amplifier

Type	Digital Siren Amplifier with a 12/24-volt operating system. Minimum speaker output of 8ohms impedance and 120 to 130-watt RMS. Minimum 4 tons as per applicable legislation for police vehicles including HRT functionality.
Impedance & Output	Impedance to be between 8ohms to 11ohms per output. It is imperative that the amplifier is able to supply an output, in respect of impedance and wattage, which is compatible to the respective speaker/s fitted with the system.

Functions	Functions to include air horn, with input and output auxiliary ports. Amplifier must be compatible to all components linked or related to the integrated functioning of the blue lights and siren, including external modules.
Mounting	The amplifier is to be fitted with-in the vehicle in manner which restricts it from being subjected to excessive vibration and allows for the amplifier to optimally cool itself, via its internal fan, during operation. The amplifier must be mounted and connected in a manner in which it does not affect or compromise any of the respective vehicle's operating system or devices.

5.4 Siren Speakers

Type	Round, (Bell Compatible), Non-fatiguing, self-aligning sound chamber waterproof/weather resistant assembly. 100-Watt, 8 ohm power handling for high intelligibility and sound penetration
Dimensions	5.25"-6" speaker/driver size
Functionality	Able to withstand DB supply of 120 to 130 dbs per speaker with minimum sound distortion not exceeding 5%
Application	Round Speaker to be mounted into the vehicle front grill/bumper allowing for maximum sound output.
Mounting	All necessary mounting clamps and brackets constructed from stainless steel or aluminum to be provided by contractor for mounting the speakers on the vehicles including all tightening and fasteners (stainless steel nuts, bolts, screws, etc).

5.5 Control panel

Functions	The various functions including siren, lights, LED Blaster switching and auxiliary to be integrated via touch of a button and also be able to function independently. All switches and control ports must be able to withstand the amperage demand by the components that are to be operated by the respective switches. City Fleet reserves the right to request proof of such data should the need arise.
Switches	Selector switches to include flash pattern selection and a separate switch for operation in the cruise light mode. A Main switch must be incorporated into system to shut system completely, including that of standby mode.
Mounting	Switch box to be mounted onto the vehicle with fasteners enabling easy removal and re-fitment (**mounting to be done in consultation with City Fleet personnel**).
Power/ indicator warning Lights	To provide an indication to the user if the system is in current operation stage or shut down state.
Application	Switches to be able to withstand external working conditions i.e. weather and climate conditions. Minimum 4 waterproof switches per box.

6. Lighting

All shall be waterproof slim line Generation 3 type LED consisting of 1 watt with blue coloured polycarbonate lenses with random flash pattern positioned around the vehicle;

6.1 A pair of emergency LED lights to be installed facing the rear of the vehicle.

6.2 Eight 6 Head LED module and a pair of LED blasters to be mounted forward facing of the vehicle. Position and installation points shall be finalised at the time of order with City Fleet officials.

6.3 Two adjustable rubber encased 48w LED spotlight shall be installed flush to the sides of the vehicle illuminating the surroundings of the vehicle with adjustable angles as needed when on site.

7. Vehicle types

The vehicles for the customization shall be supplied from eThekwini Municipality. The categories of vehicles are as follows:

1.1 Light motor passenger vehicles
1.2 Club and Double cab vehicles
1.3 SUV type vehicles

The installation shall be carried out with approval from the OEM and eThekwini City Fleet Officials. The bidder shall be able to provide all associated equipment and tools for installation.

Item 35.2: Patrol unit conversion for police response vehicles

1. Scope

The intent of this specification is to provide a customization to existing vehicles for the capability of carrying alleged criminals at the rear of the vehicle. The supply, delivery and installation shall include purpose built interior structures and vehicle accessories. This vehicle and customization shall be robust and performed at a premium level of quality as this is a high pursuit vehicle that uses a high level of reliability and performance from its accessories.

2. Vehicle accessories

2.1 Full rubber/upholstered mat set with holders to prevent movement.
2.2 Underbelly protection for the radiator, engine and transmission. It shall be minimum 4.5 mm thickness minimum, reinforced and mounted with fasteners and lock washers.
2.3 Tinted windows with a safety film that shall be 80% shade level and 200-micron thickness to be applied to all windows and rear glass. Clear film of same specification to be applied to front headlights and four fog lamps.
2.4 ADR compliant nudge bar for the front of the vehicle.
2.5 Four ECE approved 6” LED spotlights to be fitted on the nudge bar. Shall be operated from the existing fog lamp switch in the vehicle and when high beam is applied by the light stalk control.
2.6 Premium Bluetooth double din head unit equipped with upgradeable lifetime satellite navigation system. Speakers/mic (with handsfree cellphone capability) and all trimmings shall be supplied/fabricated and fitted to existing panels-no cutting of the interior will be allowed.
2.7 Reverse camera to be supplied for use with the head unit. Shall be automatically activated when reverse gear is engaged.
2.8 12v cigarette lighter/charger sockets. One additional for the driver/passenger and one for the boot.

3. Material and installation

The interior structural components shall be made of a high strength lightweight material like aluminum, automotive grade stainless steel or a nonmetallic composite. The material shall be formed to encase the contour of the vehicle and its interior panels. It shall be installed using fasteners with lock washers for easy maintenance. The entire system must be completely removal to return the vehicle back to its original form.

4. Interior customization

4.1 For all vehicles, existing rear interior shall be modified without inhibiting function of the vehicle (electrical and monitoring systems).

4.2 The interior shall be modified with a removable purpose-built partition to separate the two front seats and the rear seats from the floor to the roof. 60-70% of the structure shall be solid from the floor up. The rest shall be a caged area with windows that can allow ventilation.

4.3 The structure shall be bolt on such that it can be removed to service and maintain the vehicle.

4.4 The interior of the window area shall also have a large aperture high strength composite/steel panel to facilitate fresh air whilst holding the persons in the backseats. This cover must be for the entire surface area of the window. It shall act as an interior burglar guard.

4.5 The door pads shall be removed and replaced with solid smooth panels along the contour/geometry of the entire door. The windows and locking system shall still function from the front driver controls.

4.6 The rear seatbelt warning sensors for the backseats shall be disabled due to the application of the vehicle.

4.7 There shall be a key lock type operated metallic safe to hold ammunition and a hand pistol. Preferably to be a slimline unit that can fit under a seat. To hold at least three sets of ammunition rounds and one hand pistol.

4.8 Rifle locks to be supplied and installed for a pair of high caliber rifles/shotguns. The location for installation shall be done based on the vehicle and with conjunction with the Metro police officers.

4.9 Vehicles with a high step clearance (bakkies and SUVs) shall have a drop-down step installed to aid entry and exit. This can be mounted externally on the vehicle. It shall not inhibit the vehicle in any way. It shall be rubber lined, no sharp exposed metallic surfaces will be allowed.

4.10 All metallic interior items shall be powder coated in black.

5. Electrical and coupling requirements

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

5.1 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

5.2 Uninterrupted power supply point and a permanently installed antennae to be accommodated for two-way radio system in the vehicle.

5.3 Siren Amplifier

Type	Digital Siren Amplifier with a 12/24-volt operating system. Minimum speaker output of 8ohms impedance and 120 to 130-watt RMS. Minimum 4 tons as per applicable legislation for police vehicles including HRT functionality.
Impedance & Output	Impedance to be between 8ohms to 11ohms per output. It is imperative that the amplifier is able to supply an output, in respect of impedance and wattage, which is compatible to the respective speaker/s fitted with the system.

Functions	Functions to include air horn, with input and output auxiliary ports. Amplifier must be compatible to all components linked or related to the integrated functioning of the blue lights and siren, including external modules.
Mounting	The amplifier is to be fitted with-in the vehicle in manner which restricts it from being subjected to excessive vibration and allows for the amplifier to optimally cool itself, via its internal fan, during operation. The amplifier must be mounted and connected in a manner in which it does not affect or compromise any of the respective vehicle's operating system or devices.

5.4 Siren Speakers

Type	Round, (Bell Compatible), Non-fatiguing, self-aligning sound chamber waterproof/weather resistant assembly. 100-Watt, 8 ohm power handling for high intelligibility and sound penetration
Dimensions	5.25"-6" speaker/driver size
Functionality	Able to withstand DB supply of 120 to 130 dbs per speaker with minimum sound distortion not exceeding 5%
Application	Round Speaker to be mounted into the vehicle front grill/bumper allowing for maximum sound output.
Mounting	All necessary mounting clamps and brackets constructed from stainless steel or aluminum to be provided by contractor for mounting the speakers on the vehicles including all tightening and fasteners (stainless steel nuts, bolts, screws, etc).

5.5 Control panel

Functions	The various functions including siren, lights, LED Blaster switching and auxiliary to be integrated via touch of a button and also be able to function independently. All switches and control ports must be able to withstand the amperage demand by the components that are to be operated by the respective switches. City Fleet reserves the right to request proof of such data should the need arise.
Switches	Selector switches to include flash pattern selection and a separate switch for operation in the cruise light mode. A Main switch must be incorporated into system to shut system completely, including that of standby mode.
Mounting	Switch box to be mounted onto the vehicle with fasteners enabling easy removal and re-fitment (**mounting to be done in consultation with City Fleet personnel**).
Power/ indicator warning Lights	To provide an indication to the user if the system is in current operation stage or shut down state.
Application	Switches to be able to withstand external working conditions i.e. weather and climate conditions. Minimum 4 waterproof switches per box.

6. Lighting

All shall be waterproof slim line Generation 3 type LED consisting of 1 watt with blue coloured polycarbonate lenses with random flash pattern positioned around the vehicle;

6.1 A pair of emergency LED lights to be installed facing the rear of the vehicle.

6.2 Eight 6 Head LED module and a pair of LED blasters to be mounted forward facing of the vehicle. Position and installation points shall be finalised at the time of order with City Fleet officials.

6.3 Two adjustable rubber encased 48w LED spotlight shall be installed flush to the sides of the vehicle illuminating the surroundings of the vehicle with adjustable angles as needed when on site.

7. Vehicle types

The vehicles for the customization shall be supplied from eThekwini Municipality. The categories of vehicles are as follows:

7.1 Light motor passenger vehicles
7.2 Club and Double cab vehicles
7.3 SUV type vehicles

The installation shall be carried out with approval from the OEM and eThekwini City Fleet Officials. The bidder shall be able to provide all associated equipment and tools for installation.

Item 36: Technical specification for a search and rescue vehicle customization

2. Scope

The intent of this specification is to provide modifications and customization for a fully operational vehicle, which has the capability to do search and rescue functions for coastal and rough terrain environments. This customization consists of fitment of accessories and corrosion protection to the vehicle. This is a vehicle for the Metro Police department, hence all lighting must be in the according color.

2. Vehicle

2.1 The chassis/body for the customization for this item shall be a heavy-duty LDV. Vehicles are already in possession by eThekwini's City Fleet Department. The bidder shall use these vehicles to undertake the work.
2.2 The vehicle shall be fit with the following accessories;
2.2.1 Multimedia Radio unit with Bluetooth handsfree cellphone capability and speakers and mic.
2.2.2 Reverse camera which should integrate with monitor in 2.2.1.
2.2.3 2 x 12v charging sockets for cabin of vehicle.
2.2.4 Four ECE approved 6" LED fog lamps (should use existing fog lamp switching of vehicle's).
2.2.5 Heavy duty winch (M9000) with safety hook mounted to the front bumper (Bumper specified in 4.6.4).
2.2.6 All windows (excl. windscreen) to be smash and grab tinted to the maximum allowed legal limit.
2.2.7 Suspension upgrade for front and rear axles including;

Spring toy and bush kit
Dakar/Rally specification leaf springs
Coil spring toy
Sway bar kit
Sport shock absorbers

2.2.8 Tyres to be upgraded to BF Goodrich 285x70x17 (old/original tyres to be returned)

3. Material specification

The load bearing structures shall be made from light weight structural steel to withstand the payload and wear. Aluminium and/or stainless steel is recommended.

4. Construction requirements

All items shall be bolted and fastened with lock washers onto the rear body. Adaptor plates/assemblies shall be welded where necessary to create a sub-mounting point for the various storage compartments and equipment. The configuration shall be such that all equipment and structures fitted can be removed to return the vehicle to close to original as possible.

4.6 Rear access loading area and bumpers

4.6.1 Aluminium or stainless-steel gullwing type canopy with solid doors on the rear and sides. All doors to be lockable with integrated locks. Should have robust hinges and the roof shall be strengthened with integrated supports for a roof rack. A LED light shall be installed with a control mounted in a user-friendly access point if not automatically operated with doors action of opening and closing.

4.6.2 Aluminium or stainless-steel roof racks full size shall be for the canopy and vehicle for loading of a kayak/canoe. Holdfast brackets and/or wedges to be strategically located with tie down points and heavy-duty rachet straps. To be supplied for loading two crafts successfully.

4.6.3 Installation shall be completely bolt on and bidder shall provide all mounting hardware and fasteners. Installation shall be waterproof and will be tested before/upon delivery. All fasteners, ratchets and material outside the canopy and roof rack shall be at least galvanised if not aluminium or stainless steel.

4.6.4 Manufacture and Fitment of an Onca type Front Bumper, or equivalent with a full width and height bulbar with overlap onto the front fenders: A heavy duty front bumper, integrated with a bull bar and a one-piece skid plate (sump guard). The bumper must incorporate two head lights and indicators with mesh guards. Two rescue hooks to be incorporated on to the chassis. The bumper shall be mounted to the chassis as it will be used with the winch. The front of the bull bar shall be covered with a wire mesh to protect the front grill and headlights. It shall follow the contour of the front of the vehicle to the side of the fenders.

4.6.5 Manufacture and Fitment of an Onca type Rear Bumper, or equivalent: A heavy-duty rear bumper integrated with two Rescue Hooks on the rear chassis. An adjustable ball type tow bar with electrical harness and female socket to be mounted at the rear bumper with a safety cover. Rear lights to have fastened metallic mesh guards.

4.6.6 Under belly protection for the radiator, engine and drive line of the vehicle. Shall be installed with fasteners and lock washers.

4.6.7 A pair of six-meter chains with safety hooks to aid clearing obstacles.

4.6.8 4.5 kg Fire extinguisher to be mounted in the canopy/bin with a quick release holding cradle.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material, preferably rubber or polyurethane. The shelving shall have a non-slip rubber lining to reduce movement of items placed on it.

5. Lighting

All shall be waterproof slim line bar Generation 3 type LED consisting of 1 watt with red/blue coloured polycarbonate lenses with random flash pattern positioned around the vehicle;

5.1 A pair of emergency LED lights to be installed on the top of the rear tailgate.

5.2 Eight 6 Head LED module and a pair of LED blasters to be mounted forward facing of the vehicle. Position and installation points shall be finalised at the time of order with City Fleet officials.

5.3 Two adjustable rubber encased 48w LED spotlight shall be installed to the rear top of loading area/canopy with adjustable angles to forward and the side as needed when on site.

5.5 A 100-120 w Spot Light 430-450 mm 7560 LM mounted to the front passenger side of the vehicle. Controllable from the seated passenger position.

6. Metal Preparation and Corrosion Protection Procedure

The following procedure must be adhered to:

6.1 Under chassis components (under vehicle protection panels and guards, wheels, suspension, brakes, exhaust, front and rear axle etc.) to be disassembled to component level for preparation
6.2 Descale all metal surfaces
6.3 Grind down & smooth all rough edges
6.4 Thoroughly clean all surfaces
6.5 All components, under carriage and chassis itself shall be treated with Waxoyl Hardwax SF.
6.6 Two coats are required. Thickness shall be a minimum of 200um or better. Care to be taken where interference fits of components are required.
6.7 All components to be reassembled and inspected by OEM for non breach of warranty.
6.8 The vehicle body and panels (bonnet, fenders, doors, all interior panels of the cabin etc.) shall all removed and coated with a 50um Waxoyl Topwax. N.B all metallic items to be coated including lights, brackets etc.)
6.9 Interior of doors, panels, bonnet, fenders, bumpers and other body parts shall be protected with Waxoyl cavity wax where it cannot be coated with Topwax. Adequate amount shall be applied for the application.
6.10 All backing plates (Dust shields) must be sent for sandblasting and galvanizing.

7. Colors

Shelving internal	Rubberized interior
External	Waxoyl treatment for body and chassis
Load Bin internal	Rubberized
Vehicle external	Blue and White / Yellow with custom search and rescue decals

8. Electrical and coupling requirements

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

8.1 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
8.2 Trailer light socket to be fitted adjacent to the slimline tow hitch. Electrical connector complying to; SANS 1327: Electrical connectors for towing and towed vehicles and,

8.3 SANS 11446/ ISO 11446: Passenger cars and light commercial vehicles with 12 V systems -3-pole connectors between towing vehicles and trailers - Dimensions and contact allocation

8.4 Trailer coupling to comply with SABS 1505, Ball type couplings and towing brackets for towing caravans and light trailers.

8.5 Siren Amplifier

Type	Digital Siren Amplifier with a 12/24-volt operating system. Minimum speaker output of 8ohms impedance and 120 to 130-watt RMS. Minimum 4 tons as per applicable legislation for police vehicles including HRT functionality.
Impedance & Output	Impedance to be between 8ohms to 11ohms per output. It is imperative that the amplifier is able to supply an output, in respect of impedance and wattage, which is compatible to the respective speaker/s fitted with the system.
Functions	Functions to include air horn, with input and output auxiliary ports. Amplifier must be compatible to all components linked or related to the integrated functioning of the blue lights and siren, including external modules.
Mounting	The amplifier is to be fitted with-in the vehicle in manner which restricts it from being subjected to excessive vibration and allows for the amplifier to optimally cool itself, via its internal fan, during operation. The amplifier must be mounted and connected in a manner in which it does not affect or compromise any of the respective vehicle's operating system or devices.

8.6 Siren Speakers

Type	Round, (Bell Compatible), Non-fatiguing, self-aligning sound chamber waterproof/weather resistant assembly. 100-Watt, 8 ohm power handling for high intelligibility and sound penetration
Dimensions	5.25"-6" speaker/driver size
Functionality	Able to withstand DB supply of 120 to 130 dbs per speaker with minimum sound distortion not exceeding 5%
Application	Round Speaker to be mounted into the vehicle front grill/bumper allowing for maximum sound output.
Mounting	All necessary mounting clamps and brackets constructed from stainless steel or aluminum to be provided by contractor for mounting the speakers on the vehicles including all tightening and fasteners (stainless steel nuts, bolts, screws, etc).

8.7 Control panel

Functions	The various functions including siren, lights, LED Blaster switching and auxiliary to be integrated via touch of a button and also be able to function independently. All switches and control ports must be able to withstand the amperage demand by the components that are to be operated by the

	respective switches. City Fleet reserves the right to request proof of such data should the need arise.
Switches	Selector switches to include flash pattern selection and a separate switch for operation in the cruise light mode. A Main switch must be incorporated into system to shut system completely, including that of standby mode.
Mounting	Switch box to be mounted onto the vehicle with fasteners enabling easy removal and re-fitment (**mounting to be done in consultation with City Fleet personnel**).
Power/ indicator warning Lights	To provide an indication to the user if the system is in current operation stage or shut down state.
Application	Switches to be able to withstand external working conditions i.e. weather and climate conditions. Minimum 4 waterproof switches per box.

8.8 Auxiliary Vehicle Booster System

1 x 12v Battery	Minimum 75 Ah deep cycle, maintenance free, battery
1 x Set Booster Cables	600-amp booster cables, red and black insulation. Cables must be fitted with fully insulated 600-amp crocodile clamp on one end a heavy-duty Anderson plug on the other end.
Mounting	Battery to be securely mounted in a rust and acid resistant hold-in container with ample ventilation for battery. Battery is to be linked to vehicle primary charging circuit via a circuit break relay and cole hersee solenoid. Main cables from battery to be linked to a heavy duty Anderson plug, which is to be fixed mounted onto the tow bar.

9. Signage and Markings

9.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary on the items mention in chapter 4.

9.2 Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

9.3 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

9.4 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

9.5 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

9.6 Registration number to be clearly marked on roof.

Item 37: Armored mobile resources panel van

1.Scope

The intent of this specification is to provide for a fully armored operational vehicle to transport staff and equipment for the bus ticketing services.

2. Vehicle

The vehicle for this item shall be a panel van provided from eThekwini Municipality as it shall be part of the existing fleet.

2.1 The exterior of the vehicle shall be strengthened to B4 protection level, and the locking systems shall be changed to a specialized robust system that is tamper and shock proof. The doors shall be lockable from inside and outside the vehicle using a mechanical locking system. The access for the keys must be completely concealed.

2.2 Windows and windscreen to be upgraded to B4 protection level protection compliant.

2.4 Windows and windscreen to be protected by a 3CR12 metal grid. Aperture should be reasonable such that sight is not inhibited to operate the vehicle.

2.5 The front shall have an ADR complaint nudge bar.

2.6 Front grill to be redesigned to a metallic structure with a fine 3CR12 mesh grid to not allow any damage to the engine components. Minimum thickness of steel and mesh to be 4.5 mm.

2.7 All tyres to be removed (and returned) and rims to be fitted with run flat tyres similar to static Runflat.

3 Interior of the superstructure

3.1 There shall be a custom manufactured workstation specific to the equipment being supplied. The top tier of this workstation shall have a cover that encloses the equipment. Other tiers shall have roller doors. The workstation shall be the full longitudinal length and shall be at a user-friendly height.

3.2 Safes shall also be incorporated to store cash.

4 Power and distribution equipment

4.1 Supply and fitment of distribution board with surge arrest circuit breakers and line filter for all power points. Network set up for TV/monitor, computers and WIFI. Supply and fit 220 volt plug points as required for the safe operation of the audio/visual equipment listed below and additional plug points as stipulated by Municipal representative.

4.2 At the rear of the body there shall be a low noise generator (75 dB or better) with an electronic ignition and minimum capacity of 7.5kVA. It shall be mounted on slide out hinges such that the generator can be removed for maintenance and be easily refuellable. It shall be fully enclosed with the rear door being part of the enclosure. The back door shall be louvered allow heat dissipation and to deflect water ingression. There shall be a full-length EPDM seal on both circumferences of the enclosure to allow complete sealing of the unit. Exhaust shall be ducted outside of the body facing downwards underneath the chassis.

4.3 A pair of electric fans shall be mounted on the rear door and at the back of the enclosure of the generator to allow cooling through the rear door louvres.

4.4 There shall be solar panels on the roof of the superstructure with a regulator to charge the batteries of the generator and vehicle.

4.5 The generator shall have a remote switch installed to turn the generator on/off. Switch shall be near the workstation.

4.6 Supply and fitment of equipment as per specifications below:

Equipment Type	Equipment Specification	Equipment Quantity
Bus ticketing equipment storage and mountings	The eThekwini Municipality will be installing the bus ticketing system in the superstructure. The Bidder must provide hardware and ducting for the installation of the equipment. The bidder must also provide a lockable enclosure to house the items.	As required for the equipment
Network Cabinet	For the Secure Mounting and capsulation of components listed.	1
Air-conditioning	A roof mounted air-conditioning unit to be mounted at the top of the roof. System shall be adequate for the vehicle and the equipment and occupants. The air-conditioning shall be powered by the generator.	1
Oxygen and sensors	There shall be a minimum of four oxygen sensors in the loading area with automatic dispensing of oxygen into the cabin when the Carbon dioxide and monoxide levels become unsafe.	4 sensors 4 Oxygen tanks (10 kg)
Desk and chair	A desk with three drawers and a padded guest chair for the employee.	1
Lockers and shelving	Unallocated spaces in the rear body shall be used for storage of supplies. Lockers shall be for the storage of books, forms, files, stationery and consumables. Final design will be discussed with bidder at the time of order based on current user department requirements.	As required
Cables/ Wiring, Plugs & Adaptors	All power and av cables with fittings terminated shall be supplied for all components as per manufacturers requirements. All wiring shall be trunked throughout the interior of the superstructure.	As Required
Mounting Brackets	Where necessary the bidder shall be required to fabricated and install mounting brackets for the installation of components as per operational requirement. Material shall be minimum glavanised if not corrosion resistant with chromium and shall be powder coated.	As required
Fasteners	All Nuts, Bolts, Screws and fasteners must be stainless steel.	As Required

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap). All lockers, storage areas and work areas that may house or be used for equipment shall be lined with a non slip insertion rubber.

5. Colors

Storage compartments	Cream
Exterior of the vehicle	Black with custom branding of the entire vehicle which will be communicated at the time of order

6. Electrical

6.1 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

Items 6.2 to 6.3 to be powered by the generator;

6.2 Scene lighting to be supplied all around the body. The lighting shall be hooded to focus and illuminate the surroundings of the vehicle. Minimum of four (4) LED lights shall be installed.

6.3 Interior of the superstructure shall have LED strip lights. One to be mounted directly over the workstation. One to illuminate the rear where the generator shall be installed. Lockers shall also be illuminated.

6.4 All exposed electrical wiring looms of the chassis cab and superstructure shall be fully encased in a flexible protective metallic conduit and securely clamped with fasteners.

7. Signage and Markings

7.1 Data plates shall be fitted for:

a) The generator and batteries.

b) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

7.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

7.3 Chevron board and durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the superstructure/vehicle.

7.4 Retro-reflective tape shall be fitted to both sides and the rear of the tip- body as well as the rear bumper and the items in chapter 5 that make up the perimeter of the superstructure/vehicle.

7.5 Registration number to be clearly marked on roof (left to right, 80-90% size of the roof).

Item 38: Technical specification for a 4-5 Ton Rear Tipping Truck body with a custom crew cab

1. Scope

This specification is for a custom crew cab with rear tipping body that is has solid/caged sides with rear opening gates and a large stepped underrun. The tip-body shall be able to carry a payload of 4-5 tons (4 000-

5 000 kg). It will primarily be used to transport flora, street cleaning refuse, goods and equipment. Furthermore, a crew cab shall be built between the tip body and the main driver's cab and shall accommodate 8-10 persons.

2. Vehicle

The chassis cab/vehicle for this item shall be a single chassis cab, with a minimum Gross Vehicle Mass (GVM) of 9 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

2.1 The vehicle and the customisation shall be designed according to these critical specifications (summary of evidence shall be provided):

a) Tip body calculations with safety factors for rated payload. SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks can be used a guideline for safety factors.

b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.

c) The crew cab shall be ROPS/FOPS compliant for the amount of passengers.

b) The end of Section 7 covers other specifications/standards that shall be adhered to.

3. Major/Overall dimensions of tip body:

Description	Tip body dimensions (mm)	Crew cab dimensions (mm)
Body length (longitudinal)	3 000-3 200	2 200-2 500
Width (lateral)	2 500	2 500
Sides	50/50 solid drop side panels and caged panels	Solid enclosed body
Rear gates (caged)	Tailgate: 500-550 Pair of rear gates: 1 000	N/A
Total height to roof	1 500-1 550	2 000

4. Material specification

The superstructure shall be constructed of Corten corrosion resistant steel. The tip body floor shall have a hard-wearing wear plate fitted (Hardox). For the caged sides it shall be 3CR12 mesh with a fine aperture. Minimum of 4.5 mm thickness shall be used.

5. Construction requirements

5.1 Chassis mounting

All mounting to be in accordance with directives specified by the Original Equipment Manufacturer. The sub frame shall extend the full body length.

5.2 Crew cab

5.2.1 The crew cab shall accommodate 8-10 persons.

5.2.2 Seats shall be bench type with padded seats and backrests. The under of the seats shall be used as storage space and the floor shall be designed to prevent items from moving around in the cab.

5.2.3 There shall be sliding windows on each side of the crew cab and a window in line with the driver's cab in the front and back panel. Windows shall be minimum size as the driver's cab. An outside mounted louver/windshield to deflect water ingression shall be installed on each window.

5.2.4 Adjustable seatbelts shall be installed for the occupants.

5.2.5 The roof shall have a tinted skylight which shall also act as an emergency exit. Roof shall have a gradient which shall allow roll-off of water to the front and back. Sills shall be installed on the roof top sides to keep water away from the door and windows.

5.2.6 A pair of interior lights shall be installed with a switch near the entrance.

5.2.7 The passenger side door shall be outside hinged and have a seal around the entire circumference. Shall have lockable door latch from inside and outside.

5.2.8 There shall be four ventilation points close to the roof on either end with an outside mounted louver to deflect water ingression. An inside cover (slide or roll type) must also be installed.

5.2.9 Grab handles shall be installed in the interior to aid seating and exiting of the seat. Safety handles shall be installed when entering and exiting the crew cab with safety steps the same minimum height as the driver's cab.

5.3 Tip Body

5.3.1 The tip body shall be mounted at the rear most of the chassis and it shall incorporate a drop-side styled tailgate and sides.

5.3.2 The tailgate shall have cast type corner latches to secure the tailgate.

5.3.3 There shall be holding points that will keep the tailgate in place when opened and tipping.

5.3.4 There shall be a replaceable EPDM seal fitted to the tailgate and rear body where they meet when closed on the sides and bottom.

5.3.5 The rear-underrun shall be a step to gain access to the tipping body. It shall not interfere with the operation of the tailgate and tipping operation.

5.3.6 Platform and steps shall be covered with tread plate (Vastrap).

5.3.7 Two grab handles 400 mm each in length shall be fitted to assist entry on both the right-hand side and the left-hand side of the step.

5.3.8 A tread plate (Vastrap) covered step shall be fitted to the inside of the tailgate for further assistance with access into the body. A pair of grab handles (400 mm) shall also be installed to assist getting onto the step.

5.3.9 The sides shall be to the roof height of the built crew cab and mounted on all sides of the vehicle to create an enclosed body. The rear shall be an outside hinged pair of gates opening out to the rear. The gates shall be full lateral width and full vertical height from the tailgate to the rest of the structure. Holders on each outer side panel shall be mounted to hold each gate when tipping.

5.3.10 The 3CR12 fine mesh shall be supported by structural members (lateral, longitudinal and vertical) and shall be fixed in place to create the gates.

5.3.11 The inside panel adjacent to the crew cab shall have a meshed section with similar dimensions as the rear window of the crew cab to aid viewing. The rest of the panel shall be solid.

5.3.12 Protection of the fuel tank, hydraulic tank and air tanks shall be provided by structural frames with plate/sheet metal enclosing the item and bolted to the chassis where possible. The batteries shall have a lockable weather proof top cover to prevent debris and water ingression.

5.4 Tipping

5.4.1 Tipping operation shall be achieved by means of an under body, multi stage hydraulic cylinder which is mounted upon a suitably reinforced full length sub frame. Tipping angle shall not be less than 45˚.

5.4.2 The sub frame must start as close as possible to the rear of the truck cab in order to spread the stresses imposed.

5.4.3 An electrical switch shall be mounted on the sub frame which automatically activates a buzzer and light fitted inside the cabs dashboard when the body is raised.

5.4.4 The tipping control must incorporate the following individual positions: Raise, Hold, Lower.

5.4.5 When released the lever must automatically enter the "Hold" position.

5.4.6 A mechanical safety device shall be installed to hold the body in the raised position.

All items in chapter 5 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

6. Hydraulic system

6.1 In respect of the hydraulic tank the following shall be required:

- 6.1.1 To be constructed of steel.
- 6.1.2 To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.
- 6.1.3 To be fitted with a bump guard from externalities.
- 6.1.4 To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.
- 6.1.5 Must have a filler cap strainer & filter into filler base and filler cap assembly.
- 6.1.6 Oil capacity shall be double that of the oil capacity of the hydraulic cylinder.

6.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the tipper / solenoid valve system.

6.3 The hydraulic valves shall be grouped together for ease of maintenance.

6.4 Test points for testing hydraulic pressures shall be fitted and grouped together.

6.5 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.

6.6 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.

6.7 Safety hold valve to be fitted in case of hydraulic failure.

6.8 System shall be rated for 5 000 kg lifting capacity.

7. PTO/Electrical drive for hydraulic system

7.1 The hydraulic system shall be electric driven or a closed coupled PTO and approved by the OEM mechanically and electrically for use on the engine/transmission and the wiring systems of the vehicle for the engagement of the motor. Any modifications to the vehicle to accommodate the motor must be approved by the truck manufacturer and not affect the trucks warranty in any way.

7.2 The engine and transmission must not be harmed by use of the drive/motor.

7.3 The fitment of the drive/motor should not negatively impact on the vehicles ground clearance.

7.4 The drive/motor must only run when the tipping control is engaged. The system will not allow the motor to be engaged if the vehicle is in gear or if the handbrake is not engaged.

7.5 There must be a warning buzzer and light if the motor is engaged whilst the vehicle is in motion.

7.6 Drive system shall be rated for a 5 000 kg lifting capacity hydraulic pump and lifting system.

7.7 Calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

8. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

8.1 Descale all metal surfaces

8.2 Grind down & smooth all rough edges

8.3 Thoroughly clean all surfaces

8.4 Prime the unit and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.

8.5 Thereafter paint using a coat of premium quality twin pack automotive paint

8.6 Two primer coats and one colour coat shall be minimum.

8.7 Paint film thickness (color coat) must not be less than 80 microns each.

9. Colors

Underside of Body	Black
Chassis Cab	Verdi Green/Yellow/Blue or White
Superstructure	Verdi Green/Yellow/Blue or White

10. Electrical

10.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100mm in diameter that are screwed into position with a stainless-steel flange.

10.2 Extra indicator stop and taillight (as per specification in 10.1) units to be fitted on top of the rear opening gates on the solid panel.

10.3 Reverse buzzer and warning flashing light to be installed when reverse gear is engaged.

10.4 Four LED amber beacon strobe lights shall be installed on top of the superstructure (one pair on rear end of the tip body and one pair on the front end of crew cab). Each shall be placed in a corner seated on top of a holding bracket for elevated height.

10.5 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

10.6 Accommodation and fitment of a two-way communication device (details shall be supplied from eThekwini Municipality).

10.7 All exposed electrical wiring looms of the chassis cab and superstructure shall be fully encased in a flexible protective metallic conduit and securely clamped with fasteners.

11. Signage and Markings

11.1 Data plates shall be fitted for:

a) The hydraulic system indicating tank capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

b) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

c) Safe working load (SWL) of the rear body shall be clearly labelled on both sides of the body.

11.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

11.3 Chevron board and durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

11.4 Retro-reflective tape shall be fitted to both sides and the rear of the tip- body as well as the rear bumper and the items in chapter 5 that make up the perimeter of the vehicle.

11.5 Registration number to be clearly marked on roof (left to right, 80-90% size of the roof).

12. Miscellaneous items

12.1 Front mud flaps and full rear mudguards constructed from rubber or a durable polymer.

12.2 The batteries to have a well-insulated lockable weather proof cover to prevent debris and moisture ingression.

12.3 Fuel tank, batteries, pneumatic cylinders and hydraulic tank to have shelled structures built around them for safety.

12.4 Bolt on covers for safety where parts are rotating, swinging or of high temperature.

12.5 A 4.5 kg fire extinguisher should be supplied and fitted in an accessible position close to the driver when exiting the cab.

12.6 One complete spare wheel and one set of emergency changing tools shall be supplied per vehicle.

12.7 Bolt on head and tail light guards.
12.8 A sufficient capacity water caddy with dispenser to be mounted in a cool, dry and safe location to store drinking water for the occupants of the driver's cab and the crew cab. It shall be easily accessible to clean and refill.

Item 39: Technical specification for customization of vehicles with a skid tank diesel refueling system

1. Scope

The intent of this specification is to provide for a full mobile system, which has the capability to refuel vehicles and other equipment with diesel on-site whilst being transported on the rear of a light delivery vehicle. The system is intended to have an electric powered system that can safely pump fuel to the on-site vehicle/equipment. The skid tank and the powered system and accessories shall be easily removable from the vehicle if required. There shall also be the supply of additional storage boxes for tools and equipment.

2. Vehicle

2.1 The vehicles shall be provided by eThekwini Municipality for the customization. It shall be a single cab (one ton) light delivery vehicle (Isuzu or Toyota).

2.2The vehicle shall be fit with the following accessories;

2.2.1 First aid emergency kit.
2.2.2 Fire extinguisher.

3. Material specification

The tank and load bearing items shall be made from light weight non corrosive steel to withstand the payload and wear whilst being suitable for the application. It shall in no way contaminate the fuel being transported.

4. Construction requirements

4.1 Skid tank system

4.1.1 Tank to be designed and manufactured to SANS 10131:2004 Above-ground storage tanks for petroleum products.
4.1.2 Minimum capacity of 500 litres.
4.1.3 To have a sub chassis that can easily accommodate loading and offloading of the unit using a forklift. The sub chassis must have quick release couplers for fastening the system to the floor of the LDV.
4.1.4 220-240V AC operated pumping system with a hose of at least 20 metres and a trigger type nozzle. Hose shall be easily coupled in case it needs to be replaced and shall be installed on a hose reel system.
4.1.5 Analogue or digital read out of litres pumped and tank capacity.
4.1.6 At the rear of the load bin there shall be a generator (preferably industrial) with an electronic ignition and minimum capacity of 5kVA. It shall be mounted such that the generator is in place whilst in transit and can be removed for maintenance and be easily refuellable. There should be a top cover installed to deflect water ingression. The generator shall have at least two waterproof AC plug outlets (one for the skid tank pump and the other for general purpose use on site).

4.2 Tool boxes

A multipurpose waterproof lockable toolbox shall be installed in the rear load bin with a pull out top tray. The toolbox will store typical tools for a mobile mechanic.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces. All exposed fasteners shall have a protective encasing.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces. All exposed fasteners shall have a protective encasing.

5. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

5.1 Descale all metallic surfaces
5.2 Grind down & smooth all rough edges
5.3 Thoroughly clean all surfaces
5.4 Items shall be powder or epoxy coated.

6. Colors

Structures	Safety yellow
Loading bin interior	Rubberised

7.Electrical items, lighting and coupling requirements

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

7.1 Reversing camera, buzzer and warning light to be installed when reverse gear is engaged (if not installed already).
7.2 Bluetooth radio/cd player with handsfree cellphone capability with speakers and mic (if not installed already).
7.3 Items 7.1 and 7.2 shall be an integrated media center if installed.
7.4 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
7.5 Two adjustable rubber encased 48w LED lamps shall be installed to the rear top of loading area/the skid tank with adjustable angles to forward and the side as needed when on site.
7.6 Heavy duty steel step type rear bumper with a tow hitch shall be installed.
7.7 Trailer light socket to be fitted adjacent to a removable/shunting type tow hitch with rear steps on the bumper. Electrical connector complying to; SANS 1327: Electrical connectors for towing and towed vehicles and,
7.8 SANS 11446/ lSO 11446: Passenger cars and light commercial vehicles with 12 V systems -3-pole connectors between towing vehicles and trailers - Dimensions and contact allocation
7.9 Trailer coupling to comply with SABS 1505, Ball type couplings and towing brackets for towing caravans and light trailers.

8. Signage and Markings

8.1 Data plates shall be fitted labelling the bowser tank and fueling capacity of these items. Safe working loads should be labelled where necessary on the items mention in chapter 4.

8.2 Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

8.3 Hazardous chemical transporting signage to be placed at the sides and rear of the tank/vehicle according to SANS 10232.

8.4 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle and its customization that impose a need for the driver to be aware off.

8.5 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/ staff with the operation/maintenance of the vehicle.

8.6 All controls in chapter 4 and 7 shall be clearly labelled.

8.7 Registration number to be clearly marked on roof.

Item 40: Technical specification for a 7000L Combination Jetting/Vacuum superstructure

1.Scope

1.1 The intent of this specification is to provide for a fully operational combination high pressure water jetting and high air flow vacuum vehicle for the maintenance of drains, sewers and associated tasks. The suction system shall be able to handle recycled and grey water, slurry and sludge over and above general sewers.

1.2 The water supply to the jet pump will come from the vehicles water tank.

1.3 The high-pressure system shall be independent from the vacuum system.

1.4 The unit shall incorporate an air conveyance vacuum system that will if necessary, provide for the simultaneous removal of debris flushed to the manhole by the high-pressure water system or the removal of debris from sumps, catch basins, digesters, wet wells etc.

1.5 All operating controls should be located at a suitably located operator's station. The controls should be lockable when not in use.

1.6 The hydraulic tipping controls shall be placed in a position that the operator may safely operate the rear door.

1.7 The unit shall be supplied with all the necessary equipment in order for it to function.

2. Vehicle

The chassis cab/vehicle for this item shall be an 4x2 single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 13 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The combination tank will be made out of 3CR12 Stainless Steel. The tank will be constructed using a minimum of 4.5 mm thick plate with a minimum of 6 mm end plates, the outer skin of the water tank may be constructed using a minimum of 3 mm plate.

4. Construction requirements

4.1 Combination Tank

4.1.1 All mounting to be in accordance with directives specified by the Original Equipment Manufacturer (OEM).

4.1.2 It must be a sectioned rear tipping type tank. The rear section being the vacuum area shall have a waste capacity of approximately 3 000 litres and the front section having a capacity of approximately 4 000 litres for fresh water.

4.1.3 Suitable baffles shall be designed and installed to both tanks to increase the strength due to water surge and sloshing that will be experienced.

4.1.4 The water tank must have a drainage / inspection sump. The tank must have a suitable dump valve to discharge the excess water quickly and in a suitable location.

4.1.5 The waste tank must incorporate a strainer section which shall separate the sludge from water so that the excess water may be discharged via necessary valves. In addition, a Ø150 mm PN16 ball dump valve to facilitate total discharge of the tank, situated as low as possible and at a downward angle is required.

4.1.6 A high level sealable hatch should be incorporated in an easily accessible location for each tank for cleaning and maintenance purposes. It shall incorporate a pressure relief valve and rupture disc protection.

4.1.7 The water tank inlet must be a male hydrant coupling attached to a Ø75 mm ball valve with a supply in line primary pre-tank water filter with a vacuum/pressure breaker. The outlet to the high pressure pump must incorporate an anti-vortex device.

4.1.8 A 19 mm tap must be fitted in a suitable place to provide clean water for the washing of hands.

4.1.9 The waste tank must tip up hydraulically to a minimum of 40º to the rear to facilitate the dumping of the debris from the waste tank via the rear door. The design of the waste tank should enhance the total discharge of debris when the tank is tipped. The tank must incorporate a safety system that will hold the tank in its tipped position in case of hydraulic failure.

4.1.10 The rear door must be hinged at the top and the opening mechanism must be hydraulically operated to accommodate this configuration. The door shall be completely sealable and shall have a heavy duty replaceable EPDM seal that is corrosion resistant and resistant to high mechanical wear.

4.1.11 Tank rear shall have flared chutes to aid spillage when off-loading.

4.1.12 A system must be incorporated that will prevent the rear door from slamming shut in the event of a hydraulic failure.

4.1.13 The tank must have a minimum of three locking devices for the sealing of the rear door which must completely seal the contents.

4.1.14 The vacuum tank must have a working vacuum up to 0.90 Bar.

4.1.15 The water/vacuum tanks and cyclones or a similar separation system must have sight glasses fitted in strategic places that may be removed easily for cleaning.

4.1.16 There shall be a protective sectioned guide at the discharge valve at the rear of the tank.

4.1.17 All tanks shall be expected to be nondestructive tested, 10x x-ray, water fill and pressure tested.

4.2 Gulley/Section Arm

4.2.1 A top mounted 150 mm diameter gulley arm with a minimum rotation of 150° must be fitted.

4.2.2 It must be attached to the vacuum tank via a suitable diameter ball bearing swivel joint. The joint shall preferably be maintenance free. The arm should be supported by a cradle when in its transport resting position.

4.2.3 The controls of the arm must be mounted in the control panel. The flexible hose must be suitably supported by rollers and have all the necessary couplings.

4.2.4 The hydraulic control valve must incorporate a variable control to allow for fine adjustments of the lifting or lowering of the suction hose at full power.

4.2.5 A suitable method of securing the flexible hose when the suction arm is resting in its cradle is required.

4.3 Jetting System and Hose reel

4.3.1 Clean water from the high pressure pump must be fed to an easily accessible hydraulically operated hose reel. The reel should be mounted on the rear tank door and must be able to rotate laterally at 30°.

4.3.2 The hose reel must have a suitable method of locking it in whilst the vehicle is mobile.

4.3.3 The hose reel must be fitted with a suitable rotary system and operate hydraulically in both directions at variable speeds with a constant torque.

4.3.4 The hose reel must be capable of holding 180 m of 25 mm sewer hose and be supplied with 120 m of suitable urethane covered reinforced hose.

4.3.5 Adjacent to the tank there shall be a hose reel mounted to the rear platform with jetting hose and end couplings. It shall be the same capacity and supplied as 4.3.4.

4.4 Hosing and Nozzles

The unit must be supplied with: a 150- 100 mm reducer, 2 x 4m, 2 x 3m, and 2 x 2m of 100 mm rubber suction hoses fitted with male / female Perrott, and a 1m castled 3CR12 suction pipe with a female Perrott.

The following nozzles shall be supplied per truck:

a) Ø 1 X ENZ 1" (30.100) Retro jet nozzle or similar approved
b) Ø 1 X ENZ 1" (60.100) Pointed Nozzle or similar approved
c) Ø 1 X ENZ 1" (40.100) Grenade Bomb Nozzle or similar approved
d) Ø 1 X ENZ 1" (04.060) Rotating Pipe Cleaning Nozzle or similar approved

4.5 Hose Trays

4.5.1 The unit will also have the following features mounted in, at or on appropriate places:

4.5.2 A lockable lid hose compartment on the right hand side tank 500 mm wide x 200 mm deep and the full length of the tank

4.5.3 The same size compartment as in 4.5.2 shall be on the left side of the truck with separate lockable lids and compartments for smaller tools in the following configuration:

a) Large toolbox for spades, picks, water metre etc.

b) Medium toolbox for rain suits etc.

c) Small toolbox for nozzles etc. at rear of machine.

4.5.4 In between the lockable boxes and the tank, shall be a slimline storage compartment to hold solid bar material which range in length from 6 000-7 500 mm.

4.5.5 There shall be a suitable lockable holder system to accommodate an extension ladder.

4.6 Road Cones and Portable Signs

Provision must be made to safely secure large road cones and typically used 900 mm road signage within the body.

4.7 Control Panel

All controls for the operation of the machine shall be fitted to an illuminated, lockable, water resistant control panel. (Excluding the hydraulic tip and rear door controls that should be mounted clear of the rear door for safe tipping and discharge of the tank).

The controls shall where possible be electronic, and activate the necessary servos (either pneumatic or hydraulic) that will activate the operation. All actions will be fully adjustable at variable speeds for the operation of the machine. A plug in, modular type, control panel is preferred for ease of maintenance.

All servos and valves to be mounted in a safe and easily accessible place for ease of maintenance.
All electrical devices must be splash resistant.
The unit must have the following controls as a minimum:
a) Water pressure gauge (Mounted externally)
b) Vacuum gauge

c) Hydraulic pressure gauge (Mounted externally)
d) Emergency stop
e) Engage/disengage water pump
f) Engage/disengage vacuum pump
g) Boom up and down
h) Water to reel on/off
i) Rotary warning switch
j) Rear work light
k) Low level water alarm that sounds when the water reaches the 1000 litres level with a relay to switch off the alarm after 30 seconds and automatically resets itself when tank is filled.
l) A low level cut out device that disengages the high pressure pump when the water in the tank reaches 200 litres and automatically resets itself when the tank is filled.
All functions must be clearly marked. Control panel shall have a lock-out feature to protect against unwarranted use.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Hydraulic system

5.1 In respect of the hydraulic tank the following shall be required:
5.1.1 To be constructed of steel.
5.1.2 To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.
5.1.3 To be fitted with a bump guard from externalities.
5.1.4 To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.
5.1.5 Must have a filler cap strainer & filter into filler base and filler cap assembly.
5.1.6 Oil capacity shall be sufficient such that the system does not overheat, a cooler shall be installed if required.
5.1.7 Spin off, pressure relief, safety holding and other necessary valves are required.
5.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the tipper / solenoid valve system.
5.3 The system shall have a shut off valve at the outlet of the tank.
5.4 The hydraulic valves shall be grouped together for ease of maintenance.
5.5 Test points for testing hydraulic pressures shall be fitted and grouped together.
5.6 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.
5.7 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.
5.8 Safety hold valve to be fitted to the cylinders in case of hydraulic failure.

6 Power Take Off (PTO)

6.1 The vacuum and high pressure and hydraulic pumps must be driven, independently, via clutches, from preferably a closed coupled P.T.O. capable of delivering at least 20 % more power than the maximum continuous power rating of the systems driven by it.

6.2 The PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.

6.3 The engine and transmission must not be harmed by use of the PTO.

6.4 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

6.5 Electronic control module and wiring harness which incorporates the “Rev Up Limiter” must be integrated into the existing OEM vehicle using the OEM 24 Volt system.

6.6 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.

6.7 The accelerator pedal cannot be used, while the PTO is engaged.

6.8 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

7. High Pressure Pump

7.1 The high pressure water pump must be capable of producing a flow of not less than 230 litres per minute at a constant pressure variable from 65 to 250 bar.

7.2 The pump shall be durable enough to handle recycled water.

7.3 High quality materials such as stainless steel on the inlet and outlet valves, ceramic coated internals of the pump, hardened materials for the internals and pump head, double bearing and seal system is recommended for the pump.

7.4 The pump’s oil level shall be easily visible with an indicator.

7.5 It must be fitted as per manufacturer’s specifications in an easily accessible place with all relevant safety features i.e. regulator, secondary filtration, tank returns etc.

7.6 Should be robust, high volume, high pressure, gear driven, three piston pump or better.

7.7 The fitment of the high pressure pump should not negatively impact on the vehicles ground clearance.

7.8 The pump should include an adjustable by-pass valve and pressure release valve. A three way change over valve should redirect the flow from the hose reel to a manual by-pass or to an auxiliary take off point.

8.Vacuum System

8.1 The blower must create and maintain a suitable vacuum with a free air flow of, not less than, 400 litres/second. This air flow shall have the necessary velocity to meet the design criteria and to ensure that the ancillary equipment (cyclones etc.) has the ability to remove the debris and water from the system before it reaches the blower.

8.2 The blower shall be fitted as per manufacturer’s specifications and in an easily accessible location with all adequate relevant safety features i.e. vacuum breakers, primary and secondary filtration, exhaust/silencer etc. It must be driven from the in line P.T.O. and will be capable of 100 % duty at 50 kPA. All exposed drives must be suitably guarded.

8.3 The system must be protected as per the manufacturer’s specification and for the specific application.

It must also have the following features:

8.3.1. An easily removable, strainer inside the tank door.

8.3.2. A primary and secondary cyclone with sight glasses. These cyclones should drain to the rear of the tank when the rear door is opened.

8.3.3. A pneumatically operated shut off valve that:

a) Isolates the tank from the vacuum system and opens and closes automatically when the vacuum P.T.O. is activated.

b) With an electronic sensor mounted in the vacuum tank which shuts the same valve as above when the volume of the truck reaches 90 %.

c) And automatically disengages the automatically clutched P.T.O.

8.3.4. A non-return flap on the exhaust silencer to prevent reverse turning of pump under vacuum conditions.

8.3.5. Adequate Relief Valves set to 60 kPa.

8.3.6. Exhaust silencer to reduce noise.

8.3.7. The suction hose between the vacuum pump and tank must be adjustable and self- locating when the tank is lowered.

9. Lighting

9.1 A flood light should be installed in a suitable position illuminating the working area at the rear of the truck.

9.2 Suitable lighting should be installed within the body providing light for the toolbox area.

9.3 Two LED hazard lights should be mounted as follows;

a) A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.

b) A pair of rotating or flashing hazard lights should be mounted above the hose reel at the rear of the tank, visible from the rear of the truck. The hazard light should be protected from damage and should preferably not protrude above the top of the tank.

c) There shall be rear and side scene lights to illuminate the vehicle and its surroundings. The controls shall be on the control panel in 4.7.

10. Vice

A 100 mm engineers vice shall be mounted in a suitable location at the rear of the truck.

11. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

11.1 Descale all metal surfaces
11.2 Grind down & smooth all rough edges
11.3 Thoroughly clean all surfaces
11.4 Prime all built parts and the superstructure using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
11.5 Thereafter paint using two coats of premium quality twin pack automotive paint
11.6 Paint film thickness (color coat) must not be less than 80 microns each.

12. Colors

Underside of Body	: Black
Cab and Body	: White/Yellow
Tank	: Black epoxy tar protective coating

13. Electrical and towing requirements

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

13.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100 mm in diameter that are screwed into position with a stainless-steel flange.
13.2 Dual indicator stop and taillight units to be fitted on top of the tank.
13.3 Reversing camera, buzzer and warning flashing light to be installed when reverse gear is engaged in an optimum position. Monitor to be part of the vehicles multimedia system with Bluetooth hands free cellphone connectivity.
13.4 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
13.5 Electrical connector complying to;
SANS 1327: Electrical connectors for towing and towed vehicles and,
13.6 SANS 11446/ lSO 11446: Passenger cars and light commercial vehicles with 12 V systems -3-pole connectors between towing vehicles and trailers - Dimensions and contact allocation
13.7 Trailer coupling to comply with SABS 1505, Ball type couplings and towing brackets for towing caravans and light trailers

14. Signage and Markings

14.1 Data plates shall be fitted for:

a) The tanks, vacuum and jetting systems indicating tank capacity, system pressures, fluid type/grade, and other relevant data.

b) The hydraulic system indicating tank capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

c) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

14.2 Chevron board with rear lights and rear mudguards (constructed of 3CR12) conforming with the appropriate SABS/SANS standard.

14.3 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

14.4 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

14.5 Retro-reflective tape shall be fitted to both sides and the rear of the tank as well as the rear bumper.

14.6 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to either side of the vehicle.

15. Miscellaneous items

15.1 The batteries to have a weather proof cover to prevent debris and moisture ingression.
15.2 Fuel tank, batteries, pneumatic cylinders and hydraulic tank to have structures built around them for safety.
15.3 Bolt on covers for safety where parts are rotating, swinging or of high temperature.
15.4 A 4.5 kg fire extinguisher should be supplied and fitted in an accessible position in the cab.
15.5 Bolt on head and tail light guards.
15.6 Front and rear mud flaps.

Item 41: Technical specification for a 6000L Auxiliary Engine Jetting superstructure

2. Scope

1.1 The intent of this specification is to provide for a fully operational high-pressure water jetting vehicle for the maintenance of drains, sewers and associated tasks. The high-pressure jetting machine shall be built onto the chassis cab.

1.2 The jetting system must be powered by an auxiliary engine.

1.3 The engine, pump, hydraulic system, tank and toolbox should be enclosed by means of purpose built bodywork that incorporates lockable doors on the left hand side and removable panels on the right hand side.

1.4 The doors and side panels in the engine area should incorporate vented opening lockable removable panel doors providing adequate ventilation to provide the required air flow for the engine cooling.

1.5 The roof section of the body should incorporate a full length weather proof vent to allow the hot air to escape. Powered fans shall be incorporated to assist with the ventilation when temperature becomes detrimental to the performance.

1.6 All doors are to be lockable and fitted with latch to secure the door in the open position.

1.7 Access steps and grab handles must be provided for the side doors.

2. Vehicle

The chassis cab/vehicle for this item shall be an 4x2/4x4 single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 13 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.

b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.

c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The tank and tank ends shall be made out 3CR12 steel with a minimum thickness of 4.5 mm.

4. Construction requirements

4.1 Tank

4.1.1 A 6000 litre baffled water tank designed to withstand the additional rigours of road transport is required.

4.1.2 The tank's mounting shall be so designed to eliminate any vehicle chassis flex being transmitted to the tank. Preferably rubber block type to allow for movement when negotiating rough road

4.1.3 The following should be incorporated;

a) A large manhole with a hinged cover approximately 450 mm diameter at the rear of the tank.

b) Access ladder with steps constructed from non-slip tread plate to be positioned adjacent to manhole from the rear platform.

a) Suitable ventilation to ensure that there is an uninterrupted supply to the pump.

b) Small mounted platform at rear to suit equipment.

c) Tank over flow, draining to the left hand side of the vehicle.

d) Sight glass to view tank contents.

e) Tank level indicator with increments marked from empty to full.

f) Provision to fill the tank on the left hand side from a hydrant. A two stage water level alarm system shall be installed to protect the pump. The first stage should initiate an audible alarm and the second stage should deactivate the pump.
All tanks shall be expected to be nondestructive tested, 10x x-ray, waterfill and pressure tested.

4.2 Jetting System and Hose reel

4.2.1 Clean water from the high pressure pump must be fed to an easily accessible hydraulically operated hose reel. The hose reel should be mounted on a rotating platform allowing at least a 30° rotation laterally.

4.2.2 The hose reel must have a suitable method of locking it in the in the centre position or in the left or right 30° position as well as the transport position.

4.2.3 The hose reel must be fitted with a suitable rotary joint and operate hydraulically in both directions at variable speeds with a constant torque.

4.2.4 The hose reel must be capable of holding 180 m of 25 mm sewer hose and be supplied with 120 m of suitable urethane covered reinforced hose.

4.2.5 Adjacent to the tank there shall be a hose reel mounted to the rear platform with jetting hose and end couplings. It shall be the same capacity and supplied as 4.2.4.

4.2.6 Suitable guide rollers must be provided to guide the hose between the hose reel and the manhole.

4.3 Hosing and Nozzles

The following nozzles shall be supplied per truck:

e) Ø 1 X ENZ 1” (30.100) Retro jet nozzle or similar approved
f) Ø 1 X ENZ 1” (60.100) Pointed Nozzle or similar approved
g) Ø 1 X ENZ 1” (40.100) Grenade Bomb Nozzle or similar approved
h) Ø 1 X ENZ 1” (04.060) Rotating Pipe Cleaning Nozzle or similar approved

4.4 Tool Boxes

4.4.1 The unit will also have the following features mounted in, at or on appropriate places:

4.4.2 A lockable lid hose compartment on the right hand side tank with maximum lateral depth and the full length of the tank.

4.4.3 The same size compartment as in 4.4.2 shall be on the left side of the truck with separate lockable lids and compartments for smaller tools in the following configuration:

a) Large toolbox for spades, picks, water metre etc.

b) Medium toolbox for rain suits etc.

c) Small toolbox for nozzles etc. at rear of machine.

4.4.4 In between the lockable boxes and the tank, shall be a slimline storage compartment to hold solid bar material which range in length from 6 000-7 500 mm.

4.4.5 There shall be a suitable lockable holder system to accommodate an extension ladder.

4.5 Road Cones and Portable Signs

Provision must be made to safely secure large road cones and typically used 900 mm road signage within the body.

4.6 Control Panel

All controls for the operation of the machine shall be fitted to an illuminated, lockable, water resistant control panel on the left side of the hose reel. The design shall be such that the operator will be able to operate the unit whilst standing in front of the control panel.

The controls shall where possible be electronic, and activate the necessary servos (either pneumatic or hydraulic) that will activate the operation. All actions will be fully adjustable at variable speeds for the operation of the machine. A plug in, modular type, control panel is preferred for ease of maintenance.

All servos and valves to be mounted in a safe and easily accessible place for ease of maintenance.
All electrical devices must be splash resistant.
The unit must have the following controls as a minimum:
a) Water pressure gauge (Mounted externally)
b) Hose reel control lever
c) Reel speed controller
d) Three-way change valve control
e) Light switches
f) Water level gauge
g) Engine start/stop, fuel level, oil level and pressure, coolant temperature and variable speed control with read out.
h) Low level water alarm that sounds when the water reaches the 1000 litres level with a relay to switch off the alarm after 30 seconds and automatically resets itself when tank is filled.
i) A low level cut out device that disengages the high pressure pump when the water in the tank reaches 200 litres and automatically resets itself when the tank is filled.
All functions must be clearly marked. Control panel shall have a lock-out feature to protect against unwarranted use.

Access to the components should be through suitable doors with adequate weather proof ventilation (interlocking louver slats) and the layout should be designed to enhance maintenance of the unit. Steps should be installed to provide access to the tool box area from the left hand side of the vehicle. Provision should be made to remove the water tank using removable panels on the sides of the body.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5.High Pressure Pump

5.1 The high pressure water pump must be capable of producing a flow of not less than 230 litres per minute at a constant pressure variable from 65 to 250 bar.
5.2 The pump shall be durable enough to handle recycled water.
5.3 High quality materials such as stainless steel on the inlet and outlet valves, ceramic coated internals of the pump, hardened materials for the internals and pump head, double bearing and seal system is recommended for the pump.
5.4 The pump's oil level shall be easily visible with an indicator.
5.5 Should be robust, high volume, high pressure, gear driven, three piston pump or better.
5.6 It must be fitted as per manufacturer's specifications in an easily accessible place with all relevant safety features i.e. regulator, secondary filtration, tank returns etc.
5.9 The fitment of the high pressure pump should not negatively impact on the vehicles ground clearance.
5.10 The pump should include an adjustable by-pass valve and pressure release valve. A three way change over valve should redirect the flow from the hose reel to a manual by-pass or to an auxiliary take off point.

6. Auxiliary Engine for driving the pump

6.1 The pump should be driven by an air cooled, diesel engine with a power output approximately 90 kW @ 2500 rpm and a torque exceeding 200 Nm @ 1500 rpm. The engine shall be an industry proven "popular"

model with easily available service and spare parts support in the country and region by the bidder and other agents.

6.2 The engines exhaust should be directed down or up and out to the side of the vehicle.

6.3 Engine is to be fitted with efficient air, fuel and lubricating oil filters. A dry type air cleaner, with replaceable paper elements of South African manufacture, is required.

6.4 The engine should be direct coupled to the pump by a suitable flexible coupling.

6.5 All rotating drive systems and locations on the engine that dissipate excessive heat should be guarded in accordance with the Occupational Health and Safety Act Regulations (Act 85 of 1993).

6.6 The engine must produce the required speed and power to drive the pump and produce the required flow and pressure.

6.7 A suitable in-line disc filtration system should be incorporated to protect the pump from contaminated water.

6.8 The engine shall achieve its fuelling requirements from a standalone 50 litre supply mounted on the vehicle.

6.9 A locking fuel cap for the fuel tank and an anti-siphon device.

6.10 A roofed enclosure shall be built for the engine (4.1) such that it is protected. There shall be lockable removable ventilated doors to access the engine and tank for maintenance. The design shall allow maximum ventilation.

7. Lighting

7.1 A flood light should be installed in a suitable position illuminating the working area at the rear of the truck.

7.2 Suitable lighting should be installed within the body providing light for the toolbox area.

7.5 Two LED hazard lights should be mounted as follows;

a) A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.
b) A pair of rotating or flashing LED hazard lights should be mounted above the tank at the rear of the truck. The hazard lights should be protected from damage.
c) There shall be rear and side scene lights to illuminate the vehicle and its surroundings. The controls shall be on the control panel in 4.6.

7.4 There shall be lighting within the enclosure (6.10) to illuminate the engine, fuel tank and access points of the tank.

8. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

8.1 Descale all metal surfaces
8.2 Grind down & smooth all rough edges
8.3 Thoroughly clean all surfaces
8.4 Prime all built parts and the superstructure using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
8.5 Thereafter paint using two coats of premium quality twin pack automotive paint
8.6 Paint film thickness (color coat) must not be less than 80 microns each.

9. Colors

Underside of Body	: Black
Cab and Body	: White/Yellow
Tank	: Black epoxy tar protective coating

10. Electrical and towing requirements

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

10.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100 mm in diameter that are screwed into position with a stainless steel flange.

10.2 Dual indicator, stop and taillight units to be fitted.

10.3 Reversing camera, buzzer and warning flashing light to be installed when reverse gear is engaged in an optimum position. Monitor to be part of the vehicles multimedia system with Bluetooth hands free cellphone connectivity.

10.4 An additional set of rear light units to be installed on top of the tank.

10.5 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring systems.

10.6 An electric solar panel for charging of the vehicle's batteries.

10.7 Electrical connector complying to;

SANS 1327: Electrical connectors for towing and towed vehicles and,

10.8 SANS 11446/ lSO 11446: Passenger cars and light commercial vehicles with 12 V systems -3-pole connectors between towing vehicles and trailers - Dimensions and contact allocation

10.9 Trailer coupling to comply with SABS 1505, Ball type couplings and towing brackets for towing caravans and light trailers

10.10 Suitable fans to be installed in the auxiliary engine compartment to provide additional cooling through the enclosure. Minimum of two fans shall be connected to the thermostat of the engine.

10.11 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

11. Signage and Markings

11.1 Data plates shall be fitted for:

a) The tank and jetting systems indicating tank capacity, system pressures, fluid type/grade, and other relevant data.

b) The auxiliary engine indicating engine make and model, capacity, serial number, oil type and grade etc.

c) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

11.2 Chevron board with rear lights to be fitted on a steel channel (3CR12) section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.

11.3 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

11.4 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

11.5 Retro-reflective tape shall be fitted to both sides and the rear of the tank as well as the rear bumper.

11.6 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to either side of the vehicle.

12. Miscellaneous items

12.1 A locking fuel cap and anti-siphon device for the fuel tank.

12.2 The battery box is to be lockable (lock to be provided).

12.3 A 4.5 kg fire extinguisher should be supplied and fitted in an accessible position in the cab.

Item 42: Technical specification for an 8000L Vacuum superstructure

1.Scope

1.1 The intent of this specification is to provide for a fully operational high air flow vacuum vehicle for the maintenance of drains, sewers and associated tasks. The machine shall be built onto the chassis cab. The suction system shall be able to handle recycled and grey water, slurry and sludge over and above general sewers.

1.2 The pump, hydraulic system, tank and toolbox should be enclosed by means of purpose built bodywork that incorporates removable lockable doors on the left hand side and removable panels on the right hand side.

1.3 The doors and side panels should incorporate vented panels (weather proof interlocking slats) providing adequate ventilation to provide the required air flow for equipment cooling.

1.4 The roof section of the body should incorporate a full length weather proof vent to allow hot air to escape.

1.5 All doors are to be lockable and fitted with latch to secure the door in the open position.

1.6 Access steps and grab handles must be provided for the side doors.

2. Vehicle

The chassis cab/vehicle for this item shall be an 4x2 single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 13 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The tank and tank ends shall be made out 3CR12 steel with a minimum thickness of 4.5 mm.

4. Construction requirements

4.1 Tank

4.1.1 An 8 000 litre elliptical, baffled tank designed to withstand the additional rigours of road transport is required with a low centre of mass design.

4.1.2 The tank's mounting shall be so designed to eliminate any vehicle chassis flex being transmitted to the tank. Preferably rubber block type to allow for movement when negotiating rough road

4.1.3 The following should be incorporated;

a) A large manhole with a hinged cover approximately 450 mm diameter at the rear.
b) Access ladder with steps and railings constructed from non-slip tread plate to be positioned adjacent to manhole.
c) Suitable ventilation to ensure that there is an uninterrupted supply.
d) Small mounted platform at rear to suit equipment.
e) Tank over flow, draining to the left hand side of the vehicle.
f) Sight glass to view tank contents.
g) There shall be a protective sectioned guide at the discharge valve at the rear of the tank.

All tanks shall be expected to be non destructive tested, 10x x-ray, waterfill and pressure tested.

4.2 Solids bin

A 70-liter refuse bin complete with lid shall be supplied, securely mounted in a tipping mechanism on the rear, right hand side platform. The drum must be replaceable and should be able to tip to the right-hand side enabling the contents to be discharged. In the upright position the drum lid must be secured in the closed position.

4.3 Hoses

Eight 100mm x 3000mm and two 150mm x 3000mm suction hose each complete with a male and female Perrot type coupling should be supplied. The Perrot couplings should be adequately secured in the hose.

4.4 Tool Boxes

4.4.1 An externally mounted lockable toolbox with a volume of approximately 0.50 m^3 and length 2200 mm shall be provided.

4.4.2 A steel storage box incorporating two hinged lids and running the length of the tank to be positioned on both sides of the tank. The depth of the boxes to be approx. 300 mm. Hasp and staple fittings to be fitted for locking purposes.

4.4.3 In between the lockable boxes and the tank, shall be a slimline storage compartment to hold solid bar material which range in length from 6 000-7 500 mm.

4.4.4 There shall be a suitable lockable holder system to accommodate an extension ladder.

4.5 Road Cones and Portable Signs

Provision must be made to safely secure large road cones and typically used 900 mm road signage within the body.

4.6 Control Panel

All controls for the operation of the machine shall be fitted to an illuminated, lockable, water resistant control panel on the left side of the hose reel. The design shall be such that the operator will be able to operate the unit whilst standing in front of the control panel.

The controls shall where possible be electronic, and activate the necessary servos (either pneumatic or hydraulic) that will activate the operation. All actions will be fully adjustable at variable speeds for the operation of the machine. A plug in, modular type, control panel is preferred for ease of maintenance.

All servos and valves to be mounted in a safe and easily accessible place for ease of maintenance.
All electrical devices must be splash resistant.
The unit must have the following controls as a minimum:
a) Pressure gauge (Mounted externally)
b) Hose reel control lever
c) Reel speed controller
d) Three-way change valve control
e) Light switches
f) Water level gauge
g) Engine speed control
h) Low level water alarm that sounds when the water reaches the 1000 litres level with a relay to switch off the alarm after 30 seconds and automatically resets itself when tank is filled.
i) A low level cut out device that disengages the high pressure pump when the water in the tank reaches 200 litres and automatically resets itself when the tank is filled.
All functions must be clearly marked.

Access to the components should be through suitable doors with adequate weather proof ventilation (interlocking louver slats) and the layout should be designed to enhance maintenance of the unit. Steps

should be installed to provide access to the tool box area from the left hand side of the vehicle. Provision should be made to remove the water tank using removable panels on the sides of the body.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5.Vacuum System

5.1 A suitable exhauster, hydraulically driven via the vehicle's P.T.O. shall be suitably mounted on the vehicle. The exhauster should be capable of raising a vacuum in the tank of- 60kPa in not more than 10 minutes and should have a capacity of not less than 3.5 cubic metres per minute. The exhauster control should be ergonomically positioned on the left hand side of the truck. A pre-set vacuum relief valve should be incorporated.

5.2 The blower must create and maintain a suitable vacuum with a free air flow of, not less than, 400 litres/second. This air flow shall have the necessary velocity to meet the design criteria and to ensure that the ancillary equipment (cyclones etc.) has the ability to remove the debris and water from the system before it reaches the blower.

5.3 The blower shall be fitted as per manufacturer's specifications and in an easily accessible location with all adequate relevant safety features i.e. vacuum breakers, primary and secondary filtration, exhaust/silencer etc. It must be driven from the PTO using the vehicle's transmission and will be capable of 100 % duty at 50 kPA. All exposed drives must be suitably guarded.
The system should incorporate a sifter valve with moisture separator and odour control, vacuum release and unloader ball valves. All non-return valves must be positioned for ease of maintenance. A 100mm diameter, glycerine fill vacuum gauge shall be mounted in a suitable position on the left hand side of the truck. A suitable vacuum breaker should be mounted on the left hand side in an accessible position.

5.4 The system must be protected as per the manufacturer's specification and for the specific application.

6. Power Take Off (PTO)

6.1 The vacuum pump must be driven from an inline P.T.O. capable of delivering at least 20 % more power than the maximum continuous power rating of the systems driven by it.

6.2 The PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.

6.3 The engine and transmission must not be harmed by use of the PTO.

6.4 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

6.5 Electronic control module and wiring harness which incorporates the "Rev Up Limiter" must be integrated into the existing OEM vehicle using the OEM 24 Volt system.

6.6 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.

6.7 The accelerator pedal cannot be used, while the PTO is engaged.

6.8 PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

7. Lighting

A flood light should be installed in a suitable position illuminating the working area at the rear of the truck.

Suitable lighting should be installed within the body providing light for the toolbox area.

Two LED hazard lights should be mounted as follows;

a) A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.
b) A rotating or a flashing LED hazard light should be mounted above the hose reel and control box at the rear of the truck. The hazard light should be protected from damage.
c) There shall be rear and side scene lights to illuminate the vehicle and its surroundings. The controls shall be on the control panel in 4.6.

8. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

8.1 Descale all metal surfaces
8.2 Grind down & smooth all rough edges
8.3 Thoroughly clean all surfaces
8.4 Prime all built parts and the superstructure using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
8.5 Thereafter paint using two coats of premium quality twin pack automotive paint
8.6 Paint film thickness (color coat) must not be less than 80 microns each.

9. Colors

Underside of Body	: Black
Cab and Body	: White/Yellow
Tank	: Black epoxy tar protective coating

10. Electrical

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

10.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100 mm in diameter that are screwed into position with a stainless steel flange.
10.2 Dual indicator, stop and taillight units to be fitted.
10.3 Reversing camera, buzzer and warning flashing light to be installed when reverse gear is engaged in an optimum position. Monitor to be part of the vehicles multimedia system with Bluetooth hands free cellphone connectivity.
10.4 An additional set of rear light units to be installed on top of the tank.
10.5 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
10.6 The manhole of the tank shall have an electronic warning sensor (audible and light) that will indicate the locking/unlocking status of the door in the driver's cab.
10.7 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

11. Signage and Markings

11.1 Data plates shall be fitted for:

a) The tank and jetting systems indicating tank capacity, system pressures, fluid type/grade, and other relevant data.
b) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

11.2 Chevron board with rear lights to be fitted on a steel channel (3CR12) section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.
11.3 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.
11.4 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.
11.5 Retro-reflective tape shall be fitted to both sides and the rear of the tank as well as the rear bumper.
11.6 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to either side of the vehicle.

12. Miscellaneous items

12.1 A locking fuel cap for the fuel tank
12.2 The battery box is to be lockable (lock to be provided).
12.3 A 4.5 kg fire extinguisher should be supplied and fitted in an accessible position in the cab.

Item 43: Technical specification for a 16000L Combination Jetting/Vacuum superstructure

1.Scope

1.1 The intent of this specification is to provide for a fully operational combination high pressure water jetting and high air flow vacuum vehicle for the maintenance of drains, sewers and associated tasks. The suction system shall be able to handle recycled and grey water, slurry and sludge over and above general sewers.
1.2 The water supply to the jet pump will come from an independent source.
1.3 The high-pressure system shall be independent from the vacuum system.
1.4 The unit shall incorporate an air conveyance vacuum system that will if necessary, provide for the simultaneous removal of debris flushed to the manhole by the high-pressure water system or the removal of debris from sumps, catch basins, digesters, wet wells etc.
1.5 All operating controls should be located at a suitably located operator's station. The controls should be lockable when not in use.
1.6 The hydraulic tipping controls shall be placed in a position that the operator may safely operate the rear door.
1.7 The unit shall be supplied with all the necessary equipment in order for it to function.

2. Vehicle

The chassis cab/vehicle for this item shall be an 6x4 single chassis cab, with a minimum Gross Vehicle Mass (GVM) of 22 to 28 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.
The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The combination tank will be made out of 3CR12 Stainless Steel. The tank will be constructed using a minimum of 4.5 mm thick plate with a minimum of 6 mm end plates, the outer skin of the water tank may be constructed using a minimum of 3 mm plate.

4. Construction requirements

4.1 Combination Tank

4.1.1 All mounting to be in accordance with directives specified by the Original Equipment Manufacturer (OEM).

4.1.2 It must be a sectioned rear tipping type tank. The rear section being the vacuum area shall have a waste capacity of approximately 8 000 litres and the front section having a capacity of approximately 8 000 litres for fresh water.

4.1.3 Suitable baffles shall be designed and installed to both tanks to increase the strength due to water surge and sloshing that will be experienced.

4.1.4 The water tank must have a drainage / inspection sump. The tank must have a suitable dump valve to discharge the excess water quickly and in a suitable location.

4.1.5 The waste tank must incorporate a strainer section which shall separate the sludge from water so that the excess water may be discharged via necessary valves. In addition, a Ø150 mm PN16 ball dump valve to facilitate total discharge of the tank, situated as low as possible and at a downward angle is required.

4.1.6 A high level sealable hatch should be incorporated in an easily accessible location for each tank for cleaning and maintenance purposes. It shall incorporate a pressure relief valve and rupture disc protection.

4.1.7 The water tank inlet must be a male hydrant coupling attached to a Ø75 mm ball valve with a supply in line primary pre-tank water filter with a vacuum/pressure breaker. The outlet to the high pressure pump must incorporate an anti-vortex device.

4.1.8 A 19 mm tap must be fitted in a suitable place to provide clean water for the washing of hands.

4.1.9 The waste tank must tip up hydraulically to a minimum of 40º to the rear to facilitate the dumping of the debris from the waste tank via the rear door. The design of the waste tank should enhance the total discharge of debris when the tank is tipped. The tank must incorporate a safety system that will hold the tank in its tipped position in case of hydraulic failure.

4.1.10 The rear door must be hinged at the top and the opening mechanism must be hydraulically operated to accommodate this configuration. The door shall be completely sealable and shall have a heavy duty replaceable EPDM seal that is corrosion resistant and resistant to high mechanical wear.

4.1.11 Tank rear shall have flared chutes to aid spillage when off-loading.

4.1.12 A system must be incorporated that will prevent the rear door from slamming shut in the event of a hydraulic failure.

4.1.13 The tank must have a minimum of three locking devices for the sealing of the rear door which must completely seal the contents.

4.1.14 The vacuum tank must have a working vacuum up to 0.90 Bar.

4.1.15 The water/vacuum tanks and cyclones or a similar separation system must have sight glasses fitted in strategic places that may be removed easily for cleaning.

4.1.16 There shall be a protective sectioned guide at the discharge valve at the rear of the tank.

4.1.17 All tanks shall be expected to be nondestructive tested, 10x x-ray, waterfill and pressure tested.

4.2 Gulley/Section Arm

4.2.1 A top mounted 150 mm diameter gulley arm with a minimum rotation of 150° must be fitted.

4.2.2 It must be attached to the vacuum tank via a suitable diameter ball bearing swivel joint. The joint shall preferably be maintenance free. The arm should be supported by a cradle when in its transport resting position.

4.2.3 The controls of the arm must be mounted in the control panel. The flexible hose must be suitably supported by rollers and have all the necessary couplings.

4.2.4 The hydraulic control valve must incorporate a variable control to allow for fine adjustments of the lifting or lowering of the suction hose at full power.

4.2.5 A suitable method of securing the flexible hose when the suction arm is resting in its cradle is required.

4.3 Jetting System and Hose reel

4.3.1 Clean water from the high pressure pump must be fed to an easily accessible hydraulically operated hose reel. The reel should be mounted on the rear tank door and must be able to rotate laterally at 30°.

4.3.2 The hose reel must have a suitable method of locking it in whilst the vehicle is mobile.

4.3.3 The hose reel must be fitted with a suitable rotary system and operate hydraulically in both directions at variable speeds with a constant torque.

4.3.4 The hose reel must be capable of holding 180 m of 25 mm sewer hose and be supplied with 120 m of suitable urethane covered reinforced hose.

4.3.5 Adjacent to the tank there shall be a hose reel mounted to the rear platform with jetting hose and end couplings. It shall be the same capacity and supplied as 4.3.4.

4.4 Hosing and Nozzles

The unit must be supplied with: a 150- 100 mm reducer, 2 x 4m, 2 x 3m, and 2 x 2m of 100 mm rubber suction hoses fitted with male / female Perrott, and a 1m castled 3CR12 suction pipe with a female Perrott.

The following nozzles shall be supplied per truck:

a) Ø 1 X ENZ 1” (30.100) Retro jet nozzle or similar approved
b) Ø 1 X ENZ 1” (60.100) Pointed Nozzle or similar approved
c) Ø 1 X ENZ 1” (40.100) Grenade Bomb Nozzle or similar approved
d) Ø 1 X ENZ 1” (04.060) Rotating Pipe Cleaning Nozzle or similar approved

4.5 Hose Trays

4.5.1 The unit will also have the following features mounted in, at or on appropriate places:

4.5.2 A lockable lid hose compartment on the right hand side tank 500 mm wide x 200 mm deep and the full length of the tank

4.5.3 The same size compartment as in 4.5.2 shall be on the left side of the truck with separate lockable lids and compartments for smaller tools in the following configuration:

a) Large toolbox for spades, picks, water metre etc.

b) Medium toolbox for rain suits etc.

c) Small toolbox for nozzles etc. at rear of machine.

4.5.4 In between the lockable boxes and the tank, shall be a slimline storage compartment to hold solid bar material which range in length from 6 000-7 500 mm.

4.5.6 There shall be a suitable lockable holder system to accommodate an extension ladder.

4.6 Road Cones and Portable Signs

Provision must be made to safely secure large road cones and typically used 900 mm road signage within the body.

4.7 Control Panel

All controls for the operation of the machine shall be fitted to an illuminated, lockable, water resistant control panel. (Excluding the hydraulic tip and rear door controls that should be mounted clear of the rear door for safe tipping and discharge of the tank).

The controls shall where possible be electronic, and activate the necessary servos (either pneumatic or hydraulic) that will activate the operation. All actions will be fully adjustable at variable speeds for the operation of the machine. A plug in, modular type, control panel is preferred for ease of maintenance.

All servos and valves to be mounted in a safe and easily accessible place for ease of maintenance.
All electrical devices must be splash resistant.
The unit must have the following controls as a minimum:
a) Water pressure gauge (Mounted externally)
b) Vacuum gauge
c) Hydraulic pressure gauge (Mounted externally)
d) Emergency stop
e) Engage/disengage water pump
f) Engage/disengage vacuum pump
g) Boom up and down
h) Water to reel on/off
i) Rotary warning switch
j) Rear work light
k) Low level water alarm that sounds when the water reaches the 1000 litres level with a relay to switch off the alarm after 30 seconds and automatically resets itself when tank is filled.
l) A low level cut out device that disengages the high pressure pump when the water in the tank reaches 200 litres and automatically resets itself when the tank is filled.
All functions must be clearly marked. Control panel shall have a lock-out feature to protect against unwarranted use.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Hydraulic system

5.1 In respect of the hydraulic tank the following shall be required:

5.1.1 To be constructed of steel.

5.1.2 To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.

5.1.3 To be fitted with a bump guard from externalities.

5.1.4 To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.

5.1.5 Must have a filler cap strainer & filter into filler base and filler cap assembly.

5.1.6 Oil capacity shall be sufficient such that the system does not overheat, a cooler shall be installed if required.

5.1.7 Spin off, pressure relief, safety holding and other necessary valves are required.

5.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the tipper / solenoid valve system.
5.3 The system shall have a shut off valve at the outlet of the tank.
5.4 The hydraulic valves shall be grouped together for ease of maintenance.
5.5 Test points for testing hydraulic pressures shall be fitted and grouped together.
5.6 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.
5.7 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.
5.8 Safety hold valve to be fitted to the cylinders in case of hydraulic failure.

6 Power Take Off (PTO)

6.1 The vacuum and high pressure and hydraulic pumps must be driven, independently, via clutches, from an inline or close coupled P.T.O. capable of delivering at least 20 % more power than the maximum continuous power rating of the systems driven by it. Bidder shall provide both options in Section 8.

6.2 The PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.

6.3 The engine and transmission must not be harmed by use of the PTO.

6.4 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

6.5 Electronic control module and wiring harness which incorporates the “Rev Up Limiter” must be integrated into the existing OEM vehicle using the OEM 24 Volt system.

6.6 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.

6.7 The accelerator pedal cannot be used, while the PTO is engaged.

6.8 PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

7. High Pressure Pump

7.1 The high pressure water pump must be capable of producing a flow of not less than 230 litres per minute at a constant pressure variable from 65 to 250 bar.

7.2 The pump shall be durable enough to handle recycled water.

7.3 High quality materials such as stainless steel on the inlet and outlet valves, ceramic coated internals of the pump, hardened materials for the internals and pump head, double bearing and seal system is recommended for the pump.

7.4 The pump’s oil level shall be easily visible with an indicator.

7.5 It must be fitted as per manufacturer’s specifications in an easily accessible place with all relevant safety features i.e. regulator, secondary filtration, tank returns etc.

9.4 Should be robust, high volume, high pressure, gear driven, three piston pump or better.
9.5 The fitment of the high pressure pump should not negatively impact on the vehicles ground clearance.
7.8 The pump should include an adjustable by-pass valve and pressure release valve. A three way change over valve should redirect the flow from the hose reel to a manual by-pass or to an auxiliary take off point.

8.Vacuum System

8.1 The blower must create and maintain a suitable vacuum with a free air flow of, not less than, 400 litres/second. This air flow shall have the necessary velocity to meet the design criteria and to ensure that the ancillary equipment (cyclones etc.) has the ability to remove the debris and water from the system before it reaches the blower.

8.2 The blower shall be fitted as per manufacturer's specifications and in an easily accessible location with all adequate relevant safety features i.e. vacuum breakers, primary and secondary filtration, exhaust/silencer etc. It must be driven from the in line P.T.O. and will be capable of 100 % duty at 50 kPA. All exposed drives must be suitably guarded.

8.3 The system must be protected as per the manufacturer's specification and for the specific application.

It must also have the following features:

8.3.1. An easily removable, strainer inside the tank door.

8.3.2. A primary and secondary cyclone with sight glasses. These cyclones should drain to the rear of the tank when the rear door is opened.

8.3.3. A pneumatically operated shut off valve that:

a) Isolates the tank from the vacuum system and opens and closes automatically when the vacuum P.T.O. is activated.

b) With an electronic sensor mounted in the vacuum tank which shuts the same valve as above when the volume of the truck reaches 90 %.

c) And automatically disengages the automatically clutched P.T.O.

8.3.4. A non-return flap on the exhaust silencer to prevent reverse turning of pump under vacuum conditions.

8.3.5. Adequate Relief Valves set to 60 kPa.

8.3.6. Exhaust silencer to reduce noise.

8.3.7. The suction hose between the vacuum pump and tank must be adjustable and self- locating when the tank is lowered.

9. Lighting

A flood light should be installed in a suitable position illuminating the working area at the rear of the truck.

Suitable lighting should be installed within the body providing light for the toolbox area.

Two LED hazard lights should be mounted as follows;

a) A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.
b) A pair of rotating or flashing hazard lights should be mounted above the hose reel at the rear of the tank, visible from the rear of the truck. The hazard light should be protected from damage and should preferably not protrude above the top of the tank.
c) There shall be rear and side scene lights to illuminate the vehicle and its surroundings. The controls shall be on the control panel in 4.7.

10. Vice

A 100 mm engineers vice shall be mounted in a suitable location at the rear of the truck.

11. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

11.1 Descale all metal surfaces

11.2 Grind down & smooth all rough edges

11.3 Thoroughly clean all surfaces

11.4 Prime all built parts and the superstructure using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.

11.5 Thereafter paint using two coats of premium quality twin pack automotive paint

11.6 Paint film thickness (color coat) must not be less than 80 microns each.

12. Colors

Underside of Body	: Black
Cab and Body	: White/Yellow
Tank	: Black epoxy tar protective coating

13. Electrical

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

13.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100 mm in diameter that are screwed into position with a stainless steel flange.

13.2 Dual indicator, stop and taillight units to be fitted on top of the tank.

13.3 Reversing camera, buzzer and warning flashing light to be installed when reverse gear is engaged in an optimum position. Monitor to be part of the vehicles multimedia system with Bluetooth hands free cellphone connectivity.

13.4 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

13.5 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

14. Signage and Markings

14.1 Data plates shall be fitted for:

a) The tanks, vacuum and jetting systems indicating tank capacity, system pressures, fluid type/grade, and other relevant data.

b) The hydraulic system indicating tank capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

c) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

14.2 Chevron board with rear lights and rear mudguards (constructed of 3CR12) conforming with the appropriate SABS/SANS standard.

14.3 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

14.4 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

14.5 Retro-reflective tape shall be fitted to both sides and the rear of the tank as well as the rear bumper.

14.6 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to either side of the vehicle.

15. Miscellaneous items

15.1 The batteries to have a weather proof cover to prevent debris and moisture ingression.
15.2 Fuel tank, batteries, pneumatic cylinders and hydraulic tank to have structures built around them for safety.
15.3 Bolt on covers for safety where parts are rotating, swinging or of high temperature.
15.4 A 4.5 kg fire extinguisher should be supplied and fitted in an accessible position in the cab.
15.5 Bolt on head and tail light guards.
15.6 Front and rear mud flaps.

Item 44: Technical specification for a 13 000L Vacuum superstructure

1.Scope

1.1 The intent of this specification is to provide for a fully operational high air flow vacuum vehicle for the maintenance of drains, sewers and associated tasks. The machine shall be built onto the chassis cab. The suction system shall be able to handle recycled and grey water, slurry and sludge over and above general sewers.

1.2 The pump, hydraulic system, tank and toolbox should be enclosed by means of purpose built bodywork that incorporates lockable doors on the left hand side and removable panels on the right hand side.

1.3 The doors and side panels in the engine area should incorporate vented panels (weather proof interlocking slats) providing adequate ventilation to provide the required air flow for the engine cooling.

1.4 The roof section of the body should incorporate a full length weather proof vent to allow the hot air to escape.

1.5 All doors are to be lockable and fitted with latch to secure the door in the open position.

1.6 Access steps and grab handles must be provided for the side doors.

2. Vehicle

The chassis cab/vehicle for this item shall be a 6x4 single chassis cab, with a minimum Gross Vehicle Mass (GVM) of 22 to 28 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.
The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The tank and tank ends shall be made out 3CR12 steel with a minimum thickness of 4.5 mm.

4. Construction requirements

4.1 Tank

4.1.1 A 13 000 litre elliptical, baffled tank designed to withstand the additional rigours of road transport is required with a low centre of mass design.

4.1.2 The tank's mounting shall be so designed to eliminate any vehicle chassis flex being transmitted to the tank. Preferably rubber block type to allow for movement when negotiating rough road

4.1.3 The following should be incorporated;

h) A large manhole with a hinged cover approximately 450 mm diameter at the rear.
i) Access ladder with steps and railings constructed from non-slip tread plate to be positioned adjacent to manhole.
j) Suitable ventilation to ensure that there is an uninterrupted supply.
k) Mounted platform at rear to suit equipment.
l) Tank over flow, draining to the left hand side of the vehicle.
m) Sight glass to view tank contents.
n) There shall be a protective sectioned guide at the discharge valve at the rear of the tank.

4.1.4 The waste tank must tip up hydraulically to a minimum of 40º to the rear to facilitate the dumping of the debris from the waste tank via the rear door. The design of the waste tank should enhance the total discharge of debris when the tank is tipped. The tank must incorporate a safety system that will hold the tank in its tipped position in case of hydraulic failure.

4.1.5 The rear door must be hinged at the top and the opening mechanism must be hydraulically operated to accommodate this configuration. The door shall be completely sealable and shall have a heavy duty replaceable EPDM seal that is corrosion resistant and resistant to high mechanical wear.

4.1.6 Tank rear shall have flared chutes to aid spillage when off-loading.

4.1.7 A system must be incorporated that will prevent the rear door from slamming shut in the event of a hydraulic failure.

4.1.8 The tank must have a minimum of three locking devices for the sealing of the rear door which must completely seal the contents.

4.1.9 The vacuum tank must have a working vacuum up to 0.90 Bar.

4.1.10 The tank and cyclones or a similar separation system must have sight glasses fitted in strategic places that may be removed easily for cleaning.

4.1.11 There shall be a protective sectioned guide at the discharge valve at the rear of the tank.

4.1.12 All tanks shall be expected to be nondestructive tested, 10x x-ray, waterfill and pressure tested.

4.2 Solids bin

A 70 liter refuse bin complete with lid shall be supplied, securely mounted in a tipping mechanism on the rear, right hand side platform. The drum must be replaceable and should be able to tip to the right-hand side enabling the contents to be discharged. In the upright position the drum lid must be secured in the closed position.

4.3 Hoses

Eight 100mm x 3000mm and two 150mm x 3000mm suction hose each complete with a male and female Perrot type coupling should be supplied. The Perrot couplings should be adequately secured in the hose.

4.4 Tool Boxes

4.4.1 An externally mounted lockable toolbox with a volume of approximately 0.50 m^3 and length 2200 mm shall be provided.

4.4.2 A steel storage box incorporating two hinged lids and running the length of the tank to be positioned on both sides of the tank. The depth of the boxes to be approx. 300 mm. Hasp and staple fittings to be fitted for locking purposes.

4.4.3 In between the lockable boxes and the tank, shall be a slimline storage compartment to hold solid bar material which range in length from 6 000-7 500 mm.

4.4.4 There shall be a suitable lockable holder system to accommodate an extension ladder.

4.5 Road Cones and Portable Signs

Provision must be made to safely secure large road cones and typically used 900 mm road signage within the body.

4.6 Control Panel

All controls for the operation of the machine shall be fitted to an illuminated, lockable, water resistant control panel on the left side of the hose reel. The design shall be such that the operator will be able to operate the unit whilst standing in front of the control panel.

The controls shall where possible be electronic, and activate the necessary servos (either pneumatic or hydraulic) that will activate the operation. All actions will be fully adjustable at variable speeds for the operation of the machine. A plug in, modular type, control panel is preferred for ease of maintenance.

All servos and valves to be mounted in a safe and easily accessible place for ease of maintenance.
All electrical devices must be splash resistant.
The unit must have the following controls as a minimum:
a) Pressure gauge (Mounted externally)
b) Hose reel control lever
c) Reel speed controller
d) Three-way change valve control
e) Light switches
f) Level gauge
g) Engine speed control
h) Low level water alarm that sounds when the water reaches the 1000 litres level with a relay to switch off the alarm after 30 seconds and automatically resets itself when tank is filled.
i) A low level cut out device that disengages the high pressure pump when the water in the tank reaches 200 litres and automatically resets itself when the tank is filled.
All functions must be clearly marked.

Access to the components should be through suitable doors with adequate weather proof ventilation (interlocking louver slats) and the layout should be designed to enhance maintenance of the unit. Steps should be installed to provide access to the tool box area from the left hand side of the vehicle. Provision should be made to remove the water tank using removable panels on the sides of the body.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5.Vacuum System

5.1 A suitable exhauster, hydraulically driven via the vehicle's P.T.O. shall be suitably mounted on the vehicle. The exhauster should be capable of raising a vacuum in the tank of- 60kPa in not more than 10 minutes and should have a capacity of not less that 3.5 cubic metres per minute. The exhauster control should be ergonomically positioned on the left hand side of the truck. A pre set vacuum relief valve should be incorporated.

5.2 The blower must create and maintain a suitable vacuum with a free air flow of, not less than, 400 litres/second. This air flow shall have the necessary velocity to meet the design criteria and to ensure that the ancillary equipment (cyclones etc.) has the ability to remove the debris and water from the system before it reaches the blower.

5.3 The blower shall be fitted as per manufacturer's specifications and in an easily accessible location with all adequate relevant safety features i.e. vacuum breakers, primary and secondary filtration, exhaust/silencer etc. It must be driven from the PTO using the vehicle's transmission and will be capable of 100 % duty at 50 kPA. All exposed drives must be suitably guarded.

The system should incorporate a snifter valve with moisture separator and odour control, vacuum release and unloader ball valves. All non-return valves must be positioned for ease of maintenance. A 100mm diameter, glycerine fill vacuum gauge shall be mounted in a suitable position on the left hand side of the truck. A suitable vacuum breaker should be mounted on the left hand side in an accessible position.

5.4 The system must be protected as per the manufacturer's specification and for the specific application.

6. Power Take Off (PTO)

6.1 The vacuum pump must be driven from an inline P.T.O. capable of delivering at least 20 % more power than the maximum continuous power rating of the systems driven by it.

6.2 The PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.

6.3 The engine and transmission must not be harmed by use of the PTO.

6.4 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

6.5 Electronic control module and wiring harness which incorporates the "Rev Up Limiter" must be integrated into the existing OEM vehicle using the OEM 24 Volt system.

6.6 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.

6.7 The accelerator pedal cannot be used, while the PTO is engaged.

6.8 PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

7. Hydraulic system

7.1 In respect of the hydraulic tank the following shall be required:

- 7.1.1 To be constructed of steel.
- 7.1.2 To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.
- 7.1.3 To be fitted with a bump guard from externalities.
- 7.1.4 To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.
- 7.1.5 Must have a filler cap strainer & filter into filler base and filler cap assembly.
- 7.1.6 Oil capacity shall be sufficient such that the system does not overheat, a cooler shall be installed if required.
- 7.1.7 Spin off, pressure relief, safety holding and other necessary valves are required.

7.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the tipper / solenoid valve system.

7.3 The system shall have a shut off valve at the outlet of the tank.

7.4 The hydraulic valves shall be grouped together for ease of maintenance.

7.5 Test points for testing hydraulic pressures shall be fitted and grouped together.

7.6 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.

7.7 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.

7.8 Safety hold valve to be fitted to the cylinders in case of hydraulic failure.

8. Lighting

8.1 A flood light should be installed in a suitable position illuminating the working area at the rear of the truck.

8.2 Suitable lighting should be installed within the body providing light for the toolbox area.

8.3 Two LED hazard lights should be mounted as follows;

a) A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.
b) A rotating or a flashing LED hazard light should be mounted above the hose reel and control box at the rear of the truck. The hazard light should be protected from damage.
c) There shall be rear and side scene lights to illuminate the vehicle and its surroundings. The controls shall be on the control panel in 4.8.

9. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

9.1 Descale all metal surfaces
9.2 Grind down & smooth all rough edges
9.3 Thoroughly clean all surfaces
9.4 Prime all built parts and the superstructure using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer. Thereafter paint using two coats of premium quality twin pack automotive paint
9.5 Paint film thickness (color coat) must not be less than 80 microns each.

10. Colors

Underside of Body	: Black
Cab and Body	: White/Yellow
Tank	: Black epoxy tar protective coating

11. Electrical

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

11.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100 mm in diameter that are screwed into position with a stainless steel flange.
11.2 Dual indicator, stop and taillight units to be fitted.
11.3 Reversing camera, buzzer and warning flashing light to be installed when reverse gear is engaged in an optimum position. Monitor to be part of the vehicles multimedia system with Bluetooth hands free cellphone connectivity.
11.4 An additional set of rear light units to be installed on top of the tank.
11.5 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
11.6 The manhole of the tank shall have an electronic warning sensor (audible and light) that will indicate the locking/unlocking status of the door in the driver's cab.
11.7 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

12. Signage and Markings

12.1 Data plates shall be fitted for:
a) The tank and jetting systems indicating tank capacity, system pressures, fluid type/grade, and other relevant data.
b) The auxiliary engine indicating engine make and model, capacity, serial number, oil type and grade etc.
c) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.
12.2 Chevron board with rear lights to be fitted on a steel channel (3CR12) section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.
12.3 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.
12.4 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.
12.5 Retro-reflective tape shall be fitted to both sides and the rear of the tank as well as the rear bumper.
12.6 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

13. Miscellaneous items

13.1 A locking fuel cap for the fuel tank
13.2 The battery box is to be lockable (lock to be provided).
13.3 A 4.5 kg fire extinguisher should be supplied and fitted in an accessible position in the cab.

Item 45: Technical specification for a Construction Rear Tipping body

1. Scope

The specification is for a rear tipping body that has a top hinged tailgate. The tip-body shall be able to carry a volume of 10-16 m^3 and a payload of 14-16 tons (14 000-16 000 kg). It will primarily be used to transport asphalt. Furthermore, storage boxes and other structures are required and the mass of these units and the equipment storage volumes must be accommodated in the design and supply of the completed vehicle.

2. Vehicle

The chassis cab/vehicle for this item shall be a 6x4 single chassis cab, with a minimum Gross Vehicle Mass (GVM) of 22 to 33 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.
The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The rear tipping body and structures shall be constructed of Corten corrosion resistant steel. Furthermore, the inner floor and the bottom side panels of the tipping body shall have wear plates made of Hardox steel seated on top of the Corten steel structure.

4. Construction requirements

4.1 Chassis mounting

All mounting to be in accordance with directives specified by the Original Equipment Manufacturer. A separator insert shall be fitted to the rear most axle in case of uneven mass distribution.

4.2 Sub Frame

The sub frame shall extend the full body length.

4.3 Tip Body

4.3.1 The tip body shall be mounted at the rear most of the chassis

4.3.2 The headboard shall be extended 100 mm to a height above the cab.

4.3.3 The tailgate shall be top hinged which will open automatically when the body is tipped. The height of the tailgate shall be higher than the sides.

4.3.4 The rear guide outside the tailgate for offloading shall be a box section and/or strengthened using stiffeners/gussets if flat plate.

4.3.5 The geometry and shape of the tip body shall afford maximum capacity in terms of volume and mass with no areas that will hold the commodity when offloading.

4.3.6 The main pair of structural channels must have stiffeners/gussets evenly installed over the length.

4.3.7 Lateral support shall be provided using structural members throughout the base of the tipping body floor. Supports and guides shall be installed underneath the tipping body and on the truck chassis to provide even load distribution and prevent unwanted (lateral, oscillations, vibrations) movement when the vehicle is in motion.

4.3.8 At the front of the tip body a centrally located support shall be mounted on the lateral member of the chassis to hold the tip body in place.

4.3.9 The sides of the loading box shall also be reinforced with structural members.

4.3.10 A tipping stabilizer shall be installed.

4.3.11 All box sections and structural channels shall have stiffeners/gussets installed for reinforcement.

4.3.12 The tailgate locking mechanism shall be self-adjusting and easily maintainable.

4.3.13 The inner wear plates shall be installed such that maintenance of these components can be carried out when minimum thickness is reached.

4.8 Tipping

4.3.8 Tipping operation shall be achieved by means of a multi stage hydraulic cylinder/s which is mounted upon a suitably reinforced full length sub frame. Tipping angle shall not be less than 45˚.

4.3.9 The sub frame must start as close as possible to the rear of the truck cab in order to spread the stresses imposed.

4.3.10 When operating conditions demand, the hydraulic cylinder shall be capable of continuously handling an overload of up to 25% of the specified payload (including body mass).

4.3.11 An electrical switch shall be mounted on the sub frame which automatically activates a buzzer and light fitted inside the cabs dashboard when the body is raised.

4.3.12 The tipping control must incorporate the following individual positions: Raise, Hold, Lower.

4.3.13 When released the lever must automatically enter the “Hold” position.

4.3.14 Indicators for the rest position and maximum height when tipping shall be installed.

4.3.15 The operation of the tipping must be constrained such that the chassis cab in no way can be damaged.

4.3.16 A mechanical safety device shall be installed to hold the body in the raised position.

4.4 Covering system

4.4.1 A covering system shall be installed for the entire longitudinal and lateral dimensions of the open top of the tip body.

4.4.2 The material shall be flexible and robust enough to handle the commodity being transported in terms of geometry (if heap loaded) and the chemical composition.

4.4.3 The material shall be stored in a self reeling housing unit on the tip body closest to the cab. Top/side mounted guides and runners shall be used to spread the material over the tip body.
4.4.4 Tie downs shall be available on the sides to hold the material if needed.
4.4.5 Design must not inhibit loading (from the sides) and off-loading.
4.4.6 System shall be either electrical or hydraulically operated.
4.4.7 Operation must be such that the rear tailgate does not damage the system when offloading.
4.4.8 For item 7.2 a partial covering system for the rear shall be offered.

4.5 Storage box

4.5.1 One lockable storage box approximately 1 000 mm longitudinally shall be fixed on the chassis under the bodywork.
4.5.2 Hinges for the doors must be fitted to the exterior of the front doors.
4.5.3 There should be seals to prevent ingress of water.

4.6 Miscellaneous items

4.6.1 Steel constructed rear mud flaps shall be installed.
4.6.2 Rear underrun device shall be installed according to SANS 1055.
4.6.3 Safety access ladders and handrails to the rear tipping body.
4.6.4 Protective structures over fuel tank and pneumatic cylinders.
4.6.5 Lockable protective cover for the batteries.
4.6.6 Wire mesh covers for the front and rear lights.
4.6.7 A pair of heavy-duty wheel chocks to be mounted and easily accessible.
4.6.8 A 50l stainless steel water tank/caddy to be mounted in a position below the body with a tap.
4.6.9 Lockable fuel filler cap with an anti-siphon device installed.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Hydraulic system

5.1 In respect of the hydraulic tank the following shall be required:
5.1.1 To be constructed of steel.
5.1.2 To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.
5.1.3 To be fitted with a bump guard from externalities.
5.1.4 To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.
5.1.5 Must have a filler cap strainer & filter into filler base and filler cap assembly.
5.1.6 Oil capacity shall be double that of the oil capacity of the hydraulic cylinder.
5.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the tipper / solenoid valve system.
5.3 The hydraulic valves shall be grouped together for ease of maintenance.
5.4 Test points for testing hydraulic pressures shall be fitted and grouped together.
5.5 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.
5.6 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.
5.7 Safety hold valve for the cylinder/s in case of hydraulic system failure.

6. Power Take Off (PTO)

6.1 The close coupled PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.

6.2 The engine and transmission must not be harmed by use of the PTO.

6.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

6.4 Electronic control module and wiring harness which incorporates the “Rev Up Limiter” must be integrated into the existing OEM vehicle using the OEM 24 Volt system.

6.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.

6.6 The accelerator pedal cannot be used, while the PTO is engaged.

6.7 PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

7. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

7.1 Descale all metal surfaces

7.2 Grind down & smooth all rough edges

7.3 Thoroughly clean all surfaces, rear/side tip body/skip shall be shot blasted.

7.4 Prime the tip body and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.

7.5 Thereafter paint using premium quality automotive finish paint.

7.6 Two coats of primer and one coat of colour.

7.7 Paint film thickness (color coat) must not be less than 100 microns each.

8. Colors

- Underside of Body: Black
- Deck: Black
- Cab and Body: Yellow/White/Blue/Verdi Green

9. Electrical

9.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100mm in diameter that are screwed into position with a stainless-steel flange.

9.2 Reversing camera, buzzer and warning flashing light to be installed when reverse gear is engaged.

9.3 A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on an aluminum bracket closest to cab. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber colored polycarbonate lenses to be fitted to the top of the headboard behind the cab with on/off switch with random flash pattern positioned in the cab.

9.4 Rear work light to be installed with switch installed in the cab.

9.5 A pair of marker LED amber lights on each side of the vehicle.

9.6 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

9.7 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

10. Signage and Markings

10.1 Data plates shall be fitted for:

a) The hydraulic system indicating tank capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

b) The rear tip body detailing safe working load, material specification, tailgate operation and general maintenance.

c) Safe working load (SWL) decals shall be clearly visible on the sides of the tipping body.

d) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

10.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

10.3 Chevron board and durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

10.4 Retro-reflective tape shall be fitted to both sides and the rear of the tip- body as well as the rear bumper and the items in chapter 4 that make up the perimeter of the vehicle.

10.5 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

11. Fire Extinguisher

A 4.5kg dry powder type extinguisher to be mounted in a suitable exterior position preferably close to the generator storage box.

Item 46: Technical specification for a Construction Rear Tipping body with a crane

1. Scope

The specification is for a rear tipping body that has a top hinged tailgate with a crane mounted in between the driver's cab and rear tip body. The tip-body shall be able to carry a volume of 10-16 m^3 and a payload of 14-15 tons (14 000-15 000 kg). It will primarily be used to transport asphalt. Furthermore, storage boxes and other structures are required and the mass of these units and the equipment storage volumes must be accommodated in the design and supply of the completed vehicle.

2. Vehicle

The chassis cab/vehicle for this item shall be an 6x4 single chassis cab, with a minimum Gross Vehicle Mass (GVM) of 22 to 33 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The rear tipping body and structures shall be constructed of Corten corrosion resistant steel. Furthermore, the inner floor and the bottom side panels of the tipping body shall have wear plates made of Hardox steel seated on top of the Corten steel structure.

4. Construction requirements

4.1 Chassis mounting

All mounting to be in accordance with directives specified by the Original Equipment Manufacturer. A separator insert shall be fitted to the rear most axle in case of uneven mass distribution.

4.2 Sub Frame

The sub frame shall extend the full body length.

4.3Tip Body

4.3.1 The tip body shall be mounted at the rear most of the chassis

4.3.2 The headboard shall be extended 100 mm to a height above the cab.

4.3.3 The tailgate shall be top hinged which will open automatically when the body is tipped. The height of the tailgate shall be higher than the sides.

4.3.4 The rear guide outside the tailgate for offloading shall be a box section and/or strengthened using stiffeners/gussets if flat plate.

4.3.5 The geometry and shape of the tip body shall afford maximum capacity in terms of volume and mass with no areas that will hold the commodity when offloading.

4.3.6 The main pair of structural channels must have stiffeners/gussets evenly installed over the length.

4.3.7 Lateral support shall be provided using structural members throughout the base of the tipping body floor. Supports and guides shall be installed underneath the tipping body and on the truck chassis to provide even load distribution and prevent unwanted (lateral, oscillations, vibrations) movement when the vehicle is in motion.

4.3.8 At the front of the tip body a centrally located support shall be mounted on the lateral member of the chassis to hold the tip body in place.

4.3.9 The sides of the loading box shall also be reinforced with structural members.

4.3.10 A tipping stabilizer shall be installed.

4.3.11 All box sections and structural channels shall have stiffeners/gussets installed for reinforcement.

4.3.12 The tailgate locking mechanism shall be self-adjusting and easily maintainable.

4.3.13 The inner wear plates shall be installed such that maintenance of these components can be carried out when minimum thickness is reached.

4.4 Tipping

4.4.1 Tipping operation shall be achieved by means of a multi stage hydraulic cylinder/s which is mounted upon a suitably reinforced full-length sub frame. Tipping angle shall not be less than 45˚.

4.4.2 The sub frame must start as close as possible to the rear of the truck cab in order to spread the stresses imposed.

4.4.3 When operating conditions demand, the hydraulic cylinder shall be capable of continuously handling an overload of up to 25% of the specified payload (including body mass).

4.4.4 An electrical switch shall be mounted on the sub frame which automatically activates a buzzer and light fitted inside the cabs dashboard when the body is raised.

4.4.5 The tipping control must incorporate the following individual positions: Raise, Hold, Lower.

4.4.6 When released the lever must automatically enter the “Hold” position.

4.4.7 Indicators for the rest position and maximum height when tipping shall be installed.

4.4.8 The operation of the tipping must be constrained such that the chassis cab in no way can be damaged.

4.4.9 A mechanical safety device shall be installed to hold the body in the raised position.

4.5 Covering system

4.5.1 A covering system shall be installed for the entire longitudinal and lateral dimensions of the open top of the tip body.

4.5.2 The material shall be flexible and robust enough to handle the commodity being transported in terms of geometry (if heap loaded) and the chemical composition.

4.5.3 The material shall be stored in a self reeling housing unit on the tip body closest to the cab. Top/side mounted guides and runners shall be used to spread the material over the tip body.
4.5.4 Tie downs shall be available on the sides to hold the material if needed.
4.5.5 Design must not inhibit loading (from the sides) and off-loading.
4.5.6 System shall be either electrical or hydraulically operated.
4.5.7 Operation must be such that the rear tailgate does not damage the system when offloading.

4.6 Storage box

4.6.1 One lockable storage box approximately 1 000 mm longitudinally shall be fixed on the chassis under the bodywork.
4.6.2 Hinges for the doors must be fitted to the exterior of the front doors.
4.6.3 There should be seals to prevent ingress of water.

4.7 Crane

4.7.1 The crane shall be mounted between the cab and tip body on a suitable subframe for the application.
4.7.2 There shall be a pair of hydraulic outriggers mounted at the crane.
4.7.3 The crane and the outriggers shall be a single unit including sub systems and components to power it.
4.7.4 The crane shall have a minimum lifting capacity of 7 tons/meter and an outreach of 5 meters.
4.7.5 Crane shall be ergonomically designed with an agile profile and low tare mass.
4.7.6 The crane shall be supplied with the following options for the lift accessories:
4.7.6.1 Clamshell bucket or Log grapple supplied with a minimum load capability of 1 000-2 000 kg.
4.7.6.2 4 500-6 000 kg Rotator knuckle with a hook and safety catch. Lifting tackle to remove various equipment.
4.7.7 Shall comply to DIN 15018.
4.7.8 Shall comply to shall the South African Occupational Health and Safety Act, Act 85 of 1993, Driven Machinery Regulations 2015.
4.7.9 Shall comply to SANS 1599 with particular attention to Part 2: Power driven mobile cranes.
4.7.10 The crane should have a light illuminating its hydraulic controls and and adjustable light on the sides of the vehicle to illuminate the reached work area.

4.8 Crane Controls

4.8.1 Should have controls for complete articulation and movement in all degrees of freedom except movement that can inflict damage to itself and the chassis/driver's cab.
4.8.2 Load sensing devices to warn when maximum payload and dimensional limits are reached.
4.8.3 Crane must only be operable with hydraulic outriggers in their extended position.
4.8.4 The operation of the tipping must be constrained such that the chassis cab in no way can be damaged.
4.8.5 A hold valve/ safety device shall be installed to hold the crane in the raised position in case of hydraulic failure. An alternative method (manual, pneumatic, electric) shall be used to return the crane to "home" position.
4.8.6 Manual and remote-control system to operate the crane.

4.9 Miscellaneous items

4.9.1 Steel constructed rear mud flaps shall be installed.
4.9.2 Rear underrun device shall be installed according to SANS 1055.
4.9.3 Safety access ladders and handrails to the rear tipping body.
4.9.4 Protective structures over fuel tank and pneumatic cylinders.
4.9.5 Lockable protective cover for the batteries.
4.9.6 Wire mesh covers for the front and rear lights.
4.9.7 A pair of heavy-duty wheel chocks to be mounted and easily accessible.
4.9.8 A 50l stainless steel water tank/caddy to be mounted in a position below the body with a tap.

4.9.9 Lockable fuel filler cap with an anti-siphon device installed.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5.Hydraulic system

5.1 In respect of the hydraulic tank the following shall be required:
5.1.1To be constructed of steel.
5.1.2To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.
5.1.3To be fitted with a bump guard from externalities.
5.1.4To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.
5.1.5Must have a filler cap strainer & filter into filler base and filler cap assembly.
5.1.6Oil capacity shall be double that of the oil capacity of the hydraulic cylinder.
5.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the tipper / solenoid valve system.
5.3 The hydraulic valves shall be grouped together for ease of maintenance.
5.4 Test points for testing hydraulic pressures shall be fitted and grouped together.
5.5 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.
5.6 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.
5.7 Safety hold valve for the cylinder/s in case of hydraulic system failure.

6. Power Take Off (PTO)

6.1 The close coupled PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.

6.2 The engine and transmission must not be harmed by use of the PTO.

6.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

6.4 Electronic control module and wiring harness which incorporates the “Rev Up Limiter” must be integrated into the existing OEM vehicle using the OEM 24 Volt system.

6.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.

6.6 The accelerator pedal cannot be used, while the PTO is engaged.

6.7 PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

7. Metal Preparation and Painting Procedure

The following procedure must be adhered to:
7.1 Descale all metal surfaces
7.2 Grind down & smooth all rough edges
7.3 Thoroughly clean all surfaces, rear/side tip body/skip shall be shot blasted.
7.4 Prime the tip body and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.

7.5 Thereafter paint using premium quality automotive finish paint.
7.6 Two coats of primer and one coat of colour.
7.7 Paint film thickness (color coat) must not be less than 100 microns each.

8. Colors

- Underside of Body: Black
- Deck: Black
- Cab and Body: Yellow/White/Blue/Verdi Green

9. Electrical

9.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100mm in diameter that are screwed into position with a stainless-steel flange.
9.2 Reversing camera, buzzer and warning flashing light to be installed when reverse gear is engaged.
9.3 A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on an aluminum bracket closest to cab. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber colored polycarbonate lenses to be fitted to the top of the headboard behind the cab with on/off switch with random flash pattern positioned in the cab.
9.4 Rear work light to be installed with switch installed in the cab.
9.5 A pair of marker LED amber lights on each side of the vehicle.
9.6 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
9.7 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

10. Signage and Markings

10.1 Data plates shall be fitted for:

a) The hydraulic system indicating tank capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

b) The rear tip body detailing safe working load, material specification, tailgate operation and general maintenance.

c) Safe working load (SWL) decals shall be clearly visible on the sides of the tipping body.

d) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

e) The crane system indicating capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

10.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

10.3 Chevron board and durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

10.4 Retro-reflective tape shall be fitted to both sides and the rear of the tip- body as well as the rear bumper and the items in chapter 4 that make up the perimeter of the vehicle.

10.5 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

11. Fire Extinguisher

A 4.5kg dry powder type extinguisher to be mounted in a suitable exterior position preferably close to the generator storage box.

Item 47: Technical specification for a Construction Side Tipping body

1. Scope

This item shall be a side tipping body expected to carry a volumetric capacity of 16-20 m^3 with a payload mass of 14-16 000 kg. The body will be used primarily to transport sludge from waste treatment facilities. Furthermore, storage boxes and other structures are required and the mass of these units and the equipment storage volumes must be accommodated in the design and supply of the completed vehicle.

2. Vehicle

The chassis cab/vehicle for this item shall be an 6x4 single chassis cab, with a minimum Gross Vehicle Mass (GVM) of 22 to 33 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The rear tipping body and structures shall be constructed of Corten corrosion resistant steel. Furthermore, the inner floor and the interior side panels of the skip shall have wear plates seated on top of the steel structure. For the wear plates a suitable chromium/stainless steel/composite liner shall be used with adequate strength and corrosion properties.

4. Construction requirements

4.1 Chassis mounting

All mounting to be in accordance with directives specified by the Original Equipment Manufacturer. A separator insert shall be fitted to the rear most axle in case of uneven mass distribution.

4.2 Sub Frame

The sub frame shall extend the full body length.

4.3 Side tipper body

4.3.1 The body shall be mounted at the rear most of the chassis
4.3.2 The headboard shall be extended 100 mm to a height above the cab.
4.3.3 The geometric shape shall offer maximum capacity and easy loading and offloading.
4.3.4 The top rim of the body shall be reinforced throughout with a heavy-duty structural member to act as a bump guard.
4.3.5 All structural sections be it channels, bent plate etc. shall be reinforced using gussets evenly spaced in them such that they do not warp or buckle.
4.3.6 The floor of the body shall be reinforced using structural members.

4.3.7 The inner wear plates shall be installed such that maintenance of these components can be carried out when minimum thickness is reached.

4.4 Tipping

4.4.1 Tipping operation shall be achieved by means of a multi stage hydraulic cylinder/s which is mounted upon a suitably reinforced full-length sub frame. Tipping angle shall not be less than 45˚.

4.4.2 The sub frame must start as close as possible to the rear of the truck cab in order to spread the stresses imposed.

4.4.3 When operating conditions demand, the hydraulic cylinder shall be capable of continuously handling an overload of up to 25% of the specified payload (including body mass).

4.4.4 An electrical switch shall be mounted on the sub frame which automatically activates a buzzer and light fitted inside the cabs dashboard when the body is raised.

4.4.5 The tipping control must incorporate the following individual positions: Raise, Hold, Lower.

4.4.6 When released the lever must automatically enter the “Hold” position.

4.4.7 Indicators for the rest position and maximum height when tipping shall be installed.

4.4.8 The operation of the tipping must be constrained such that the chassis cab in no way can be damaged.

4.4.9 A mechanical safety device shall be installed to hold the body in the raised position.

4.5 Covering system

4.5.1 A covering system shall be installed for the entire longitudinal and lateral dimensions of the open top of the tip body.

4.5.2 The material shall be flexible and robust enough to handle the commodity being transported in terms of geometry (if heap loaded) and the chemical composition.

4.5.3 The material shall be stored in a self reeling housing unit on the tip body closest to the cab. Top/side mounted guides and runners shall be used to spread the material over the tip body.

4.5.4 Tie downs shall be available on the sides to hold the material if needed.

4.5.5 Design must not inhibit loading (from the sides) and off-loading.

4.5.6 System shall be either electrical or hydraulically operated.

4.5.7 Operation must be such that the rear tailgate does not damage the system when offloading.

4.6 Storage box

4.6.1 One lockable storage box approximately 1 000 mm longitudinally shall be fixed on the chassis under the bodywork.

4.6.2 Hinges for the doors must be fitted to the exterior of the front doors.

4.6.3 There should be seals to prevent ingress of water.

4.7 Miscellaneous items

4.7.1 Steel constructed rear mud flaps shall be installed.

4.7.2 Rear underrun device shall be installed according to SANS 1055.

4.7.3 Safety access ladders and handrails to the rear tipping body.

4.7.4 Protective structures over fuel tank and pneumatic cylinders.

4.7.5 Lockable protective cover for the batteries.

4.7.6 Wire mesh covers for the front and rear lights.

4.7.7 A pair of heavy-duty wheel chocks to be mounted and easily accessible.

4.7.8 A 50l stainless steel water tank/caddy to be mounted in a position below the body with a tap.

4.7.9 Lockable fuel filler cap with an anti-siphon device installed.

4.7.10 Electrical connector complying to SANS 1327: Electrical connectors for towing and towed vehicles.

4.7.11 40/50 mm Rockinger type trailer coupling to comply with DIN 74054, ECE R55-01 for on road use.

4.7.12 Pneumatic connections complying to SANS 1477-3: Pneumatic braking system connections between drawing and drawn vehicles, Part 3: The arrangement of connections on vehicles, using contact type or palm type couplings.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5 Hydraulic system

5.1 In respect of the hydraulic tank the following shall be required:

5.1.1 To be constructed of steel.

5.1.2 To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.

5.1.3 To be fitted with a bump guard from externalities.

5.1.4 To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.

5.1.5 Must have a filler cap strainer & filter into filler base and filler cap assembly.

5.1.6 Oil capacity shall be double that of the oil capacity of the hydraulic cylinder.

5.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the tipper / solenoid valve system.

5.3 The hydraulic valves shall be grouped together for ease of maintenance.

5.4 Test points for testing hydraulic pressures shall be fitted and grouped together.

5.5 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.

5.6 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.

5.7 Safety hold valve for the cylinder/s in case of hydraulic system failure.

6. Power Take Off (PTO)

6.1 The close coupled PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.

6.2 The engine and transmission must not be harmed by use of the PTO.

6.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

6.4 Electronic control module and wiring harness which incorporates the “Rev Up Limiter” must be integrated into the existing OEM vehicle using the OEM 24 Volt system.

6.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.

6.6 The accelerator pedal cannot be used, while the PTO is engaged.

6.7 PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

7. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

7.1 Descale all metal surfaces

7.2 Grind down & smooth all rough edges

7.3 Thoroughly clean all surfaces, rear/side tip body/skip shall be shot blasted.

7.4 Prime the tip body and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.

7.5 Thereafter paint using premium quality automotive finish paint.

7.6 Two coats of primer and one coat of colour.

7.7 Paint film thickness (color coat) must not be less than 100 microns each.

8. Colors

- Underside of Body: Black
- Deck: Black
- Cab and Body: Yellow/White/Blue/Verdi Green

9. Electrical

9.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100mm in diameter that are screwed into position with a stainless-steel flange.

9.2 Reversing camera, buzzer and warning flashing light to be installed when reverse gear is engaged.

9.3 A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on an aluminum bracket closest to cab. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber colored polycarbonate lenses to be fitted to the top of the headboard behind the cab with on/off switch with random flash pattern positioned in the cab.

9.4 Rear work light to be installed with switch installed in the cab.

9.5 A pair of marker LED amber lights on each side of the vehicle.

9.6 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

9.7 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

10. Signage and Markings

10.1 Data plates shall be fitted for:

a) The hydraulic system indicating tank capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

b) The rear tip body detailing safe working load, material specification, tailgate operation and general maintenance.

c) Safe working load (SWL) decals shall be clearly visible on the sides of the tipping body.

d) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

10.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

10.3 Chevron board and durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

10.4 Retro-reflective tape shall be fitted to both sides and the rear of the tip- body as well as the rear bumper and the items in chapter 4 that make up the perimeter of the vehicle.

10.6 Hazardous chemical transporting signage to be placed at the sides and rear of the trailers according to SANS 10232.

10.7 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

11. Fire Extinguisher

A 4.5kg dry powder type extinguisher to be mounted in a suitable exterior position preferably close to the generator storage box.

Item 48: Technical specification for a 6500-liter water tanker

1. Scope

The intent of this specification is to provide for a fully operational vehicle which can transport a specified amount of water as per highway conditions. The bidder shall provide two options of this tanker; 48.1 Drinking water tanker for use in communities and 48.2 Recycled water tanker for construction application.

2. Vehicle

The chassis cab/vehicle for this item shall be a 4x2 single chassis cab, with a minimum Gross Vehicle Mass (GVM) of 13 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The tank, tank ends and water ways will be made out 3CR12 steel.

4. Construction requirements

4.1 Tank

4.1.1 The tank must have a low centre of mass design.

4.1.2 Baffled water tank designed to withstand the additional rigours of road transport.

4.1.3 The tank's mounting shall be so designed to eliminate any vehicle chassis flex being transmitted to the tank. Preferably rubber block type to allow for movement when negotiating rough road.

4.1.4 Chassis mounting method to conform to original equipment manufacturer (OEM) body mounting directive.

4.1.5 The following shall be incorporated;

a) A large manhole with hinged cover approximately 450 mm diameter.
b) A full length spill box.
c) Access ladder with steps covered from non-slip tread plate (Vastrap) to be positioned to access the manhole. Accommodation for safety harnesses to be made along and on top of the tank.
d) Suitable ventilation to ensure that there is an uninterrupted supply to the pump.
e) Rear mounted platform with bolt on safety rails. Platform shall be mounted independent of the water tank primary structure.
f) Tank over flow, draining to the left hand side of the vehicle.
g) Rear mounted sight glass to view tank contents and level in increments.
h) Provision to fill the tank on the left hand side from a hydrant. A two stage water level alarm system shall be installed to protect the pump. The first stage should initiate an audible alarm and the second stage should deactivate the pump.
i) The option of having two sensors in the water tank (one at the front and one at the rear) such that it can provide a signal to log the amount of water in the tank and the amount dispensed.

4.2 Tank plumbing, valves and hoses (for 48.1)

4.2.1 The piping for the pump will be of a permanent nature and will be so arranged that by means of quick operating valves, the pump can be used for filling the tank as well as discharge.
4.2.2 Single 2-inch outlet tap for general use shall be installed.
4.2.3 Distribution outlets for the tank shall be from the floor of the tank to utilise all of the tank contents and it must have no issues distributing water if parked on a gradient. It shall consist of 6 outlets with detachable 400 mm long hoses and 1-inch ball valves shall be supplied for each side of the tank.
4.2.4 Ø 50 mm Perspex sight tube indicator with protective cover.
4.2.5 Ø 50 mm dump valve at tank rear end for quick discharge of tank.
4.2.6 Pair off flexible non corrosive metal hoses (6m each) with agricultural couplings and strainer foot valves to be supplied.

4.2 Tank plumbing, valves and hoses (for 48.2)

4.2.1 The piping for the pump will be of a permanent nature and will be so arranged that by means of quick operating valves, the pump can be used for filling the tank as well as discharge.
4.2.2 Full width spray bar mounted for optimised spray coverage area. Spray bar shall be protected from a person stepping on it.
4.2.3 Ø 50 mm Perspex sight tube indicator with protective cover.
4.2.4 Ø 50 mm dump valve at tank rear end for quick discharge of tank.
4.2.5 Pair off flexible non corrosive metal hoses (6m each) with agricultural couplings and strainer foot valves to be supplied.

4.3 Storage Boxes

4.3.1 An appropriate size lockable storage box with a removable lid shall be installed adjacent to the tank to hold the hoses and valves.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Water Pump

5.1 To supply and mount a hydraulic driven 3-inch self-priming centrifugal pump, suitable for clean water. For construction water application the pump shall be able to handle recycled and grey water. Therefore, pump should be made of premium materials and have ceramic coated interior and plumbing.
5.2 Should be robust, high volume and high pressure and piped to allow for pumping in and discharging out.
5.3 It must be fitted as per manufacturer's specifications in an easily accessible place with all relevant safety features i.e. regulator, secondary filtration etc.
5.4 The fitment of the high pressure pump should not negatively impact on the vehicles ground clearance.
5.5 The pump should include an adjustable by-pass valve and pressure release valve. A three way change over valve should redirect the flow from the hose reel to a manual by-pass or to an auxiliary take off point.
5.6 Pump shall be mounted on a suspended shock proof platform.

6. Power Take Off (PTO)

6.1 The PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way. PTO shall preferably be closed coupled.
For 48.2 the vehicle should be able to travel at 20km/hr whilst spraying.
6.2 The engine and transmission must not be harmed by use of the PTO.
6.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.
6.4 Electronic control module and wiring harness which incorporates the "Rev Up Limiter" must be integrated into the existing OEM vehicle using the OEM 24 Volt system.

6.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.
6.6 The accelerator pedal cannot be used, while the PTO is engaged.
6.7 PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

7. Lighting

7.1 One rubber encased, adjustable spotlight, with operating switch, shall be installed at the top of the tank in proximity of the manhole and refilling point of the vehicle.

7.2 LED lights (minimum of three) alongside the tank shall be installed to provide ambient lighting on both sides, for visibility on site. Operating switches shall be installed and labelled inside the driver's cab.

7.3 Two LED hazard lights should be mounted as follows;

a) A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.
b) A pair of flashing hazard lights should be mounted at the rear of the truck. The hazard lights should be protected from damage.

8. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

8.1 Descale all metal surfaces
8.2 Grind down & smooth all rough edges
8.3 Thoroughly clean all surfaces
8.4 Prime the tank and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
8.5 Thereafter paint using two coats of premium quality twin pack automotive paint
8.6 Paint film thickness (color coat) must not be less than 80 microns each.

9. Colors

Underside of Body	: Black
Cab and tank exterior	: White/Yellow/Verdi Green
Tank interior	: Solvent free, amine cured epoxy coating in white

10. Electrical

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

10.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100 mm in diameter that are screwed into position with a stainless steel flange.
10.2 Dual indicator stop and taillight units to be fitted.
10.3 Reversing camera (with an LED scene light to assist), buzzer warning and flashing light to be installed when reverse gear is engaged.
10.4 Suitable CCTV cameras to provide clear view around the sides and rear of the vehicle for item 48.1.
10.5 Monitor screen to be installed in driver cab with option of multiple on screen displays that can be used for all cameras.
10.6 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

10.7 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

11. Signage and Markings

11.1 Data plates shall be fitted for:

a) The water pump system indicating capacity, system pressure, fluid type/grade, specifications, operation and test criteria.

b) The tank detailing safe working load, material specification, operation and general maintenance.

c) Safe working load (SWL) decals shall be clearly visible on the sides of the tank. For the construction water tanker "NO DRINKING WATER" shall be clearly labelled across the entire tank on each side.

d) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

11.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

11.3 Chevron board and durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

11.4 Retro-reflective tape shall be fitted to both sides and the rear of the tip- body as well as the rear bumper and the items in chapter 4 that make up the perimeter of the vehicle.

12. Fire Extinguisher

A 4.5kg dry powder type extinguisher to be mounted in a suitable exterior position preferably close to the generator storage box.

Item 49: Technical specification for a 14 000-liter water tanker

1. Scope

The intent of this specification is to provide for a fully operational vehicle which can transport a specified amount of water as per highway conditions. The bidder shall provide two options of this tanker; 49.1 Drinking water tanker for use in communities and 49.2 Recycled water tanker for construction application.

2. Vehicle

The chassis cab/vehicle for this item shall be a single chassis cab, with a minimum Gross Vehicle Mass (GVM) of 22 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The tank, tank ends and water ways will be made out 3CR12 steel.

4. Construction requirements

4.1 Tank

4.1.1 The tank must have a low centre of mass design.

4.1.2 Baffled water tank designed to withstand the additional rigours of road transport.

4.1.3 The tank's mounting shall be so designed to eliminate any vehicle chassis flex being transmitted to the tank. Preferably rubber block type to allow for movement when negotiating rough road.

4.1.4Chassis mounting method to conform to original equipment manufacturer (OEM) body mounting directive.

4.1.5The following shall be incorporated;

a) A large manhole with hinged cover approximately 450 mm diameter.
b) A full length spill box.
c) Access ladder with steps covered from non-slip tread plate (Vastrap) to be positioned to access the manhole. Accommodation for safety harnesses to be made along and on top of the tank.
d) Suitable ventilation to ensure that there is an uninterrupted supply to the pump.
e) Rear mounted platform with bolt on safety rails. Platform shall be mounted independent of the water tank primary structure.
f) Tank over flow, draining to the left hand side of the vehicle.
g) Rear mounted sight glass to view tank contents and level in increments.
h) Provision to fill the tank on the left hand side from a hydrant. A two stage water level alarm system shall be installed to protect the pump. The first stage should initiate an audible alarm and the second stage should deactivate the pump.
i) The option of having two sensors in the water tank (one at the front and one at the rear) such that it can provide a signal to log the amount of water in the tank and the amount dispensed.

4.2 Tank plumbing, valves and hoses (for 49.1)

4.2.1 The piping for the pump will be of a permanent nature and will be so arranged that by means of quick operating valves, the pump can be used for filling the tank as well as discharge.

4.2.2 Single 2-inch outlet tap for general use shall be installed.

4.2.3 Distribution outlets for the tank shall be from the floor of the tank to utilise all of the tank contents and it must have no issues distributing water if parked on a gradient. It shall consist of 8 outlets with detachable 400 mm long hoses and 1-inch ball valves shall be supplied for each side of the tank.

4.2.4 Ø 50 mm Perspex sight tube indicator with protective cover.

4.2.5 Ø 50 mm dump valve at tank rear end for quick discharge of tank.

4.2.6 Pair off flexible non corrosive metal hoses (5m each) with agricultural couplings and strainer foot valves to be supplied.

4.2 Tank plumbing, valves and hoses (for 49.2)

4.2.1 The piping for the pump will be of a permanent nature and will be so arranged that by means of quick operating valves, the pump can be used for filling the tank as well as discharge.

4.2.2 Full width spray bar mounted for optimised spray coverage area. Spray bar shall be protected from a person stepping on it.

4.2.3 Ø 50 mm Perspex sight tube indicator with protective cover.

4.2.4 Ø 50 mm dump valve at tank rear end for quick discharge of tank.

4.2.5 Pair off flexible non corrosive metal hoses (6m each) with agricultural couplings and strainer foot valves to be supplied.

4.3 Storage Boxes

4.3.1 An appropriate size lockable storage box with a removable lid shall be installed adjacent to the tank to hold the hoses and valves.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Water Pump

5.1 To supply and mount a hydraulic driven 3-inch self-priming centrifugal pump, suitable for clean water. For construction water application the pump shall be able to handle recycled and grey water. Therefore, pump should be made of premium materials and have ceramic coated interior and plumbing.
5.2 Should be robust, high volume and high pressure and piped to allow for pumping in and discharging out.
5.3 It must be fitted as per manufacturer's specifications in an easily accessible place with all relevant safety features i.e. regulator, secondary filtration etc.
5.6 The fitment of the high pressure pump should not negatively impact on the vehicles ground clearance.
5.7 The pump should include an adjustable by-pass valve and pressure release valve. A three way change over valve should redirect the flow from the hose reel to a manual by-pass or to an auxiliary take off point.
5.8 Pump shall be mounted on a suspended shock proof platform.

6. Power Take Off (PTO)

6.1 The PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way. PTO shall preferably be close coupled.
6.2 The engine and transmission must not be harmed by use of the PTO.
6.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.
6.4 Electronic control module and wiring harness which incorporates the "Rev Up Limiter" must be integrated into the existing OEM vehicle using the OEM 24 Volt system.
6.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.
6.6 The accelerator pedal cannot be used, while the PTO is engaged.
6.7 PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

7. Lighting

7.1 One rubber encased, adjustable spotlight, with operating switch, shall be installed at the top of the tank in proximity of the manhole and refilling point of the vehicle.

7.2 LED lights (minimum of three) alongside the tank shall be installed to provide ambient lighting on both sides, for visibility on site. Operating switches shall be installed and labelled inside the driver's cab.

7.3 Two LED hazard lights should be mounted as follows;

a) A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.
b) A pair of flashing hazard lights should be mounted at the rear of the truck. The hazard lights should be protected from damage.

8. Metal Preparation and Painting Procedure

The following procedure must be adhered to:
8.1 Descale all metal surfaces
8.2 Grind down & smooth all rough edges
8.3 Thoroughly clean all surfaces

8.4 Prime the tank and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
8.5 Thereafter paint using two coats of premium quality twin pack automotive paint
8.6 Paint film thickness (color coat) must not be less than 80 microns each.

9. Colors

Underside of Body	: Black
Cab and tank exterior	: White
Tank interior	: Solvent free, amine cured epoxy coating in white

10. Electrical

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

10.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100 mm in diameter that are screwed into position with a stainless-steel flange.
10.2 Dual indicator stop and taillight units to be fitted.
10.3 Reversing camera (with an LED scene light to assist), buzzer warning and flashing light to be installed when reverse gear is engaged.
10.4 Suitable CCTV cameras to provide clear view around the sides and rear of the vehicle for item 49.1.
10.5 Monitor screen to be installed in driver cab with option of multiple on screen displays that can be used for all cameras.
10.6 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
10.7 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

11. Signage and Markings

11.1 Data plates shall be fitted for:

a) The water pump system indicating capacity, system pressure, fluid type/grade, specifications, operation and test criteria.

b) The tank detailing safe working load, material specification, operation and general maintenance.

c) Safe working load (SWL) decals shall be clearly visible on the sides of the tank. For the construction water tanker “NO DRINKING WATER” shall be clearly labelled across the entire tank on each side.

d) Safety, operation, technical data, dates of manufacture, manufacturer’s details etc.

11.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

11.3 Chevron board and durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

11.4 Retro-reflective tape shall be fitted to both sides and the rear of the tip- body as well as the rear bumper and the items in chapter 4 that make up the perimeter of the vehicle.

11.5 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

12. Fire Extinguisher

A 4.5kg dry powder type extinguisher to be mounted in a suitable exterior position preferably close to the generator storage box.

Item 50: Technical specification for a 18-22 000-liter water tanker

1. Scope

The intent of this specification is to provide for a fully operational vehicle which can transport a specified amount of water as per highway conditions. The bidder shall provide two options of this tanker; 50.1 Drinking water tanker for use in communities and 50.2 Recycled water tanker for construction application.

2. Vehicle

The chassis cab/vehicle for this item shall be a single chassis cab, with a minimum Gross Vehicle Mass (GVM) of 22 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The tank, tank ends and water ways will be made out 3CR12 steel.

4. Construction requirements

4.1Tank

4.1.1 The tank must have a low centre of mass design.

4.1.2 Baffled water tank designed to withstand the additional rigours of road transport.

4.1.3 The tank's mounting shall be so designed to eliminate any vehicle chassis flex being transmitted to the tank. Preferably rubber block type to allow for movement when negotiating rough road.

4.1.4Chassis mounting method to conform to original equipment manufacturer (OEM) body mounting directive.

4.1.5The following shall be incorporated;

a) A large manhole with hinged cover approximately 450 mm diameter.
b) A full length spill box.
c) Access ladder with steps covered from non-slip tread plate (Vastrap) to be positioned to access the manhole. Accommodation for safety harnesses to be made along and on top of the tank.
d) Suitable ventilation to ensure that there is an uninterrupted supply to the pump.
e) Rear mounted platform with bolt on safety rails. Platform shall be mounted independent of the water tank primary structure.
f) Tank over flow, draining to the left hand side of the vehicle.
g) Rear mounted sight glass to view tank contents and level in increments.

h) Provision to fill the tank on the left hand side from a hydrant. A two stage water level alarm system shall be installed to protect the pump. The first stage should initiate an audible alarm and the second stage should deactivate the pump.

i) The option of having two sensors in the water tank (one at the front and one at the rear) such that it can provide a signal to log the amount of water in the tank and the amount dispensed.

4.2 Tank plumbing, valves and hoses (for 50.1)

4.2.1 The piping for the pump will be of a permanent nature and will be so arranged that by means of quick operating valves, the pump can be used for filling the tank as well as discharge.
4.2.2 Single 2-inch outlet tap for general use shall be installed.
4.2.3 Distribution outlets for the tank shall be from the floor of the tank to utilise all of the tank contents and it must have no issues distributing water if parked on a gradient. It shall consist of 8 outlets with detachable 400 mm long hoses and 1-inch ball valves shall be supplied for each side of the tank.
4.2.4 Ø 50 mm Perspex sight tube indicator with protective cover.
4.2.5 Ø 50 mm dump valve at tank rear end for quick discharge of tank.
4.2.6 Pair off flexible non corrosive metal hoses (5m each) with agricultural couplings and strainer foot valves to be supplied.

4.2 Tank plumbing, valves and hoses (for 50.2)

4.2.1 The piping for the pump will be of a permanent nature and will be so arranged that by means of quick operating valves, the pump can be used for filling the tank as well as discharge.
4.2.2 Full width spray bar mounted for optimised spray coverage area. Spray bar shall be protected from a person stepping on it.
4.2.3 Ø 50 mm Perspex sight tube indicator with protective cover.
4.2.4 Ø 50 mm dump valve at tank rear end for quick discharge of tank.
4.2.5 Pair off flexible non corrosive metal hoses (6m each) with agricultural couplings and strainer foot valves to be supplied.

4.3 Storage Boxes

4.3.1 An appropriate size lockable storage box with a removable lid shall be installed adjacent to the tank to hold the hoses and valves.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Water Pump

5.1 To supply and mount a hydraulic driven 3-inch self-priming centrifugal pump, suitable for clean water. For construction water application the pump shall be able to handle recycled and grey water. Therefore, pump should be made of premium materials and have ceramic coated interior and plumbing.
5.2 Should be robust, high volume and high pressure and piped to allow for pumping in and discharging out.
5.3 It must be fitted as per manufacturer's specifications in an easily accessible place with all relevant safety features i.e. regulator, secondary filtration etc.
5.4The fitment of the high pressure pump should not negatively impact on the vehicles ground clearance.

5.5 The pump should include an adjustable by-pass valve and pressure release valve. A three way change over valve should redirect the flow from the hose reel to a manual by-pass or to an auxiliary take off point.

5.6 Pump shall be mounted on a suspended shock proof platform.

6. Power Take Off (PTO)

6.1 The PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the

vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way. PTO shall preferably be close coupled.
6.2 The engine and transmission must not be harmed by use of the PTO.
6.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.
6.4 Electronic control module and wiring harness which incorporates the "Rev Up Limiter" must be integrated into the existing OEM vehicle using the OEM 24 Volt system.
6.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.
6.6 The accelerator pedal cannot be used, while the PTO is engaged.
6.7 PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

7. Lighting

7.1 One rubber encased, adjustable spotlight, with operating switch, shall be installed at the top of the tank in proximity of the manhole and refilling point of the vehicle.

4.2 LED lights (minimum of three) alongside the tank shall be installed to provide ambient lighting on both sides, for visibility on site. Operating switches shall be installed and labelled inside the driver's cab.
4.3 Two LED hazard lights should be mounted as follows;
a) A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.
b) A pair of flashing hazard lights should be mounted at the rear of the truck. The hazard lights should be protected from damage.

8. Metal Preparation and Painting Procedure

The following procedure must be adhered to:
8.1 Descale all metal surfaces
8.2 Grind down & smooth all rough edges
8.3 Thoroughly clean all surfaces
8.4 Prime the tank and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
8.5 Thereafter paint using two coats of premium quality twin pack automotive paint
8.6 Paint film thickness (color coat) must not be less than 80 microns each.

9. Colors

Underside of Body	: Black
Cab and tank exterior	: White
Tank interior	: Solvent free, amine cured epoxy coating in white

10. Electrical

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

10.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100 mm in diameter that are screwed into position with a stainless-steel flange.
10.2 Dual indicator stop and taillight units to be fitted.
10.3 Reversing camera (with an LED scene light to assist), buzzer warning and flashing light to be installed when reverse gear is engaged.
10.4 Suitable CCTV cameras to provide clear view around the sides and rear of the vehicle for item 50.1.

10.5 Monitor screen to be installed in driver cab with option of multiple on screen displays that can be used for all cameras.

10.6 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

10.7 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

11. Signage and Markings

11.1 Data plates shall be fitted for:

a) The water pump system indicating capacity, system pressure, fluid type/grade, specifications, operation and test criteria.

b) The tank detailing safe working load, material specification, operation and general maintenance.

c) Safe working load (SWL) decals shall be clearly visible on the sides of the tank. For the construction water tanker “NO DRINKING WATER” shall be clearly labelled across the entire tank on each side.

d) Safety, operation, technical data, dates of manufacture, manufacturer’s details etc.

11.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

11.3 Chevron board and durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

11.4 Retro-reflective tape shall be fitted to both sides and the rear of the tip- body as well as the rear bumper and the items in chapter 4 that make up the perimeter of the vehicle.

11.5 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

12. Fire Extinguisher

A 4.5kg dry powder type extinguisher to be mounted in a suitable exterior position preferably close to the generator storage box.

Item 51: Technical specification for a welder’s superstructure

1. Scope

The intent of this specification is to provide for a fully operational vehicle, which has the capability to do on site welding and hold relevant tools and material for the water and sanitation department of eThekwini municipality.

2. Vehicle

The chassis cab/vehicle for this item shall be a single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 7 000 - 13 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

a) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.

b) The end of Section 7 covers other specifications/standards that shall be adhered to.

3. Material specification

The load bearing items shall be made out of structural steel to withstand the payload. Corten steel for the structural rolled sections and flat plate is recommended. Whilst Hardox for the wear pads and floors.

4. Construction requirements

4.1 Rear body loading area

4.1.1 A minimum of 3 mm thickness is recommended for the structural members.

4.1.2 Dimensions of the loading area shall be the full length of the chassis and full width of the cab.

4.1.3 Areas of the floor that shall be used as access walkways shall have a hard wearing, slip resistant material (Vastrap).

4.1.4 Access ladder and railings/grabs shall be installed in a suitable position to the loading area.

4.1.5 Underneath the top plate of the loading rear in between the longitudinal chassis structural members shall be two compartments: one for a 6 000 mm extension ladder and the other to hold long steel tools and round bar/piping material. The floor of this compartment shall have stops and be lined with an insertion rubber to reduce noise. There shall be a lockable rear access door.

4.1.6 At the rear panel below the rear body below the lights and above the bumper; a heavy duty 150 mm engineering vice shall be installed. It should be mounted on a pull out stand which can be concealed behind a lockable access door. Pull out stand should be long enough to allow user friendly workability.

4.2 Lockers

There shall be three lockers on the passenger and driver side of the vehicle. The lockers shall have a height of 1 000 mm, lateral depth of 700 mm. Each locker shall have aluminium roller shutter doors which are lockable. The locker shall start from behind the cab. Adjacent to the rear cab shall be a storage box the entire lateral width of the cab, more information is provided in 5.5.

The lockers shall house tools and round bar/piping material. Shelving and holders will be required in the lockers and this will be provided to the manufacturer based on eThekwini department's current tooling and equipment. On top of the lockers a storage box shall be constructed with 3CR12 wire mesh to hold pipe flanges, valves and general material.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Welding machine

5.1 A self-powered direct current welding machine shall be positioned at the rear of the truck with user friendly access behind the cab between the lockers. The machine shall be accessible from all sides and it shall be positioned such that access to the rest of the rear body area is possible. The machine shall be expected to be of premium quality suitable for extreme operating conditions, a recgonised brand such as Lincoln Electric or better are recommended.
The machine shall meet the following minimum specifications;

Output current range	30-500 Amps
Output	400 to 500 Amps @ 60% - 100% Duty Cycle
Auxiliary power outputs (SABS compliant)	240 Volts @ 1 Phase - 50Hz to 380 Volts @ 3 Phase - 50Hz
Engine	Capacity:2 000 cc Power: 35 kW and Torque: 200 Nm

5.2 Output sockets to be SABS compliant and the unit's generator should accommodate one standard 3 pin 220 Volt socket.
5.3 The machine shall be supplied with welding cables with a minimum length of 10 m and include spare welding fittings.
5.4 The cables shall be installed on self-retracting cable reels and enclosed in a lockable compartment.
5.5 A compartment behind the rear cab shall be designated to securely accommodate two pairs of oxygen and acetylene cylinders. A caged door lockable door shall be installed.
5.6 A cutting torch with couplings and 10 m hoses shall be provided and installed in a same manner as the welding cables.
5.7 Welding machine shall have an emergency cut off switch.
5.8 The base clamps to secure the machine shall be mounted for easy access. Machine shall have lifting points to easily remove for maintenance.
5.9 Exhaust shall not expel gas into the rear loading area, it shall be re-routed away from the immediate vicinity.

6. Lighting

6.1 A waterproof slim line bar light 1200 mm in length and 200 mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.

6.2 Three rubber encased spotlight shall be installed to the rear top of the loading area for the welding machine and loading area. Switches shall be located in a user-friendly waterproof compartment.

6.3 Two interior lights shall be installed in the crew cab with switches in a user-friendly position near the entry/exit door.

6.4 Two scene lights shall be installed on each side and the rear of the loading area to help illuminate the surroundings of the vehicle.

7. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

7.1 Descale all metal surfaces.
7.2 Grind down & smooth all rough edges.
7.3 Thoroughly clean all surfaces.
7.4 Prime the unit and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
7.5 The bin must be painted in white, with 3 coats polyurethane or equivalent product.
7.6 Thereafter paint using two coats of premium quality twin pack automotive paint.
7.7 Paint film thickness (color coat) must not be less than 80 microns each.

8. Colors

Underside of Body	Black
Cab and Body	White
Deck and structures	White

9. Electrical

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

9.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more of minimum 100 mm in diameter that are screwed into position with a stainless-steel flange.
9.2 Front fog lamps installed.

9.3 Reversing camera with monitor in cab, buzzer and warning light to be installed when reverse gear is engaged.
9.4 Battery isolator switch.
9.5 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
9.6 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

10. Signage and Markings

10.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary:

a) The welding machine and its engine, system ratings, oil type/grade, specifications and test criteria.

b) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

10.2 Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

10.3 Chevron board to be fitted section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.

10.4 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

10.5 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

10.6 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

10.7 Registration number to be clearly marked on roof.

10.8 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

11. Miscellaneous items

11.1 Mudguards suitable for the application shall be fitted.
11.2 The batteries to have a weather proof cover to prevent debris and moisture ingression.
11.3 Fuel tank, batteries, pneumatic cylinders and hydraulic tank to have structures built around them for safety.
11.4 Bolt on covers for safety where parts are rotating, swinging or of high temperature.
11.5 Two 4.5 kg fire extinguisher should be supplied and fitted in accessible positions close to the driver and close to the welding machine for use in case of emergency.
11.6 Bolt on head and tail light guards.
11.7 Specialised tools and fittings for the welding machine and oxygen and acetylene system to be made available for purchasing, as and when required (Please provide list of options and pricing as part of submission).

Item 52: Technical specification for a 4-ton mobile workshop (plumbers' body)

1. Scope

The intent of this specification is to provide for a fully operational vehicle, which has the capability to do on site repairs and hold relevant tools and material for the water and sanitation and electricity department of eThekwini municipality.

2. Vehicle

The chassis cab/vehicle for this item shall be a 4x2 single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 13 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The load bearing items shall be made out of structural steel to withstand the payload. Corten steel for the structural rolled sections and flat plate is recommended. Aluminium for the roof and galvanised steel for the internal storage compartments.

4. Construction requirements

4.1 Rear body loading area

4.1.1 A minimum of 3 mm thickness is recommended for the structural members. Sheet plate

4.1.2 Dimensions of the loading area shall be the full length of the chassis and full width of the cab.

4.1.3 Areas of the floor that shall be used as access walkways shall have a hard wearing, slip resistant material (Vastrap).

4.1.4 Access ladder and railings/grabs shall be installed in a suitable position to the loading area and the roof.

4.1.5 Underneath the top plate of the loading rear in between the longitudinal chassis structural members shall be two compartments: one for an extension ladder and the other to hold long steel tools and round bar/piping material. The floor of this compartment shall have stops and be lined with an insertion rubber to reduce noise. There shall be a lockable rear access door.

4.1.6 At the rear panel below the rear body below the lights and above the bumper; a heavy duty 150 mm engineering vice shall be installed. It should be mounted on a pull out stand which can be concealed behind a lockable access door. Pull out stand should be long enough to allow user friendly workability.

4.1.7 A heavy duty tailgate shall be fitted with a heavy duty engineers vice and an extra heavy duty pipe vice is required.

4.1.8 The tailgate shall be 500 mm in height and shall be held in the horizontal position by extra heavy duty chains which also can be released if necessary.

4.1.9 A large grab handle shall be fitted externally on both sides of the opening above the tailgate.

4.1.10 A lockable aluminium roller door shall be fitted at the rear above the tailgate.

4.2 Storage Lockers

4.2.1 There shall be four lockers on the passenger and driver side of the vehicle. The lockers shall be built with the doors facing the outside of the vehicle.

4.2.2 The first lockers shall have a width of 900 mm, lateral depth of 500-600 mm. Each locker shall have aluminium roller shutter doors which are lockable. The first set of lockers shall be partitioned off by a full height solid panel which will separate it from the rest of the rear loading area.

4.2.3 The second an third lockers shall have a width of 950 mm, lateral depth of 500-600 mm. Each locker shall have aluminium roller shutter doors which are lockable.

4.2.4 The last pair of lockers shall have a width of 300 mm, lateral depth of 500-600 mm. Each locker shall have aluminium roller shutter doors which are lockable.

4.2.5 The lockers shall house tools and round bar/piping material. Shelving and holders will be required in the lockers and this will be provided to the manufacturer based on eThekwini department's current tooling and equipment. The back of the lockers be constructed with a solid panel for 90% of the height and the rest will 3CR12 wire mesh.

4.2.6 A storage compartment shall be constructed at the front of the load body, between the front side compartments. The height shall be 500mm and the depth shall be 500mm. The lid shall be top hinged, and a hasp and staple shall be fitted.

4.3 Roof

4.3.1 A roof shall be radiused at the sides and strongly supported and gusseted to allow persons to safety walk on the roof.

4.3.2 A roof rack constructed of galvanised framing shall be fitted. 3mm 3CR12 mesh shall be fitted to the bottom, both sides and the rear.

4.3.3 A solid galvanised panel shall be fitted at the front to prevent items moving forward off the vehicle. It shall be the full width and length of the rear and 250 mm high. Five equally spaced cross bearers and four equally spaced longitudinal are required.

4.3.4 The assembly shall be mounted at least 25 mm above the roof.

4.3.5 Substantial galvanised steel plates shall be used to support the framing which must be bolted to the upper sides of the roof.

4.3.6 There shall be points for safety harnesses to be used from the access ladder leading to the roof and on the roof rack.

4.4 Lower storage boxes

4.4.1 A storage box 750 mm longitudinally, 500 mm high and 450 mm laterally shall be fitted under the bodywork behind each rear wheel on both sides of the vehicle. The lid shall be hinged at the top and shall be held open by a length of chain and a clip. A hasp and staple shall be provided for locking purposes.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor (including the tailgate and roof) that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Lighting

5.1 A waterproof slim line bar light 1200 mm in length and 200 mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.

5.2 There shall be LED lights installed to the rear top of the loading area, tailgate and in each of the storage lockers in the loading area. There shall also be a single LED light installed in each of the lower storage boxes. On the roof and under body compartments strip lights shall be used. Switches shall be located in a user-friendly waterproof compartment.

5.3 Two scene lights shall be installed on each side and the rear of the loading area to help illuminate the surroundings of the vehicle.

6. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

6.1 Descale all metal surfaces.

6.2 Grind down & smooth all rough edges.

6.3 Thoroughly clean all surfaces.

6.4 Prime the unit and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.

6.5 The bin must be painted in white, with 3 coats polyurethane or equivalent product.

6.6 Thereafter paint using two coats of premium quality twin pack automotive paint.

6.7 Paint film thickness (color coat) must not be less than 80 microns each.

7. Colors

Underside of Body	Black
Cab and Body	White
Deck and structures	White

8. Electrical and coupling items

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

8.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more of minimum 100 mm in diameter that are screwed into position with a stainless steel flange.

8.2 Front fog lamps installed.

8.3 Reversing camera with monitor in cab, buzzer and warning light to be installed when reverse gear is engaged.

8.4 Battery isolator switch.

8.5 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

8.6 Electrical connector complying to;
SANS 1327: Electrical connectors for towing and towed vehicles and,

8.7 SANS 11446/ ISO 11446: Passenger cars and light commercial vehicles with 12 V systems -3-pole connectors between towing vehicles and trailers - Dimensions and contact allocation

8.8 Trailer coupling to comply with SABS 1505, Ball type couplings and towing brackets for towing caravans and light trailers

8.9 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

9. Signage and Markings

9.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary.

9.2 Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

9.3 Chevron board to be fitted section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.

9.4 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

9.5 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

9.6 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

9.7 Registration number to be clearly marked on roof.

9.8 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

10. Miscellaneous items

10.1 Mudguards suitable for the application shall be fitted.
10.2 The batteries to have a weather proof cover to prevent debris and moisture ingression.
10.3 Fuel tank, batteries, pneumatic cylinders and hydraulic tank to have structures built around them for safety.
10.4 Bolt on covers for safety where parts are rotating, swinging or of high temperature.
10.5 Two 4.5 kg fire extinguisher should be supplied and fitted in accessible positions close to the driver and close to the rear loading area.
10.6 Bolt on head and tail light guards.

Item 53: Technical specification for a 4-ton mobile sewer body

1.Scope

The intent of this specification is to provide for a fully operational vehicle, which has the capability to do on site repairs, unblock sewers and hold relevant tools and material for the water and sanitation and electricity department of eThekwini municipality.

2. Vehicle

The chassis cab/vehicle for this item shall be a single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 7 000 - 12 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

c) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
d) The end of Section 7 covers other specifications/standards that shall be adhered to.

3. Material specification

The load bearing items shall be made out of structural steel to withstand the payload. Corten steel for the structural rolled sections and flat plate is recommended. Aluminium for the roof and galvanised steel for the internal storage compartments.

4. Construction requirements

4.1 Rear body loading area

4.1.1 A minimum of 3 mm thickness is recommended for the structural members. Sheet plate
4.1.2 Dimensions of the loading area shall be the full length of the chassis and full width of the cab.
4.1.3 Areas of the floor that shall be used as access walkways shall have a hard wearing, slip resistant material (Vastrap).
4.1.4 Access ladder and railings/grabs shall be installed in a suitable position to the loading area and high storage areas as in 4.5.3.

4.2 Storage Lockers

4.2.1 There shall be two lockers on the passenger and driver side of the vehicle. The lockers shall be built with the doors facing the outside of the vehicle.
4.2.2 The two equally spaced passenger side lockers shall be the full longitudinal length with a lateral depth of 500-600 mm. Each locker shall have aluminium roller shutter doors which are lockable.
4.2.3 The top of the lockers shall have a three tier storage area constructed out of structural members and 3CR12 mesh. The first tier on top of the lockers shall be a storage area (approx. height: 300 mm), the second tier a frame to hold larger items from the first tier and the third tier which can house an extension ladder and lengths (7 500 mm) of solid bar in a concealed lockable box. The ladders should have a lockable holding mechanism.
4.2.4 The drivers set of lockers shall have two equally spaced lockers along the longitudinal, lateral depth of 500-600 mm. Each locker shall have aluminium roller shutter doors which are lockable. The lockers

shall not extend the full longitudinal length as the rear most section shall house a 50 litre 3CR12 water tank on top of a lockable 3CR12 caged storage box to store road cones.

4.2.5 The top of the lockers shall have a lockable storage box area (approx. height: 300 mm), constructed out of structural members and 3CR12 mesh. Doors shall be top hinged (3CR12).

4.2.6 The lockers and the first tier/lockable storage box shall be the approx. height of the cab.

4.2.7 Shelving for the lockers shall be required based on the current tooling requirements which the bidder will accommodate.

4.3 Wire reel system

4.3.1 The wire reel system shall be housed in the centre of the passenger and driver side lockers. A large (1.8-2 m) 3CR12 or stainless solid bar reel shall be constructed to hold ductile lengths of solid bar which is used to unblock sewers and pipes. The reel shall sit on a bolted frame with maintenance free bearings/bushings in a mounting for easy maintenance.

4.3.2 On the rear of the loading area floor shall be an adjustable guide that will guide the solid bar to and from the reel.

4.3.3 Underneath the top plate of the loading rear in between the longitudinal chassis structural members shall be a pull out compartment to hold the solid round bar/piping material (1 200 mm). The floor of this compartment shall have stops and be lined with an insertion rubber to reduce noise. There shall be a lockable rear access door.

4.3.4 The rear headboard shall not obstruct the view of the driver. There shall be a combination of solid plate and 3CR12 mesh which will allow easy drainage from the rear loading floor.

All items in chapter 4 and the rear underrun must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can possibly accumulate. Any floor or step that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Lighting

5.1 A waterproof slim line bar light 1200 mm in length and 200 mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.

5.2 There shall be warning LED lights installed to the rear top of the loading area. There shall be a single LED light installed in each of the storage boxes. On the roof storage compartments strip lights shall be used. Switches shall be located in a user friendly waterproof compartment.

5.3 Two scene lights shall be installed on each side and the rear of the loading area to help illuminate the surroundings of the vehicle.

6. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

6.1 Descale all metal surfaces.

6.2 Grind down & smooth all rough edges.

6.3 Thoroughly clean all surfaces.

6.4 Prime all built parts and the superstructure using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer. The bin must be painted in white, with 3 coats polyurethane or equivalent product.

6.5 Thereafter paint using two coats of premium quality twin pack automotive paint.

6.6 Paint film thickness (color coat) must not be less than 80 microns each.

7. Colors

Underside of Body	Black
Cab and Body	White
Deck and structures	White

8. Electrical and coupling items

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

8.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more of minimum 100 mm in diameter that are screwed into position with a stainless steel flange.

8.2 An extra set of lights to be mounted on a flanged bracket at an elevated height on the rear body.

8.3 Reversing camera, buzzer and warning light to be installed when reverse gear is engaged.

8.4 Battery isolator switch.

8.5 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

8.6 Electrical connector complying to;
SANS 1327: Electrical connectors for towing and towed vehicles and,

8.7 SANS 11446/ ISO 11446: Passenger cars and light commercial vehicles with 12 V systems -3-pole connectors between towing vehicles and trailers - Dimensions and contact allocation

8.8 Trailer coupling to comply with SABS 1505, Ball type couplings and towing brackets for towing caravans and light trailers

8.9 The rear underrun device according to SANS 1055 shall house 8.7 and 8.8 and be a step to the rear loading body and ladder for 4.5.3.

8.10 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

9. Signage and Markings

9.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary.

9.2 Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

9.3 Chevron board to be fitted section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.

9.4 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

9.5 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

9.6 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

9.7 Registration number to be clearly marked on roof.

9.8 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

10. Miscellaneous items

10.1 Mudguards suitable for the application shall be fitted.

10.2 The batteries to have a weather proof cover to prevent debris and moisture ingression.
10.3 Fuel tank, batteries, pneumatic cylinders and hydraulic tank to have structures built around them for safety.
10.4 Bolt on covers for safety where parts are rotating, swinging or of high temperature.
10.5 Two 4.5 kg fire extinguisher should be supplied and fitted in accessible positions close to the driver and close to the rear loading area.
10.6 Bolt on head and tail light guards.
10.7 3CR12 bolt on mesh for the cab's rear window.

Item 54: Technical specification for a Rear Tipping body with crane

1. Scope

This specification is for a rear tipping body that has a top hinged tailgate. The tip-body shall be able to carry a volume of 6-8 m^3 and a payload of 6-8 tons (6 000-8 000 kg). It will primarily be used to transport asphalt, bricks (on pallets) and various flora. Furthermore, storage boxes and other structures are required and the mass of these units and the equipment storage volumes must be accommodated in the design and supply of the completed vehicle.

2. Vehicle

The chassis cab/vehicle for this item shall be a 4x2 single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 13 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.
The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The rear tipping body and structures shall be constructed of Corten corrosion resistant steel. Furthermore, the inner floor and the bottom side panels of the tipping body shall have wear plates made of Hardox steel seated on top of the Corten steel structure.

4. Construction requirements

4.1 Chassis mounting

All mounting to be in accordance with directives specified by the Original Equipment Manufacturer. A separator insert shall be fitted to the rear most axle in case of uneven mass distribution.

4.2 Sub Frame

The sub frame shall extend the full body length.

4.3 Tip Body

4.3.1 The tip body shall be mounted at the rear most of the chassis
4.3.2 The headboard shall be extended to a height above the cab which will not interfere with the crane and its functions.
4.3.3 The tailgate shall be top hinged which will open automatically when the body is tipped. The height of the tailgate shall be higher than the sides.
4.3.4 The rear guide outside the tailgate for offloading shall be a box section and/or strengthened using stiffeners/gussets if flat plate.

4.3.5 The sides of the loading box shall be two pairs of drop sides. Height shall be sufficient to handle the transported commodity and access shall be made for workers to safely release and close the drop side panels.
4.3.6 The geometry and shape of the tip body shall afford maximum capacity in terms of volume and mass with no areas that will hold the commodity when offloading.
4.3.7 The main pair of structural channels must have stiffeners/gussets evenly installed over the length.
4.3.8 Lateral support shall be provided using structural members throughout the base of the tipping body floor. Supports and guides shall be installed underneath the tipping body and on the truck chassis to provide even load distribution and prevent unwanted (lateral, oscillations, vibrations) movement when the vehicle is in motion.
4.3.9 At the front of the tip body a centrally located support shall be mounted on the lateral member of the chassis to hold the tip body in place.
4.3.10 The sides of the loading box shall also be reinforced with structural members.
4.3.11 A tipping stabilizer shall be installed.
4.3.12 All box sections and structural channels shall have stiffeners/gussets installed for reinforcement.
4.3.13 The tailgate locking mechanism shall be self-adjusting and easily maintainable.

4.4 Tipping

4.4.1 Tipping operation shall be achieved by means of a multi stage hydraulic cylinder which is mounted upon a suitably reinforced full-length sub frame. Tipping angle shall not be less than 45˚.
4.4.2 The sub frame must start as close as possible to the rear of the truck cab in order to spread the stresses imposed.
4.4.3 When operating conditions demand, the hydraulic cylinder shall be capable of continuously handling an overload of up to 25% of the specified payload (including body mass).
4.4.4 An electrical switch shall be mounted on the sub frame which automatically activates a buzzer and light fitted inside the cabs dashboard when the body is raised.
4.4.5 The tipping control must incorporate the following individual positions: Raise, Hold, Lower.
4.4.6 When released the lever must automatically enter the “Hold” position.
4.4.7 Indicators for the rest position and maximum height when tipping shall be installed.
4.4.8 The operation of the tipping must be constrained such that the chassis cab in no way can be damaged.
4.4.9 A mechanical safety device shall be installed to hold the body in the raised position.

4.5 Storage box

4.5.1 One lockable storage box approximately 1000 mm longitudinally shall be fixed on the chassis under the bodywork.
4.5.2 Hinges for the doors must be fitted to the exterior of the front doors.
4.5.3 There should be seals to prevent ingress of water.

4.6 Crane

4.6.1 The crane shall be mounted between the cab and tip body on a suitable subframe for the application.
4.6.2 There shall be a pair of hydraulic outriggers mounted at the crane.
4.6.3 The crane and the outriggers shall be a single unit including sub systems and components to power it.
4.6.4 The crane shall have a minimum lifting capacity of 13 tons/meter and an outreach of 10 meters.
4.6.5 Crane shall be ergonomically designed with an agile profile and low tare mass.
4.6.6 The crane shall have the following options for the lift accessory:
4.6.6.1 Lift bucket supplied with a minimum load capability of 1 000-2 000 kg.

4.6.6.2 4 500-6 000 kg Rotator knuckle with a hook and safety catch. Lifting tackle to remove various equipment.
4.6.6.3 Option of a log grapple.
4.6.7 Shall comply to DIN 15018.
4.6.8 Shall comply to shall the South African Occupational Health and Safety Act, Act 85 of 1993, Driven Machinery Regulations 2015.
4.6.9 Shall comply to SANS 1599 with particular attention to Part 2: Power driven mobile cranes.
4.6.10 The crane should have a light illuminating its hydraulic controls and and adjustable light on the sides of the vehicle to illuminate the reached work area.

4.7 Crane Controls

4.7.1 Should have controls for complete articulation and movement in all degrees of freedom except movement that can inflict damage to itself and the chassis/driver's cab.
4.7.2 Load sensing devices to warn when maximum payload and dimensional limits are reached.
4.7.3 Crane must only be operable with hydraulic outriggers in their extended position.
4.7.4 The operation of the tipping must be constrained such that the chassis cab in no way can be damaged.
4.7.5 A hold valve/ safety device shall be installed to hold the crane in the raised position in case of hydraulic failure. An alternative method (manual, pneumatic, electric) shall be used to return the crane to "home" position.
4.7.6 Manual and remote-control system to operate the crane.

4.8 *Miscellaneous items*

4.8.1 Front and rear mud flaps shall be installed.
4.8.2 Rear underrun device shall be installed according to SANS 1055.
4.8.3 Safety access ladders and handrails to the rear tipping body.
4.8.4 Protective structures over fuel tank and pneumatic cylinders.
4.8.5 Lockable protective cover for the batteries.
4.8.6 Wire mesh covers for the front and rear lights.
4.8.7 A pair of heavy-duty wheel chocks to be mounted and easily accessible.
4.8.8 A 50l stainless steel water tank/caddy to be mounted in a position below the body with a tap.
4.8.9 Lockable fuel filler cap with an anti-siphon device installed.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5.Hydraulic system

5.1 In respect of the hydraulic tank the following shall be required:
5.1.1 To be constructed of steel.
5.1.2 To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.
5.1.3 To be fitted with a bump guard from externalities.
5.1.4 To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.
5.1.5 Must have a filler cap strainer & filter into filler base and filler cap assembly.
5.1.6 Oil capacity shall be double that of the oil capacity of the hydraulic cylinder.
5.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the tipper / solenoid valve system.

5.3 The hydraulic valves shall be grouped together for ease of maintenance.
5.4 Test points for testing hydraulic pressures shall be fitted and grouped together.
5.5 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.
5.6 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.
5.7 Safety hold valve for the cylinder/s in case of hydraulic system failure.

6. Power Take Off (PTO)

6.1 The close coupled PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.

6.2 The engine and transmission must not be harmed by use of the PTO.

6.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

6.4 Electronic control module and wiring harness which incorporates the “Rev Up Limiter” must be integrated into the existing OEM vehicle using the OEM 24 Volt system.

6.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.

6.6 The accelerator pedal cannot be used, while the PTO is engaged.

6.7 PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

7. Metal Preparation and Painting Procedure

The following procedure must be adhered to:
7.1 Descale all metal surfaces.
7.2 Grind down & smooth all rough edges.
7.3 Thoroughly clean all surfaces, rear tip body must be shot blasted.
7.4 Prime the tip body and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
7.5 Thereafter paint using premium quality automotive finish paint.
7.6 Two coats of primer and one coat of colour.
7.7 Paint film thickness (color coat) must not be less than 100 microns each.

8. Colors

- Underside of Body: Black
- Deck: Black
- Chassis cab and superstructure : Yellow/White/Blue/Verdi Green

9. Electrical

9.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100mm in diameter that are screwed into position with a stainless-steel flange.
9.2 Reversing camera with monitor installed in cab, buzzer and warning flashing light to be installed when reverse gear is engaged.
9.3 A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on an aluminum bracket closest to cab. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber colored polycarbonate lenses to be

fitted to the top of the headboard behind the cab with on/off switch with random flash pattern positioned in the cab.

9.4 Rear work lights to be installed with switch installed in the cab.

9.5 A pair of marker LED amber lights on each side of the vehicle.

9.6 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

9.7 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

10. Signage and Markings

10.1 Data plates shall be fitted for:

a) The hydraulic system indicating tank capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

b) The rear tip body detailing safe working load, material specification, tailgate operation and general maintenance.

c) Safe working load (SWL) decals shall be clearly visible on the sides of the tipping body.

d) The crane system indicating capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

e) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

10.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

10.3 Chevron board and durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

10.4 Retro-reflective tape shall be fitted to both sides and the rear of the tip- body as well as the rear bumper and the items in chapter 5 that make up the perimeter of the vehicle.

10.5 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

11. Fire Extinguisher

A 4.5kg dry powder type extinguisher to be mounted in a suitable exterior position preferably close to the generator storage box.

Item 55: Technical specification for a 4-ton mobile workshop with accommodation for a compressor

1. Scope

The intent of this specification is to provide for a fully operational vehicle, which has the capability to do on site repairs and hold relevant tools and material for the water and sanitation and electricity department of eThekwini municipality.

2. Vehicle

The chassis cab/vehicle for this item shall be a 4x2 single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 13 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The load bearing items shall be made out of structural steel to withstand the payload. Corten steel for the structural rolled sections and flat plate is recommended. Aluminium for the roof and galvanised steel for the internal storage compartments.

4. Construction requirements

4.1 Rear body loading area

4.1.1 A minimum of 3 mm thickness is recommended for the structural members. Sheet plate

4.1.2 Dimensions of the loading area shall be the full length of the chassis and full width of the cab.

4.1.3 Areas of the floor that shall be used as access walkways shall have a hard wearing, slip resistant material (Vastrap).

4.1.4 Access steps and railings/grabs shall be installed in a suitable position to the loading area. The rear underrun shall be designed as a step to the rear body.

4.1.5 Underneath the top plate of the loading rear in between the longitudinal chassis structural members shall be a compartment for an extension ladder and long steel tools and round bar/piping material. The floor of this compartment shall have stops and be lined with an insertion rubber to reduce noise. There shall be a lockable rear access door.

4.1.6 A heavy duty 150 mm engineering vice shall be installed. It shall be mounted at the rear on top of the driver's side locker/storage box.

4.1.7 Behind the driver's cab shall be space to accommodate a self driven compressor. This area of the load body shall be constructed with a floor with mounting arrangements for the compressor.

4.2 Storage Lockers and boxes

4.2.1 There shall be three compartments on the passenger side of the vehicle. Two lockers shall be built with the doors facing the outside of the vehicle and the rearmost storage box shall have a hinged door opening towards the rear.

4.2.2 The driver's side shall have one large storage box (same dimensions as the two storage lockers as in 4.2.1). This locker shall have a pair of doors on the top of the first locker opening from inside the loading area. The last storage box shall be the same as in 4.2.1.

4.2.3 The lockers and storage boxes shall be symmetrically designed maximising the space, height should be in line with the compressor. Each locker shall have aluminium roller shutter doors which are lockable, and the storage box lids shall be top hinged and lockable. In between the lockers on the rear loading body shall be a walkway to access the storage box in 4.2.2.

4.2.4 The lockers shall house tools and round bar/piping material. Shelving and holders will be required in the lockers and this will be provided to the manufacturer based on eThekwini department's current tooling and equipment.

4.2.5 A small storage compartment shall be constructed at the front of 4.2.2 to be accessed from outside the vehicle.

4.3 Roof rack

4.3.1 A heavy duty roof rack shall be constructed from structural members from the storage lockers and boxes to the cab. It shall be raised approx. 300 mm above the cab and be from the centre of the crew cab to the rear of the vehicle.

4.3.2 It shall be constructed such that items like adders and lengths of piping and round material can be stored.

4.3.3 The roof rack shall be fitted with 3mm 3CR12 mesh on the front section on the cab (sides and floor) so no material can be pushed forward.

4.3.4 There shall be generous tie down

4.4 Lower storage boxes

4.4.1 A storage box 750 mm longitudinally, 500 mm high and 450 mm laterally shall be fitted under the bodywork behind each rear wheel on both sides of the vehicle. The lid shall be hinged at the top and shall be held open by a length of chain and a clip. A hasp and staple shall be provided for locking purposes.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor (including the rear underrun) that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Lighting

5.1 A waterproof slim line bar light 1200 mm in length and 200 mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.

5.2 There shall be LED lights installed to the rear top of the loading area, tailgate and in each of the storage lockers in the loading area. There shall also be a single LED light installed in each of the lower storage boxes. On the roof and under body compartments strip lights shall be used. Switches shall be located in a user-friendly waterproof compartment.

5.3 Two scene lights shall be installed on each side and the rear of the loading area to help illuminate the surroundings of the vehicle.

6. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

6.1 Descale all metal surfaces.

6.2 Grind down & smooth all rough edges.

6.3 Thoroughly clean all surfaces.

6.4 Prime the unit and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.

6.5 The bin must be painted in white, with 3 coats polyurethane or equivalent product.

6.6 Thereafter paint using two coats of premium quality twin pack automotive paint.

6.7 Paint film thickness (color coat) must not be less than 80 microns each.

7. Colors

Underside of Body	Black
Cab and Body	White
Deck and structures	White

8. Electrical and coupling items

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

8.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more of minimum 100 mm in diameter that are screwed into position with a stainless steel flange.

8.2 Front fog lamps installed.

8.3 Reversing camera with monitor in cab, buzzer and warning light to be installed when reverse gear is engaged.
8.4 Battery isolator switch.
8.5 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
8.6 Electrical connector complying to;
SANS 1327: Electrical connectors for towing and towed vehicles and,
8.7 SANS 11446/ lSO 11446: Passenger cars and light commercial vehicles with 12 V systems -3-pole connectors between towing vehicles and trailers - Dimensions and contact allocation
8.8 Trailer coupling to comply with SABS 1505, Ball type couplings and towing brackets for towing caravans and light trailers
8.9 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

9. Signage and Markings

9.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary.

9.2 Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

9.3 Chevron board to be fitted section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.

9.4 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

9.5 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

9.6 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

9.7 Registration number to be clearly marked on roof.

9.8 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

10. Miscellaneous items

10.1 Mudguards suitable for the application shall be fitted.
10.2 The batteries to have a weather proof cover to prevent debris and moisture ingression.
10.3 Fuel tank, batteries, pneumatic cylinders and hydraulic tank to have structures built around them for safety.
10.4 Bolt on covers for safety where parts are rotating, swinging or of high temperature.
10.5 Two 4.5 kg fire extinguisher should be supplied and fitted in accessible positions close to the driver and close to the rear loading area.
10.6 Bolt on head and tail light guards.
10.7 3CR12 bolt on mesh grid for the cab's rear window.

Item 56: Technical specification for a Pot Hole /3 Ton Rear Tipping Truck body

1. Scope

This specification is for a rear tipping body that has dual drop-sides and a top hinged tailgate. The tip-body shall be able to carry a payload of 3 tons (3 000 kg). It will primarily be used to transport asphalt. Furthermore,

storage boxes and other structures are required and the mass of these units and the equipment storage volumes must be accommodated in the design and supply of the completed vehicle.

2. Vehicle

The chassis cab/vehicle for this item shall be a single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 7 000 - 12 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

a) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
b) The end of Section 7 covers other specifications/standards that shall be adhered to.

3. Major/Overall dimensions of customization:

Description	Dimension (mm)
Body length (approximately)	4100
Width	2500
Drop-sides	400
Tailgate	700

4. Material specification

The deck, tailgate, sides and headboard shall be constructed of Corten corrosion resistant steel with a minimum of 3 mm thickness.

5. Construction requirements

5.1 Chassis mounting

All mounting to be in accordance with directives specified by the Original Equipment Manufacturer.

5.2 Sub Frame

The sub frame shall extend the full body length.

5.3 Tip Body

5.3.1 The tip body shall be mounted at the rear most of the chassis (longitudinally 2500 mm x laterally: 2400 mm) after the storage areas behind the cab. It shall incorporate dual drop-sides.

5.3.2 The drop sides shall have three evenly spaced segments such that a partition can be fitted across. The segment holders shall be structural steel on either drop side, and the partition shall be a user-friendly wood partition with top carry handles and end caps to slide into the segments on either side.

5.3.3 The tailgate approx. 700mm high, shall be top hinged which will open automatically when the body is tipped.

5.3.4 The rear guide outside the tailgate for offloading shall be a box section or strengthened using stiffeners/gussets if flat plate.

5.3.5 Cast type corner latches shall be used to secure all drop-sides.

5.3.6 Pressed drop-sides which ensure that the lower edges do not form a sand trap.

5.3.7 A full headboard shall be fit to the tipping body that is higher than the drop sides.

5.3.8 A walking platform longitudinally 500 mm shall be mounted between the tipping body and the storage areas (laterally approx. 1800 mm) with its own safety railing before the tip body headboard side.

5.3.9 The platform shall have an access door/gate with a safety holding latch.

5.3.10 Steps shall be fitted to gain access to the platform and tipping body. The steps and entrance to the platform shall be on the passenger side. The tipping body steps shall not interfere with the operation of the drop-side or the rear wheels.

5.3.11 Platform and steps shall be covered with tread plate (Vastrap).

5.3.12 Two grab handles 400 mm each in length shall be fitted to assist entry on both the right-hand side and the left-hand side of the steps.

5.3.13 A tread plate (Vastrap) covered step shall be fitted to the lower edge of the drop-side for further assistance with access into the body.

5.3.14 Four rope hooks shall be provided on the drop sides, headboard and the tailgate for securing a tarpaulin.

5.3.15 Protection of the fuel tank, hydraulic tank and air tanks shall be provided by structural frames bolted to the chassis (These frames can be integrated into steps as mentioned in 5.3.9 and 5.3.10) where possible. The batteries shall have a top cover to prevent debris and water ingression.

5.3.16 Bidder shall offer the option of a three way rear tipping body if offered.

5.4 Tipping

5.4.1 Tipping operation shall be achieved by means of an under body, multi stage hydraulic cylinder which is mounted upon a suitably reinforced full-length sub frame. Tipping angle shall not be less than 45˚.

5.4.2 The sub frame must start as close as possible to the rear of the truck cab in order to spread the stresses imposed.

5.4.3 When operating conditions demand, the hydraulic cylinder shall be capable of continuously handling an overload of up to 25% of the specified payload (including body mass).

5.4.4 An electrical switch shall be mounted on the sub frame which automatically activates a buzzer and light fitted inside the cabs dashboard when the body is raised.

5.4.5 The tipping control must incorporate the following individual positions: Raise, Hold, Lower.

5.4.6 When released the lever must automatically enter the “Hold” position.

5.4.7 A mechanical safety device shall be installed to hold the body in the raised position.

5.5 Headboard

5.5.1 Supply of frame type headboard raised approx. 100 mm high above the cab. 3 mm 3CR12 mesh shall be installed over the headboard surface area.

5.5.2 The tipping body shall have a similar headboard mounted at the tailgate rear end. It shall not inhibit the operation of the tailgate nor effect the loading area and drop sides. The height shall be the same of that mentioned in 5.5.1.

5.5.3 Headboard 5.3.7 must be of same height as that in 5.5.2 and 5.5.1

5.5.4 A removable structural frame shall be mounted on the passenger side longitudinally between headboards 5.5.2 and 5.5.3. It should be wide enough to cater for ladders and general handle tools. There should be guides/supports at the sides and a center structural member should have uprights (at the front and rear) such that the ladder legs can be held in place. Provisions to be made for tying or ratcheting the ladders with a pair of heavy-duty ratchets and straps included.

All items in chapter 5 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

6. Hydraulic system

6.1 In respect of the hydraulic tank the following shall be required:

6.1.1 To be constructed of steel.

6.1.2 To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.

6.1.3 To be fitted with a bump guard from externalities.

6.1.4 To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.

6.1.5 Must have a filler cap strainer & filter into filler base and filler cap assembly.

6.1.6 Oil capacity shall be double that of the oil capacity of the hydraulic cylinder.

6.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the tipper / solenoid valve system.
6.3 The hydraulic valves shall be grouped together for ease of maintenance.
6.4 Test points for testing hydraulic pressures shall be fitted and grouped together.
6.5 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.
6.6 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.

7. Power Take Off (PTO)

7.1 The PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.

7.2 The engine and transmission must not be harmed by use of the PTO.

7.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

7.4 Electronic control module and wiring harness which incorporates the “Rev Up Limiter” must be integrated into the existing OEM vehicle using the OEM 24 Volt system.

7.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.

7.6 The accelerator pedal cannot be used, while the PTO is engaged.

7.7 PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

8. Storage boxes

8.1 One storage box approximately 1200 mm longitudinally and 650 mm laterally shall be fixed in between the cab headboard and the platform entrance. It shall be fixed on the passenger side of the chassis under the bodywork.

8.2 Hinges for the doors must be fitted to the top of the front panel.

8.3 A hook shall be welded to each lower corner of the doors and lengths of chain shall be secured at suitable positions to the bodywork to hold the lids open.

8.4 A hasp and staple for locking purposes are required.

8.5 One drain hole of 13 mm in diameter is to be provided in each corner of the bottom panels.

8.6 The base of the box shall have a “U” shaped flat bar mounted and a suitable latch on the side of the box closest to the cab. This is to secure a portable rammer’s base plate and handle respectively. There also should be straps to hold other equipment.

8.7 A second storage box approximately 1500 mm longitudinally and 650 mm laterally shall be fixed in between the cab headboard and the tipping body headboard. It shall be fixed on the driver side of the chassis under the bodywork. It shall also follow points 8.2-8.5.

8.7.1 This storage shall house a generator and jackhammer hence the following shall be required;

8.7.2 The base of the storage box shall have two structural members to serve as mounting points for the generator.

8.7.3 There shall be a jerry can holder in the storage box with the supply of a jerry can.

8.7.4 The storage box shall have adequate ventilation and the vented openings shall be enclosed with louvers.

8.7.5 Either on the rear or bottom of the storage box an exhausting flange shall be fitted with the supply of flexible exhaust pipe and band clamps. This shall be for the generator's exhausting. The positioning and mounting shall be such that the fumes are expelled safely, the area that is heated is insulated and cannot be in contact with workers and there shall be no feedback of foreign debris or water. An angled outlet pipe shall divert the fumes.

8.8 There shall be accommodation for securely holding a jack hammer in its case.

8.9 The space between the two storage boxes shall be left open, however sectioned off from the platform laterally, such that it can be used as a loading area for miscellaneous tools.

8.10 There shall be a holding slot on the headboard to hold tools such as rakes and spades.

8.11 A structural member and pipe to hold traffic cones shall be mounted where convenient.

9. Tanks

9.1 A 50ℓ tank for drinking water and constructed from 3CR12 steel shall be positioned in a convenient position. A lockable 50 mm outlet and a filling point cover attached by a short length of chain shall be incorporated. A tap shall be installed.

9.2 A removable bitumen storage tank to be mounted on the passenger side of the chassis approx. 300 x 300 x 300 mm (minimum of 40 litres). Tank shall have the following:

a) Easily accessible with carry handles to lift on and off the mountings.
b) Safe and quick release method for securing.
c) Valve for release of the bitumen to be installed underneath the tank. Floor of the tank should have a gradient to assist flow to the valve.
d) The tank shall have legs such that the valve clears the ground when removed from the vehicle.
e) Top filler cap shall have a chain link secured to the tank for safety.
f) There shall be a 12/24v immersion heater installed in the tank or at the bottom of it to keep the bitumen in a liquified state.

10. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

10.1 Descale all metal surfaces
10.2 Grind down & smooth all rough edges
10.3 Thoroughly clean all surfaces
10.4 Prime the unit and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
10.5 Thereafter paint using two coats of premium quality twin pack automotive paint
10.6 Paint film thickness (color coat) must not be less than 80 microns each.

11. Colors

- Underside of Body: Black
- Deck: Black
- Cab and Body: Yellow

12. Electrical

12.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100mm in diameter that are screwed into position with a stainless steel flange.
12.2 Extra indicator, stop and taillight (as per specification in 13.1) units to be fitted on top of rear tail gate headboard.
12.3 Reverse camera, buzzer and warning flashing light to be installed when reverse gear is engaged.

12.4 A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on headboard closest to cab. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber colored polycarbonate lenses to be fitted to the top of the headboard behind the cab with on/off switch with random flash pattern positioned in the cab.

12.5 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

13. Signage and Markings

13.1 Data plates shall be fitted for:

a) The hydraulic system indicating tank capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

b) The bitumen and water tank indicating capacity and valve/tap details.

c) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

13.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

13.3 Chevron board and durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

13.4 Retro-reflective tape shall be fitted to both sides and the rear of the tip- body as well as the rear bumper and the items in chapter 4, 5 and 8 that make up the perimeter of the vehicle.

14. Fire Extinguisher

A 4.5kg dry powder type extinguisher to be mounted in a suitable exterior position preferably close to the generator storage box.

Item 57: Technical specification for a Skip Loader/Tele-hoist superstructure

1. Scope

The intent of this specification is to provide for a fully operational vehicle, which has the capability to load and offload laden 5m^3, 8m^3 and 14m^3 skip containers with a laden mass of 15-20 000 kg. The metallic skips are used for the collection of non-compactable commercial waste and sludge.

2. Vehicle

The chassis cab/vehicle for this item shall be a single chassis cab, with a minimum Gross Vehicle Mass (GVM) of 28 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

a. SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b. SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c. The end of Section 7 covers other specifications/standards that shall be adhered to.

3. Material specification

The load baring base shall be made out of structural steel to withstand the payload. Corten steel for the structural rolled sections and floor is recommended. Whilst Hardox for the floor wear pads.

4. Construction requirements

4.1Rear body loading area

4.1.1 A minimum of 6 mm thickness is recommended for the floor where the skip will be seated.

4.1.2 Areas of the floor that shall be used as access walkways shall have a hard wearing, slip resistant material (Vastrap).

4.1.3 Skip and container stops shall be strategically positioned and installed. The surface in contact with the skip/container shall be a hard wearing type like Hardox.

4.1.4 Access ladder and railings/grabs shall be installed in a suitable position behind the cab and rear/side.

4.1.5 The twin mounted hydraulic cylinders shall be suitable for the application and provide a sufficient lifting force for the laden skip even if heaped loaded. Maintenance free bushings/bearings shall be used where possible.

4.1.6 A tipping angle of 50° shall be required.

4.1.7 The main booms on either side shall be independent and have no lateral member connecting them.

4.1.8 The booms shall be height adjustable to accommodate larger skips on occasion.

4.1.9 Hydraulically controlled rear stabiliser legs shall be installed to allow levelling and counterbalance of chassis when loading/unloading.

4.1.10 Rear stabilizer legs shall be fit with suitable wheels/rollers to allow short term movement of unit.

4.1.11 Lifting chain assemblies (tipping and lifting) shall be supplied and certified according to SANS 10388. Tipping chains at the rear base shall have a safety lock and holders to securely keep them in place during transit.

4.1.12 Stowage points shall be provided for the chains when not in use.

4.1.13 A hydraulically operated durable and robust roll up material which can be deployed and retracted automatically over a skip shall be installed. The cover shall cover the skip geometry including the length and width. It shall have a two stage movement process; were the later after being covered, shall be held in tension to secure covered skip contents.

4.1.14 Hydraulic controls for the operation of the loading/offloading shall be fitted to a lockable, water resistant control panel behind the driver's cab allowing for ease of operation.

4.1.15 The controls shall be clearly marked for their specific operation and colour coding shall be used with the instruction data plate.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Lighting

5.1 A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.

5.2 One rubber encased spotlight shall be installed to the rear top of the cab facing the skip loading area. Switch shall be located on the hydraulics control panel.

6 Hydraulic system

6.1 In respect of the hydraulic tank the following shall be required:

6.1.1To be constructed of steel.

6.1.2 To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.

6.1.3To be fitted with a bump guard from externalities.

6.1.4To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.

6.1.5Must have a filler cap strainer & filter into filler base and filler cap assembly.

6.1.6 Oil capacity shall be double that of the oil capacity of the hydraulic cylinder.

6.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the tipper / solenoid valve system.

6.3 The hydraulic valves shall be grouped together for ease of maintenance.

6.4 Test points for testing hydraulic pressures shall be fitted and grouped together.

6.5 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.

6.6 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.

7. Power Take Off (PTO)

7.1 The PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.

7.2 The engine and transmission must not be harmed by use of the PTO.

7.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

7.4 Electronic control module and wiring harness which incorporates the “Rev Up Limiter” must be integrated into the existing OEM vehicle using the OEM 24 Volt system.

7.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.

7.6 The accelerator pedal cannot be used, while the PTO is engaged.

7.7 PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

8. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

8.8 Descale all metal surfaces

8.9 Grind down & smooth all rough edges

8.10 Thoroughly clean all surfaces

8.11 Prime using PA 10 red oxide

8.12 Thereafter paint using two coats of premium quality twin pack automotive paint

8.13 Paint film thickness (color coat) must not be less than 80 microns each.

9. Colors

Underside of Body	Black
Cab	1. White and Cleansing Solid Waste (CSW) branding with white, blue and green stripes across the front of the cab. 2.Yellow
Deck and Body	Grey

10. Electrical

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

10.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100 mm in diameter that are screwed into position with a stainless steel flange.

10.2 Bolt on taillight guards to be installed.

10.3 Reversing camera, buzzer and warning flashing light to be installed when reverse gear is engaged.

10.4 Aerial mounted camera for viewing the rear load area should use same monitor as in 10.3 with split view option.
10.5 Battery isolator switch.
10.6 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
10.7 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

11. Signage and Markings

11.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary:

a) The hydraulic system indicating tank capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

b) Safe working loads to be clearly labeled on the structure on both sides.

c) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

11.2 Instructional data plates shall be fit close to the hydraulic control panel.

11.3 Chevron board to be fitted section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard (see end of Section 7).

11.4 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

11.5 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

11.6 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

11.7 Hazardous chemical transporting signage to be placed at the sides and rear of the vehicle according to SANS 10232.

11.8 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

12. Miscellaneous items

12.1. The batteries to have a weather proof cover to prevent debris and moisture ingression.
12.2 Fuel tank, batteries, pneumatic cylinders and hydraulic tank to have structures built around them for safety.
12.3 Bolt on covers for safety where parts are rotating, swinging or of high temperature.
12.4 A 4.5 kg fire extinguisher should be supplied and fitted in an accessible position in the cab.
12.5 Bolt on head and tail light guards.
12.6 Front and rear mud flaps.
12.7 Electrical connector complying to SANS 1327: Electrical connectors for towing and towed vehicles.
12.8 40/50 mm Rockinger type trailer coupling to comply with DIN 74054, ECE R55-01 for on road use.
12.9 Pneumatic connections complying to SANS 1477-3: Pneumatic braking system connections between drawing and drawn vehicles, Part 3: The arrangement of connections on vehicles, using contact type or palm type couplings.

Item 58: Technical specification for a 4 Ton Rear Tipping Truck body with the option of caged sides

1. Scope

This specification is for a rear tipping body that has dual drop-sides and a top hinged tailgate. The tip-body shall be able to carry a payload of 4 tons (4 000 kg). It will primarily be used to transport general supplies. Furthermore, storage boxes and other structures are required and the mass of these units and the equipment storage volumes must be accommodated in the design and supply of the completed vehicle.

There are two variants for Item 58: Item 58.1 is a rear tip body whilst Item 58.2 is a rear tip body with caged sides.

2. Vehicle

The chassis cab/vehicle for this item shall be a single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 7 000 - 13 500 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

a) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
b) The end of Section 7 covers other specifications/standards that shall be adhered to.

3. Major/Overall dimensions of customization:

Description	Dimension (mm)
Body length	Full
Width	Full as cab
Drop-sides	400
Tailgate	700

4. Material specification

The deck, tailgate, sides and headboard shall be constructed of Corten corrosion resistant steel with a minimum of 3 mm thickness.

5. Construction requirements

5.1 Chassis mounting

All mounting to be in accordance with directives specified by the Original Equipment Manufacturer.

5.2 Sub Frame

The sub frame shall extend the full body length.

5.3Tip Body

5.3.1 The tip body shall be mounted at the rear most of the chassis and it shall incorporate dual drop-sides.
5.3.2 The tailgate approx. 700mm high, shall be top hinged which will open automatically when the body is tipped.
5.3.3 Cast type corner latches shall be used to secure all drop-sides.
5.3.4 Pressed drop-sides which ensure that the lower edges do not form a sand trap.
5.3.5 A full headboard shall be fit to the tipping body that is detailed in 5.5.
5.3.6 Steps shall be fitted to gain access to the tipping body on the passenger side. The tipping body steps shall not interfere with the operation of the drop-side or the rear wheels.

5.3.7 Platform and steps shall be covered with tread plate (Vastrap).

5.3.8 Two grab handles 400 mm each in length shall be fitted to assist entry on both the right-hand side and the left-hand side of the steps.

5.3.9 A tread plate (Vastrap) covered step shall be fitted to the lower edge of the drop-side for further assistance with access into the body.

5.3.10 Four rope hooks shall be provided on the drop sides, headboard and the tailgate for securing a tarpaulin (included).

5.3.11 Protection of the fuel tank, hydraulic tank and air tanks shall be provided by structural frames bolted to the chassis (These frames can be integrated into steps as above) where possible. The batteries shall have a weather proof top cover to prevent debris and water ingression.

5.3.12 Where a chassis cab has a long wheel base and cannot accommodate 4000 kg for the full length there shall be a center structure between the driver's cab headboard and tip body. This structure shall have a drop side on the passenger side which doubles as a step when open. The storage area shall be open and have a road cone holder, broom, rake and spade holder mounted on the headboard. And a tread plate floor. Hand rails and protection guards shall also be fitted as requested.

5.4 Tipping

5.4.1 Tipping operation shall be achieved by means of an under body, multi stage hydraulic cylinder which is mounted upon a suitably reinforced full-length sub frame. Tipping angle shall not be less than 45˚.

5.4.2 The sub frame must start as close as possible to the rear of the truck cab in order to spread the stresses imposed.

5.4.3 When operating conditions demand, the hydraulic cylinder shall be capable of continuously handling an overload of up to 25% of the specified payload (including body mass).

5.4.4 An electrical switch shall be mounted on the sub frame which automatically activates a buzzer and light fitted inside the cabs dashboard when the body is raised.

5.4.5 The tipping control must incorporate the following individual positions: Raise, Hold, Lower.

5.4.6 When released the lever must automatically enter the "Hold" position.

5.4.7 A mechanical safety device shall be installed to hold the body in the raised position.

5.5 Headboard

5.5.1 Supply of frame type headboard raised approx. 100 mm high above the cab. 3 mm 3CR12 mesh shall be installed over the headboard surface area.

5.5.2 The tipping body shall have a similar headboard mounted at the tailgate rear end. It shall not inhibit the operation of the tailgate nor effect the loading area and drop sides. The height shall be the same of that mentioned in 5.5.1. (Not required for Item 29.2)

5.6 Caged Sides

5.6.1 In addition to the requirements in chapter 5 caged sides extending from the drop sides to the headboard height shall be mounted on all sides and rear of the vehicle to create an enclosed body.

5.6.2 The 3 mm 3CR12 fine mesh shall be supported by structural members and shall be fixed in place. The drop sides and tailgate will operate as normal

All items in chapter 5 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

6. Hydraulic system

6.1 In respect of the hydraulic tank the following shall be required:

6.1.1 To be constructed of steel.

6.1.2 To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.

6.1.3 To be fitted with a bump guard from externalities.

6.1.4 To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.

6.1.5 Must have a filler cap strainer & filter into filler base and filler cap assembly.

6.1.6 Oil capacity shall be double that of the oil capacity of the hydraulic cylinder.

6.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the tipper / solenoid valve system.

6.3 The hydraulic valves shall be grouped together for ease of maintenance.

6.4 Test points for testing hydraulic pressures shall be fitted and grouped together.

6.5 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.

6.6 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.

7. Power Take Off (PTO)

7.1 The PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.

7.2 The engine and transmission must not be harmed by use of the PTO.

7.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

7.4 Electronic control module and wiring harness which incorporates the “Rev Up Limiter” must be integrated into the existing OEM vehicle using the OEM 24 Volt system.

7.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.

7.6 The accelerator pedal cannot be used, while the PTO is engaged.

7.7 PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

8. Storage boxes

8.1 One storage box approximately 1 500 mm longitudinally and 400 mm laterally and high shall be on the underside of the chassis.

9. Tanks

9.1 A 50ℓ tank for drinking water and constructed from 3CR12 steel shall be positioned in a convenient position under the chassis. It shall be demountable. A tap shall be installed.

10. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

10.1 Descale all metal surfaces

10.2 Grind down & smooth all rough edges

10.3 Thoroughly clean all surfaces

10.4 Prime the unit and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.

10.5 Thereafter paint using two coats of premium quality twin pack automotive paint

10.6 Paint film thickness (color coat) must not be less than 80 microns each.

11. Colors

- Underside of Body: Black
- Deck: Black
- Cab and Body: White, Yellow or Verdi Green

12. Electrical

12.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100mm in diameter that are screwed into position with a stainless-steel flange.

12.2 Extra indicator, stop and taillight (as per specification in 13.1) units to be fitted on top of rear tail gate headboard.

12.3 Reverse camera, buzzer and warning flashing light to be installed when reverse gear is engaged.

12.4 A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on headboard closest to cab. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber colored polycarbonate lenses to be fitted to the top of the headboard behind the cab with on/off switch with random flash pattern positioned in the cab.

12.5 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.

12.6 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

13. Signage and Markings

13.1 Data plates shall be fitted for:

a) The hydraulic system indicating tank capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

b) The bitumen and water tank indicating capacity and valve/tap details.

c) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

13.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

13.3 Chevron board and durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

13.4 Retro-reflective tape shall be fitted to both sides and the rear of the tip- body as well as the rear bumper and the items in chapter 5that make up the perimeter of the vehicle.

13.5 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

14. Fire Extinguisher

A 4.5kg dry powder type extinguisher to be mounted in a suitable exterior position preferably close to the generator storage box.

Item 59: Technical specification for a 12m aerial platform vehicle

1. Scope

The intent of this specification is to provide for a fully operational vehicle which has an aerial platform mounted on the rear with a loading area. The primary use of the vehicle is to cut trees, maintain street lights, store tools and remove the flora from recreational parks and gardens in the eThekwini area.

2. Vehicle

The chassis cab/vehicle for this item shall be a single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 7 000 - 12 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

a) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
b) The end of Section 7 covers other specifications/standards that shall be adhered to.

3. Material specification

The load bearing items shall be made out of structural steel to withstand the payload. Corten steel for the structural rolled sections and floor is recommended. Whilst Hardox for the wearing surfaces.

4. Construction requirements

4.2 Main Deck Body

4.2.1 A full length sub frame to be manufactured with four out rigger hydraulic legs.
4.2.2 A full deck shall be constructed for the rear loading bed with accommodation for the aerial platform.
4.2.3 A support frame shall be manufactured on the head board behind the cab, to support the aerial platform boom structure.
4.2.4 Chassis mounting method to conform to original equipment manufacturer (OEM) body mounting directive.

4.2 Storage Boxes

4.2.1 The outer perimeter of the deck shall accommodate tool boxes that shall enclose the rear body. The longitudinal tool boxes shall be 400 mm laterally and 400 mm high. There shall be two lockable lids opening from the inside of the deck.

The rear of the deck shall have two storage boxes opening outwards to the rear. The boxes shall extend the full lateral length with and be 700 mm longitudinally and 700 mm high. The space in between the two boxes shall accommodate the aerial platform bucket.

4.2.2 Access steps and safety railings shall be installed for the entrance to the rear deck which shall be positioned behind the passenger side of the cab.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Aerial Platform

5.1 12 m aerial platform, with a two-man basket with a minimum safe working load of 250 kg.
To be designed according to SANS 16368 Mobile elevating work Platforms-Design calculations, safety requirements and test methods (latest revision).
5.2 Opening access to have a safety gate with a safety type slam/latch lock and safety handles for ease of entry and exiting.
5.3 Floor of bucket to be lined with a non-slip material and to have drain holes for easy drainage of water.
5.4 The bucket or boom shall have safety points for connections of safety restraining harnesses (included).
5.5 The aerial platform shall have controls such that the aerial platform will not damage the cab in its full rotation and movements.
5.6 Controls available on the basket and turret with emergency stop at both locations.
5.7 Outriggers shall be fit around the body to allow stable operation of the aerial platform for entire movement range.

6. Hydraulic system

6.1 In respect of the hydraulic tank the following shall be required:
6.1.1 To be constructed of steel.

6.1.2 To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.
6.1.3 To be fitted with a bump guard from externalities.
6.1.4 To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.
6.1.5 Must have a filler cap strainer & filter into filler base and filler cap assembly.
6.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the solenoid valve system.
6.3 The hydraulic valves shall be grouped together for ease of maintenance.
6.4 Test points for testing hydraulic pressures shall be fitted and grouped together.
6.5 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.
6.6 Safety hold valves to hold the booms in place in case of failure.
6.7 Emergency system: manual pump shall be installed to lower the aerial platform in case of system failure.
6.8 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.
6.9 Outrigger hydraulic legs controls to be located near the turret. System shall be self-equalizing in terms of pressure and force.
6.10 Aerial platform shall only operate if outriggers have being deployed. This shall be incorporated as a safety device.

7. Power Take Off (PTO)

7.1 The PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.
7.2 The engine and transmission must not be harmed by use of the PTO.
7.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.
7.4 Electronic control module and wiring harness which incorporates the “Rev Up Limiter” must be integrated into the existing OEM vehicle using the OEM 24 Volt system.
7.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.
7.6 The accelerator pedal cannot be used, while the PTO is engaged.

8. Lighting

8.1 A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.

8.2 2x4 head amber modules to be mounted at the rear of the vehicle.

9. Metal Preparation and Painting Procedure

The following procedure must be adhered to:
9.1 Descale all metal surfaces
9.2 Grind down & smooth all rough edges
9.3 Thoroughly clean all surfaces
9.4 Prime the unit and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
9.5 Thereafter paint using two coats of premium quality twin pack automotive paint
9.6 Paint film thickness (color coat) must not be less than 80 microns each.

10. Colors

Underside of body and chassis	Black
Cab exterior	Verdi grass green/Blue/Yellow
Superstructure and deck	Verdi grass green/Blue/Yellow

11. Electrical

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

11.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100 mm in diameter that are screwed into position with a stainless steel flange.
11.2 Reversing camera, buzzer and warning flashing light to be installed when reverse gear is engaged.
11.3 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
11.4 There shall be a safety device installed to not allow driving of the vehicle when the aerial platform is raised.
11.5 When movement limits of the platform are reached there shall be a light and buzzer to give warning to the user.
11.6 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

12. Signage and Markings

12.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary:

a) The aerial platform hydraulic system indicating tank capacity, system pressure, fluid type/grade specifications and test criteria where applicable.

b) Safe working loads to be clearly labeled on the structure on both sides.

c) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

12.2 Instructional data plates shall be fit close to all the hydraulic control panels.

12.3 Chevron board to be fitted section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.

12.4 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

12.5 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

12.6 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

12.7 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

13. Miscellaneous items

13.1 The batteries to have a weather proof cover to prevent debris and moisture ingression.
13.2 Fuel tank, batteries, pneumatic cylinders and hydraulic tank to have structures built around them for safety.
13.3 Bolt on covers for safety where parts that are rotating, swinging or of high temperature.
13.4 A 4.5 kg fire extinguisher should be supplied and fitted in an accessible position in the cab.
13.5 Bolt on head and tail light guards.
13.6 Front and rear mud flaps.
13.7 Wheel chocks to be included with carry straps.
13.8 Levelling pads for the outriggers to aid levelling on uneven surfaces.

Item 60: Technical specification for a 20m aerial platform vehicle

1. Scope

The intent of this specification is to provide for a fully operational vehicle which has an aerial platform mounted on the rear with a loading area. The primary use of the vehicle is to cut trees, maintain street lights, store tools and remove the flora from recreational parks and gardens in the eThekwini area.

2. Vehicle

The chassis cab/vehicle for this item shall be an 4x2 single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 13 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

The superstructure, vehicle and the customization shall be designed according to these critical specifications (summary of evidence shall be provided):

a) SANS 1518 Transport of dangerous goods — Design, construction, testing, approval and maintenance of road vehicles and portable tanks.
b) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
c) At the end Section 7 other specifications/standards are covered that will be adhered to.

3. Material specification

The load bearing items shall be made out of structural steel to withstand the payload. Corten steel for the structural rolled sections and floor is recommended. Whilst Hardox for the wearing surfaces.

4. Construction requirements

4.3 Main Deck Body

4.3.1 A full length sub frame to be manufactured with four out rigger hydraulic legs.
4.3.2 A full deck shall be constructed for the rear loading bed with accommodation for the aerial platform.
4.3.3 A support frame shall be manufactured on the head board behind the cab, to support the aerial platform boom structure.
4.3.4 Chassis mounting method to conform to original equipment manufacturer (OEM) body mounting directive.

4.2 Storage Boxes

4.2.1 The outer perimeter of the deck shall accommodate tool boxes that shall enclose the rear body. The longitudinal tool boxes shall be 400 mm laterally and 400 mm high. There shall be two lockable lids opening from the inside of the deck.

The rear of the deck shall have two storage boxes opening outwards to the rear. The boxes shall extend the full lateral length with and be 700 mm longitudinally and 700 mm high. The space in between the two boxes shall accommodate the aerial platform bucket.

4.2.2 Access steps and safety railings shall be installed for the entrance to the rear deck which shall be positioned behind the passenger side of the cab.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Aerial Platform

5.1 20 m aerial platform, with a two-man basket with a minimum safe working load of 250 kg.
To be designed according to SANS 16368 Mobile elevating work Platforms-Design calculations, safety requirements and test methods (latest revision).
5.2 Opening access to have a safety gate with a safety type slam/latch lock and safety handles for ease of entry and exiting.
5.3 Floor of bucket to be lined with a non-slip material and to have drain holes for easy drainage of water.
5.4 The bucket or boom shall have safety points for connections of safety restraining harnesses (included).
5.5 The aerial platform shall have controls such that the aerial platform will not damage the cab in its full rotation and movements.
5.6 Controls available on the basket and turret with emergency stop at both locations.
5.7 Outriggers shall be fit around the body to allow stable operation of the aerial platform for entire movement range.

6. Hydraulic system

6.1 In respect of the hydraulic tank the following shall be required:
6.1.1 To be constructed of steel.

6.1.2 To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.
6.1.3 To be fitted with a bump guard from externalities.
6.1.4 To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.
6.1.5 Must have a filler cap strainer & filter into filler base and filler cap assembly.
6.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the solenoid valve system.
6.3 The hydraulic valves shall be grouped together for ease of maintenance.
6.4 Test points for testing hydraulic pressures shall be fitted and grouped together.
6.5 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.
6.6 Safety hold valves to hold the booms in place in case of failure.
6.7 Emergency system: manual pump shall be installed to lower the aerial platform in case of system failure.
6.8 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.
6.9 Outrigger hydraulic legs controls to be located near the turret. System shall be self-equalizing in terms of pressure and force.
6.10 Aerial platform shall only operate if outriggers have been deployed. This shall be incorporated as a safety device.

7. Power Take Off (PTO)

7.1 The PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.
7.2 The engine and transmission must not be harmed by use of the PTO.
7.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.
7.4 Electronic control module and wiring harness which incorporates the “Rev Up Limiter” must be integrated into the existing OEM vehicle using the OEM 24 Volt system.
7.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.
7.6 The accelerator pedal cannot be used, while the PTO is engaged.
7.7 PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

8. Lighting

8.1 A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.

8.2 2x4 head amber modules to be mounted at the rear of the vehicle.

9. Metal Preparation and Painting Procedure

The following procedure must be adhered to:
9.1 Descale all metal surfaces
9.2 Grind down & smooth all rough edges
9.3 Thoroughly clean all surfaces
9.4 Prime the unit and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
9.5 Thereafter paint using two coats of premium quality twin pack automotive paint
9.6 Paint film thickness (color coat) must not be less than 80 microns each.

10. Colors

Underside of body and chassis	Black
Cab exterior	Verdi grass green/Blue/Yellow
Superstructure and deck	Verdi grass green/Blue/Yellow

11. Electrical

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

8.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100 mm in diameter that are screwed into position with a stainless-steel flange.
8.2 Reversing camera, buzzer and warning flashing light to be installed when reverse gear is engaged.
8.3 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
8.4 There shall be a safety device installed to not allow driving of the vehicle when the aerial platform is raised.
8.5 When movement limits of the platform are reached there shall be a light and buzzer to give warning to the user.
8.6 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

12. Signage and Markings

12.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary:

a) The aerial platform hydraulic system indicating tank capacity, system pressure, fluid type/grade specifications and test criteria where applicable.

b) Safe working loads to be clearly labeled on the structure on both sides.

c) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

12.2 Instructional data plates shall be fit close to all the hydraulic control panels.

12.3 Chevron board to be fitted section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.

12.4 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

12.5 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

12.6 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

12.7 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

13. Miscellaneous items

13.1 The batteries to have a weather proof cover to prevent debris and moisture ingression.
13.2 Fuel tank, batteries, pneumatic cylinders and hydraulic tank to have structures built around them for safety.
13.3 Bolt on covers for safety where parts that are rotating, swinging or of high temperature.
13.4 A 4.5 kg fire extinguisher should be supplied and fitted in an accessible position in the cab.
13.5 Bolt on head and tail light guards.
13.6 Front and rear mud flaps.
13.7 Wheel chocks to be included with carry straps.
13.8 Levelling pads for the outriggers to aid levelling on uneven surfaces.

Item 61: Technical specification for an Electricians truck

1. Scope

The intent of this specification is to provide for a fully operational vehicle which has an enclosed rear loading area. The primary use of the vehicle is to carry equipment, tooling and material to carry out electrical repairs within the eThekwini region.

2. Vehicle

The chassis cab/vehicle for this item shall be a single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 7 000 - 13 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

a) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
b) The end of Section 7 covers other specifications/standards that shall be adhered to.

3. Material specification

The load bearing items shall be made out of structural steel to withstand the payload. Corten steel for the structural rolled sections and floor is recommended. Whilst Hardox for the wearing surfaces.

4. Construction requirements

4.1 Chassis mounting

All mounting to be in accordance with directives specified by the Original Equipment Manufacturer.

4.2 Sub Frame

The sub frame shall extend the full body length if required. There shall be a full width storage area in the subframe at least 2 600m deep with a lockable door at the rear of the body.

4.3Windows

4.3.1 Two sliding windows (700 x 400 mm) shall be fitted on each side body and shall be evenly positioned between the front and the rear of the body.

4.3.2 The windows shall have suitable burglar guards constructed out of round bar installed by bolting to the interior of the body.

4.3.3 A fixed window shall be installed at the front of the body directly behind the rear cab window to allow visibility into the rear body.

4.4 Roof

4.4.1 Two ladder holding brackets with rubber covered conveyor rollers shall be installed, one on either side of the roof. A ladder step at the front shall be incorporated to the holding brackets. Each bracket shall be 700 mm in width and 250 mm in height and be positioned 100mm from the front and rear panels, and 100 mm in from the side panels.

4.4.2 Each bracket must incorporate two hinges and one anti-loose fastener so that the ladder can easily be removed. The rear bracket must be fitted with a tongue constructed of 50 x 12 mm flat bar so that the ladder cannot slide off.

4.4.3 The overall diameter of roller shall be approximately 35 mm.

4.4.4 The front bracket shall be fit at the front of the open top storage box.

4.4.5 The rear bracket (with tongue) shall be fit at the end of the open topped storage box.

4.4.6 An open storage bay shall be installed on the space between the ladder.

4.4.7 The sides of the roof and 4.4.6 shall have 3CR12 meshed structures with a fine aperture.

4.4.8 Roof shall have a gradient to allow water roll off to the sides. Side sills shall be installed the entire longitudinal length so water does not drape off on the exterior side panels.

4.5 Access ladder

4.5.1 An access ladder to the roof shall be fitted at the front of the body and another ladder shall be fitted to the rear of the body. Framing to be constructed from structural galvanized steel and with a hard wearing, slip resistant material (Vastrap) on each step.

4.5.2 Both shall be wide enough for safe operation and must incorporate a minimum five steps, the top step must be level with the top of the bodywork and the bottom step must be 450 mm above ground level.

4.5.3 In order to provide sufficient toe hold the ladder must not be fitted flush with the body, but the front section must be offset away from the body to improve toe hold.

4.5.4 Suitable railings and roof grabs shall be installed for both sets of ladders.

4.5.5 Safety hooks for safety harnesses (included) shall be installed in suitable positions along the ladder and roof.

4.6 Tailgate and rear door

The tailgate shall be constructed as to form a nearly full width step when in the open position, in order to facilitate entry and exit to the body interior. Suitable grab handles must be placed on the either side

of the body to assist with entry onto the tailgate. A lockable aluminum roller shutter door is to be fitted at the rear.

The tailgate shall have a U-holder at the rear such that a pole can be held there which will go through the rear body through the top of the rear bulkhead behind the driver's cab. There shall be heavy duty tie down points with a heavy-duty ratchet and strap supplied to hold the pole from slipping.

4.7 Internal fittings

4.7.1 Two pigeon hole sets shall be constructed 500 x 500 mm to be positioned against the sides of the body or front bulkhead on either side of the front/side windows. The depth and the height shall be approx. 180 mm. The pigeon holes shall have a gradient and incorporate a safety lip to prevent items easily falling out.

4.7.2 A 600 x 600 mm locker to carry clothing and extending the full height from floor to roof shall be positioned on the offside at the rear and incorporating a hanging rail and an adjustable shelf.

4.7.3 Commencing at the front on the nearside three tool/equipment boxes 1300 x 450 x 450 mm each shall be fitted. The last box will be shorter to accommodate a gas bottle. On the offside two boxes 1600 x 450 x 450 mm shall be fitted. The boxes to incorporate outside hinged doors which shall be lockable. The doors shall be held in the open position using a short length of chain clipped onto a hook on the sides of the body.

4.7.4 A cylindrical bracket of 300 mm inside diameter, shall be constructed of flat bar which is mounted on 4 flat bar legs, 150 mm high shall be secured to the interior offside corner of the body. Three or more threaded thumb screws shall be fitted to secure the gas bottle during transit.

4.7.5 A heavy duty 150-200 mm engineering vice shall be mounted onto a suitable bracket which shall be fastened to the deck on the nearside. The brackets shall be hinged so that when the tailgate is in the open position the bracket holding the vice can be swung over and locked into a horizontal position to enable workers to safely utilise the vice.

4.7.6 The free side of the interior shall have semi-circle straps welded to the inner structure to hold lengths of pipe, steel and wood poles. Diameter to be approx. 400 mm.

4.7.7 The front bulkhead shall have a U-holder with safety flap such that it can accommodate a power pole that runs from the tailgate through the rear body. The U-holder shall be 400 mm diameter and the pole length is 5/7 and 9 m.

5. Lighting

5.1 A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.

5.2 2x4 head amber modules to be mounted at the rear and side of the vehicle (minimum of 2 per side).

5.3 Minimum of four interior rear body LED lights strategically positioned and switches positioned at the rear entrance.

5.4 Minimum of two exterior scene LED lights strategically positioned and integrated on the side panels near the roof shall be installed on each side. Switches to be positioned in the driver's cab and clearly marked.

6. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

6.1 Descale all metal surfaces
6.2 Grind down & smooth all rough edges
6.3 Thoroughly clean all surfaces
6.4 Prime the unit and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
6.5 Thereafter paint using two coats of premium quality twin pack automotive paint
6.6 Paint film thickness (color coat) must not be less than 80 microns each.

7. Colors

Underside of body and chassis	Black
Cab exterior	Blue

Superstructure and deck	Blue

8. Electrical

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

8.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100 mm in diameter that are screwed into position with a stainless-steel flange. One set shall also be installed at the top rear of the body.
8.2 Reversing camera, buzzer and warning flashing light to be installed when reverse gear is engaged.
8.3 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
8.4 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

9. Signage and Markings

9.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary:

a) Safe working loads to be clearly labeled on the structure on both sides.

b) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

9.2 Instructional data plates shall be fit close to all the hydraulic control panels.

9.3 Chevron board to be fitted section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.

9.4 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

9.5 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

9.6 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

9.7 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

10. Miscellaneous items

10.1 The batteries to have a weather proof cover to prevent debris and moisture ingression.
10.2 Fuel tank, batteries, pneumatic cylinders and hydraulic tank to have structures built around them for safety.
10.3 Bolt on covers for safety where parts that are rotating, swinging or of high temperature.
10.4 A 4.5 kg fire extinguisher should be supplied and fitted in an accessible position in the cab.
10.5 Bolt on head and tail light guards.
10.6 Front and rear mud flaps.

Item 62: Technical specification for a water tanker with drop sides tipping superstructure

1. Scope

The intent of this specification is to provide for a fully operational vehicle which can transport water and store flora waste for the parks department. The purpose of the combination is such that parks and recreation sites can be maintained by removing waste and the gardens can be watered. The water tanker of 1500-2500 liters shall be constructed to be the base of the superstructure and the drop sides shall be constructed around it. The exterior top of the tank would serve as the floor for the drop side loading area. The design shall be a tip body for the entire superstructure including the tank.

2. Vehicle

The chassis cab/vehicle for this item shall be a single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 7 000 - 13 500 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

a) SANS 20013 Surface vehicles. This specification covers the braking system of motor vehicles and trailers. Maximum design speed exceeding 35km/h intended for use on public roads.
b) The end of Section 7 covers other specifications/standards that shall be adhered to.

3. Material specification

The deck, tailgate, sides and headboard shall be constructed of Corten corrosion resistant steel with a minimum of 3 mm thickness. The tank, tank ends and water ways will be made out 3CR12 steel.

4. Construction requirements

4.1 Tank

4.1.1 The tank must have a low centre of mass design.
4.1.2 Baffled water tank designed to withstand the additional rigours of road transport.
4.1.3 The tank's mounting shall be designed to eliminate any vehicle chassis flex being transmitted to the tank. Preferably rubber block type to allow for movement when negotiating rough road.
4.1.4 Chassis mounting method to conform to original equipment manufacturer (OEM) body mounting directive.
4.1.5 The following shall be incorporated;

a) A large filling spout located in a user friendly position.
b) A full length spill box.
c)Suitable ventilation to ensure that there is an uninterrupted supply to the pump.
d)Tank over flow, draining to the rear of the vehicle.
e) Rear mounted sight glass to view tank contents and level in increments.
f) Provision to fill the tank on the left hand side from a hydrant. A two stage water level alarm system shall be installed to protect the pump. The first stage should initiate an audible alarm and the second stage should deactivate the pump.

4.2 Tank plumbing, valves and hoses

4.2.1 The piping for the pump will be of a permanent nature and will be so arranged that by means of quick operating valves, the pump can be used for filling the tank as well as discharge.
4.2.2 Single 2-inch outlet tap for general use shall be installed.
4.2.3 The pump feed to and from the tank shall be installed to utilise all of the tank contents and it must have no issues distributing water if parked on a gradient.
4.2.4 Discharge shall be from two hoses for watering of gardens.
4.2.4 Ø 50 mm Perspex sight tube indicator with protective cover.
4.2.5 Ø 50 mm dump valve at tank rear end for quick discharge of tank.
4.2.6 Pair off flexible non corrosive metal hoses (10m each) with agricultural couplings and strainer foot valves to be supplied.

4.3 Storage Boxes

4.3.1 An appropriate size lockable storage box with a removable lid shall be installed adjacent to the tank to hold the hoses and valves.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

6.11 Drop side body to be built on top of the tank

4.4.1 The drop side body shall be mounted at the rear most of the chassis and it shall incorporate dual drop-sides.

4.4.1 The two-piece tailgate approx. 450-700mm high, shall be side hinged which will be lockable in the center.

4.4.2 Cast type corner latches shall be used to secure all drop-sides.

4.4.3 Pressed drop-sides which ensure that the lower edges do not form a sand trap.

4.4.4 A full headboard shall be fit to the tipping body that is detailed in 4.6.

4.4.5 Steps shall be fitted to gain access to the tipping body on the passenger side. The tipping body steps shall not interfere with the operation of the drop-side or the rear wheels.

4.4.6 Platform and steps shall be covered with tread plate (Vastrap).

4.4.7 Two grab handles 400-600 mm each in length shall be fitted to assist entry on both the right-hand side and the left hand side of the steps.

4.4.8 A tread plate (Vastrap) covered step shall be fitted to the lower edge of the drop-side for further assistance with access into the body.

4.4.9 Four rope hooks shall be provided on the drop sides, headboard and the tailgate for securing a tarpaulin (included).

4.4.10 Protection of the fuel tank, hydraulic tank and air tanks shall be provided by structural frames bolted to the chassis (These frames can be integrated into steps as above) where possible. The batteries shall have a weather proof top cover to prevent debris and water ingression.

4.5 Tipping

4.5.1 Tipping operation shall be achieved by means of an under body, multi stage hydraulic cylinder which is mounted upon a suitably reinforced full-length sub frame. Tipping angle shall not be less than 45˚.

4.5.2 The sub frame must start as close as possible to the rear of the truck cab in order to spread the stresses imposed.

4.5.3 When operating conditions demand, the hydraulic cylinder shall be capable of continuously handling an overload of up to 25% of the specified payload (including body mass).

4.5.4 An electrical switch shall be mounted on the sub frame which automatically activates a buzzer and light fitted inside the cabs dashboard when the body is raised.

4.5.5 The tipping control must incorporate the following individual positions: Raise, Hold, Lower.

4.5.6 When released the lever must automatically enter the “Hold” position.

4.5.7 A mechanical safety device shall be installed to hold the body in the raised position.

4.6 Headboard

4.6.1 Supply of frame type headboard raised approx. 100 mm high above the cab. 3 mm 3CR12 mesh shall be installed over the headboard surface area.

4.6.2 The tipping body shall have a similar headboard mounted at the tailgate rear end. It shall not inhibit the operation of the tailgate nor effect the loading area and drop sides.

5. Water Pump

5.1 To supply and mount a hydraulic driven 3-inch self-priming centrifugal pump, suitable for clean and grey water.

5.2 Should be robust, high volume and high pressure and piped to allow for pumping in and discharging out.

5.3 It must be fitted as per manufacturer's specifications in an easily accessible place with all relevant safety features i.e. regulator, secondary filtration etc.
5.4The fitment of the pump should not negatively impact on the vehicles ground clearance.

5.5 The pump should include an adjustable by-pass valve and pressure release valve. A three way change over valve should redirect the flow from the hose reel to a manual by-pass or to an auxiliary take off point.

6. Power Take Off (PTO)

6.1 The PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way. PTO shall preferably be closed coupled.
6.2 The engine and transmission must not be harmed by use of the PTO.
6.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.
6.4 Electronic control module and wiring harness which incorporates the "Rev Up Limiter" must be integrated into the existing OEM vehicle using the OEM 24 Volt system.
6.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.
6.6 The accelerator pedal cannot be used, while the PTO is engaged.
6.7 PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

7. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

7.1 Descale all metal surfaces
7.2 Grind down & smooth all rough edges
7.3 Thoroughly clean all surfaces
7.4 Prime the unit and other components using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
7.5 Thereafter paint using two coats of premium quality twin pack automotive paint
7.6 Paint film thickness (color coat) must not be less than 80 microns each.

8. Colors

- Underside of Body: Black
- Deck: Black
- Cab and Body: Verdi Green

9. Electrical

9.1 Existing taillight units to be replaced with premium quality equal light unit incorporating 30 LEDs or more approx. 100mm in diameter that are screwed into position with a stainless-steel flange.
9.2 Extra indicator, stop and taillight (as per specification in 12.1) units to be fitted on top of rear tail gate headboard.
9.3 Reverse camera, buzzer and warning flashing light to be installed when reverse gear is engaged.
9.4 A waterproof slim line bar light approx. 1200mm in length and 200mm in width to be installed on headboard closest to cab. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber colored polycarbonate lenses to be fitted to the top of the headboard behind the cab with on/off switch with random flash pattern positioned in the cab.
9.5 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
9.6 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

10. Signage and Markings

10.1 Data plates shall be fitted for:

a) The hydraulic system indicating tank capacity, system pressure, fluid type/grade, hydraulic cylinder specifications and test criteria.

b) The water tank indicating capacity and valve/tap details.

c) Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

10.2 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

10.3 Chevron board and durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

10.4 Retro-reflective tape shall be fitted to both sides and the rear of the tip- body as well as the rear bumper and the items in chapter 5 that make up the perimeter of the vehicle.

10.5 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

11. Fire Extinguisher

A 4.5kg dry powder type extinguisher to be mounted in a suitable exterior position preferably close to the generator storage box.

Item 63: Technical specification for a Tyre truck

2. Scope

The intent of this specification is to provide for a fully operational vehicle, which has the capability to load and offload tyres and provide a tyre change out service.

2. Vehicle

The chassis cab/vehicle for this item shall be a single/crew chassis cab, with a minimum Gross Vehicle Mass (GVM) of 7 000 - 12 000 kg. The chassis cab will be provided from eThekwini Municipality as it shall be part of the existing fleet.

3. Material specification

The load baring items shall be made from structural steel to withstand the payload. Corten steel and Domex for the structural rolled sections and flat plate is recommended. Whilst Hardox for the wear pads and the floor.

4. Construction requirements

4.1 Rear body loading area

4.1.1 Load area to be the full length of the chassis to accommodate the payload.

4.1.2 Areas of the floor that shall be used as access walkways shall have a hard wearing, slip resistant material (Vastrap).

4.1.3 Access ladder and railings/grabs shall be installed in a suitable position behind the cab and rear/side.

4.1.4 The rear body shall have fixed drop sides and safety railings. Drop sides to be approx. 400 mm high and safety railings 400 mm high.

4.1.5 The rear of the load area shall have a drop side type tailgate with a paint of outward opening safety railing doors with latches. Dimensions to match those as in 4.1.4.

4.1.6 Behind the driver's cab shall be a fully enclosed area full height and width of the cab to accommodate a 300L self powered compressor (included).

4.1.7 There shall be a drop side door on the passenger side which shall have steps and hand rails installed to gain access to the compressor. This area must be large enough to gain access to and remove the compressor for maintenance.

4.1.8 Custom floor mountings must be fabricated to fasten the compressor safely.

4.1.9 There shall be a self powered electronic ignition 300-liter compressor installed in 4.1.6. The compressor shall be supplied with a minimum 15 m retractable air hose and analogue gauge tyre inflator with all the relevant couplings. Battery for compressor shall be charged by a solar panel with a regulator. The battery shall also be lockable in its compartment.

4.3 Crane

4.3.1 The crane shall be mounted at the end of the rear body on a suitable subframe for the use of loading and off-loading commercial wheels.

4.3.2 There shall be a pair of hydraulic outriggers mounted at the rear body with the crane (integrated unit).

4.3.3 The crane shall have a minimum lifting capacity of 2-3 tons/meter and an outreach of 7-8 meters. Crane shall be equipped with a lifting hook including a safety catch for lifting a light motor vehicle similar to the crane's maximum capacity.

4.3.4 Crane shall be ergonomically designed with an agile profile and low tare mass.

4.3.5 The crane shall have the following options for the lift accessory:

4.3.5.1 2-3 000 kg rotator knuckle with a hook and safety catch.

4.3.5.2 Lifting tackle (SANS 10388) for various recovery purposes; A pair of recovery slings 10 meters in length to rig and recover a light motor vehicle. Two pairs of lifting slings with tyre clamps to lift a light motor vehicle off the ground to the rear load bed. Hydraulic outriggers to be supplied for stability.

4.3.6 Shall comply to DIN 15018.

4.3.7 Shall comply to shall the South African Occupational Health and Safety Act, Act 85 of 1993, Driven Machinery Regulations 2015.

4.3.8 Shall comply to SANS 1599 with particular attention to Part 2: Power driven mobile cranes.

4.3.9 The crane should have a light illuminating its hydraulic controls and adjustable light on the sides of the vehicle to illuminate the reached work area. Controls shall be weather proof, clearly labelled and have a lockout feature.

All items in chapter 4 must be thoroughly sealed with an approved sealer to prevent rusting between mating surfaces and drain holes must be provided in areas where water can accumulate. Any floor that persons will use on the body should be coated with a hard wearing, slip resistant material (Vastrap).

5. Lighting

5.1 A waterproof slim line bar light 1200 mm in length and 200 mm in width to be installed on bracket on the front of the cab without drilling into the roof. Generation 3 type LED consisting of 1 watt, 6x4 modules to the front with end cap modules consisting of 1x2 head modules with amber coloured polycarbonate lenses to be fitted to the bracket on the cab roof with on/off switch with random flash pattern positioned in the cab.

5.2 A pair of waterproof adjustable rubber encased spotlights shall be installed on the top of the compressor enclosure on either side facing downwards to the load area. Switch shall be located in the driver's cab.

6.Hydraulic system

6.1 In respect of the hydraulic tank the following shall be required:

a)To be constructed of steel and mounted clear from all moving parts.
b)To be fitted to an accessible side on the truck chassis, low enough that the body height does not impede the maintenance staff or driver of filling oil to tank.
c)To be fitted with a bump guard from externalities.
d) To be fitted with a front mounted sight glass for visual oil level inspection. Glass should be marked minimum and maximum accordingly with levels of fluid in the tank.
e)Must have a filler cap strainer & filter into filler base and filler cap assembly.
f)Oil capacity shall be sufficient and a cooler added if necessary.

6.2 Must have an inline filter with a blockage indicator fitted onto the pressure side of hydraulic pump, before the tipper / solenoid valve system.

6.3 The hydraulic valves shall be grouped together for ease of maintenance.

6.4 Test points for testing hydraulic pressures shall be fitted and grouped together.

6.5 Where possible steel tubing, which shall be treated with suitable corrosion protection, in lieu of rubber hosing shall be used for hydraulic lines.

6.6 All hydraulic fittings shall be wrapped with a petrolatum impregnated tape or sprayed with a petrolatum primer to prevent corrosion.

6.7 Safety hold valve for cylinder in case of hydraulic failure.

6.8 Hydraulic controls for the operation of the loading/offloading shall be fitted in a user friendly manner in the driver's cab and behind the cab allowing for ease of operation. The outside controls shall be protected by means of an enclosure.

6.9 Safety hand pump to be installed in case of failure.

6.10 The controls shall where possible be electronic and activate the necessary servos (either pneumatic or hydraulic) that will activate the operation. All actions will be fully adjustable at variable speeds for the operation of the hydraulics. A plug in, modular type, control panel is preferred for ease of maintenance.

7. Power Take Off (PTO)

7.1 The close coupled PTO drive assembly shall be approved by the OEM mechanically and electrically for use on the engine and the wiring systems of the vehicle for the engagement of the PTO drive. Any modifications to the vehicle to accommodate the P.T.O. must be approved by the truck manufacturer and not affect the trucks warranty in any way.

7.2 The engine and transmission must not be harmed by use of the PTO.

7.3 The fitment of the P.T.O. should not negatively impact on the vehicles ground clearance.

7.4 Electronic control module and wiring harness which incorporates the "Rev Up Limiter" must be integrated into the existing OEM vehicle using the OEM 24 Volt system.

7.5 The PTO must only run when the PTO switch is engaged. The system will not allow the PTO to be engaged if the vehicle is in gear or if the handbrake is not engaged.

7.6 The accelerator pedal cannot be used, while the PTO is engaged.

7.7 PTO calibration shall be performed after tracking device is installed on the vehicle by eThekwini City Fleet.

8. Metal Preparation and Painting Procedure

The following procedure must be adhered to:

8.1 Descale all metal surfaces

8.2 Grind down & smooth all rough edges

8.3 Thoroughly clean all surfaces and shot/bead blast to correct surface roughness for primer application

8.4 Prime the superstructure using a two component self-curing inorganic zinc ethyl silicate or two component zinc rich polyamide cured epoxy primer.
8.5 Thereafter paint using a coat of premium quality twin pack automotive paint.
8.6 Paint film thickness must not be less than 80 microns each. Two coats of primer and one-color coat.

9. Colors

Underside of Body	Black
Cab and superstructure	Yellow/White/Blue
Rear Deck	Black

10. Electrical

All additional electrical circuits are to be suitably fused and must not interfere with or adversely affect the existing electrical system.

10.1 Taillight units shall be premium quality equal light unit incorporating 30 LEDs or more of not less than 100 mm in diameter that are screwed into position with a stainless-steel flange.
10.2 Battery isolator switch for vehicle and crane.
10.3 Uninterrupted power supply points shall be made available for the vehicle tracking and fuel master monitoring system.
10.4 All exposed electrical wiring looms of the chassis cab and superstructure shall be full encased in a flexible protective metallic conduit and securely clamped with fasteners to the chassis or the structure.

11. Signage and Markings

11.1 Data plates shall be fitted labelling the storage areas and capacity. Safe working loads should be labelled where necessary:

a) The crane and compressor system indicating capacity, material/fluid grade, maintenance instructions, specifications and test criteria.

b) Safe working loads to be clearly labeled on the structure on both sides.

c) Crane and compressor shall have a clear data plate with relevant information.

11.2 Safety, operation, technical data, dates of manufacture, manufacturer's details etc.

11.3 Chevron board to be fitted section above rear underrun bumper and plastic mudguards to the rear wheels both conforming with the appropriate SABS/SANS standard.

11.4 Durable, ultraviolet resistant and weather resistant warning signs shall be provided at all locations of the vehicle that impose a danger to persons.

11.5 Durable, ultraviolet resistant and weather resistant information signs shall be provided in specific locations to assist the driver/maintenance staff with the operation/maintenance of the vehicle.

11.6 Retro-reflective tape shall be fitted to both sides and the rear of the vehicle as well as the rear bumper.

11.7 Registration number to be clearly marked on roof.

11.8 Two pairs of red prismatic retroreflectors shall be fitted to the rear of the vehicle and two pairs of amber prismatic retroreflectors shall be fitted to each side of the vehicle.

12. Miscellaneous items

12.1 Front mud flaps and full rear mudguards.
12.2 The batteries to have a well-insulated weather proof cover to prevent debris and moisture ingression.

12.3 Fuel tank, batteries, pneumatic cylinders and hydraulic tank to have structures built around them for protection.
12.4 Bolt on covers for safety where parts are rotating, swinging or of high temperature.
12.5 A 4.5 kg fire extinguisher should be supplied and fitted in an accessible position close to the driver when exiting the cab.
12.6 Bolt on head and tail light guards.

Item 64: Bulbar and tow bars

Item 64 is for various bulbar and tow bars that maybe required for the superstructures. This shall be an option depending on the user departments requirement. The bidder shall supply and fabricate the bulbar or tow bar such that it fits in the superstructure and chassis cab safely and suitable for the application.

The following standards need to be adhered to:

1. SANS 1327: Electrical connectors for towing and towed vehicles.
2. SANS 11446/ lSO 11446: Passenger cars and light commercial vehicles with 12 V systems -3-pole connectors between towing vehicles and trailers - Dimensions and contact allocation.
3. SABS 1505, Ball type couplings and towing brackets for towing caravans and light trailers.
4. Front bull-bars and roll-bars to be ADR compatible for airbag functionality.
5. to SANS 1477-3: Pneumatic braking system connections between drawing and drawn vehicles, Part 3: The arrangement of connections on vehicles, using contact type or palm type couplings.

Installation of the products are to be done according to the supplied mounting and installation points provided on the vehicle by the original equipment manufacturer. Front tow hitch points shall not be affected by the installation. All exposed electrical wiring looms of the chassis cab and superstructure shall be fully encased in a flexible protective metallic conduit and securely clamped with fasteners.

Item 64.1

Supply and fitment of bull/roll bar (minimum 3 mm thickness) which shall follow the contour of the front of the vehicles design. The bull/roll bar is expected to provide front and side protection as well with headlight mesh guards.

Item 64.2

Supply and fitment of Item 64.1 with the addition of a pair of fog lamps connected preferably to existing controls in the driver's cab or a clearly marked switch correctly fused with a relay. All wiring to be trunked with a protective non-corrosive metallic conduit.

Item 64.3

Supply and fitment of tow bar (pin ball combination) with wiring harness and electric socket connection. This installation shall be done to the existing underrun of the vehicle. Bidder shall be responsible for any material (holding brackets, stiffeners, gussets and structural members) and workmanship required for the installation.

Item 64.4

Supply and fitment of manual shunting type tow hitch with wiring harness and electric socket connection. Bidder shall be responsible for any material (holding brackets, stiffeners, gussets and structural members) and workmanship required for the installation.

Item 64.5

Supply and fitment of a 40/50 mm Rockinger type trailer coupling to comply with DIN 74054, ECE R55-01 for on road use with wiring harness and electric socket connection. This installation shall be done to the existing chassis of the vehicle. Bidder shall be responsible for any material (holding brackets, stiffeners, gussets and structural members) and workmanship required for the installation. Bidder is expected to do the installation such that the correct D-value of the trailer coupling is met in operation.

Pneumatic connections complying to SANS 1477-3: Pneumatic braking system connections between drawing and drawn vehicles, Part 3: The arrangement of connections on vehicles, using contact type or palm type couplings.

Wiring harness and electric socket connection to be included.

Bidder shall also provide the option of a low position install where the hitch is 600-650 mm above ground level on the chassis cab.

Item 64.6

Supply and fitment of Item 64.5 with quick hydraulic connectors at the rear to drive hydraulic equipment and trailers.

Item 65: Tail lifts

Item 65 is for various tail lifts that maybe required for the superstructures. This shall be an option depending on the user departments requirements. The bidder shall supply and fabricate any mountings the superstructure and chassis cab shall require to safely and suitably install the tail lift for the application.

The tail lifts shall be supplied in various configurations and lifting capacities. Section 8 has the schedule for the requirements.

Below standards are applicable however not limited to all items listed in Section 7. Applicable standards and specifications

The following, not necessarily comprehensive, list of standard specifications are relevant (latest revisions to be adhered to):

ANSI/AWS D1.1 Structural Welding Code

Steel BS-EN 287 Part 1 Approval testing of welders/fusion welding

BS-EN 288 Part 3 Specification and approval of welding procedures for metallic materials

BS 5135 Metal arc welding of carbon and carbon manganese steels

BS 3923 Methods for ultrasonic examination of welds

BS 2600 Radiographic examination of fusion welded butt joints in steel

BS 5493 Code of practice for protective coating of iron and steel structures against corrosion

DIN 1026 Metric channels

ISO R657 Angles

SANS 135 ISO metric bolts, screws and nuts (hexagon and square) (coarse thread, free fit series)

SANS 136 ISO metric precision hexagon-head bolts and screws, and hexagon nuts (coarse thread medium fit series)

SANS 064 Preparation of steel surfaces for coating

SANS 763 Hot-dip (galvanized) zinc coatings

SANS 1091 National colour standards for paint

SANS 1431 Weldable structural steels

SABS 1046, SABS 1376 Lights and retro-reflective devices

SABS 1051, 1447, SANS 20013, SANS 6292 Brakes and braking equipment

SABS 1329 Rear warning sign (chevron)

SANS 1055 Rear underrun protection device

SANS 1496 Wheel flaps

SABS 1447 Pneumatic braking connections

SANS 3779 Vehicle identification number

Vehicle dimensions NRTA Act no.93 of 1996

Data plates Compulsory Vehicle Standards

COMPULSORY QUESTIONNAIRE

Questionnaire forms part of the tender documents and must be completed in its entirety. Where proof is provided the bidder shall clearly mark these as appendices and highlight in the submission the sections that are valid. If a bidder cannot provide the exact and responds "NO" the close alternative must be submitted as an Appendix if available (please mark as well).

Can your company adhere to the following specifications when manufacturing and supplying various superstructures?	**Yes / No**	**If Yes, please provide proof. Appendix no. with submission.**
Compulsory items: • Are you an OEM/Certified agent/SABS/SANS certified manufacturer of truck bodies? (Certified proof provided) • Can the relevant documents be provided for Section 6, SCC 10.1 and ACC1 with the vehicles? o Detailed maintenance manual o Operating manual o Training manual o Spares manual o Electrical wiring circuit/diagram o Design report showing that the criteria for SANS 1518 has been met (where applicable). o The vehicle complies to SANS 20013. o A CAD model in. STEP format for the customisation either on CD or USB (where applicable). o Quality management plan and documents for the superstructure and the vehicle customisation? • Has Section 6, SCC 10.1.2 been submitted for the tender? o An assembly drawing indicating the general arrangement of the body and the subassemblies making up the customization. o A mass distribution diagram of the loading forces in relation to the vehicle chassis and axles. o Design calculations (where applicable) showing supplied systems are operating safely. • Can the warranty obligations be met in Section 6, 15.2 (2 years for systems, 7 years for structural integrity, 10 years for anti corrosion)? (Terms and conditions shall be submitted) • Have the returnable documents from Sections 3 and 4 being provided? • Can the design stages described in Section 7 be met with the consultation of eThekwini department officials?		
Specifications and standards • Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard? • Tanks nondestructive tested, 10 x-ray, water fill and pressure tested?		

Item 1.1, 1.2 and 1.3: Rollback superstructures		
Loading system (all items): • Is Corten and Hardox steel or better used? • Rear overhang of flatbed in line with NRTA? (specify amount) • Lateral guides for stability when laden (specify details)? • Safety access ladders, walkways (lined with non-slip material) with safety railings? • Hydraulic controls clearly marked? • Electric/Hydraulic winches (make, model and rating)? • Hydraulic outriggers? • Hydraulic safety system in case of failure?		
Operating capacity • Payload minimum of 3 500 kg for item 1.1 (specify amount)? • Payload minimum of 22 000 kg for item 1.2 (specify amount)? • Payload minimum of 10 000 kg for item 1.3 (specify amount)? • Tipping angle (specify angle range)? Item 1.1 Item 1.2 Item 1.3 • Hydraulic system capacity for the payload (specify details)? • Wheel lift system rating? • Item 1.1, Option with Crane (make and model)? Lifting capacity of 2-3ton/m with 7-8 m outreach or better (specify amount)? Knuckle rotator with lifting hook (specify details and capacity)? Lifting and recovery tackle/slings as requested?		
Sub systems and miscellaneous items Can items in section 7, chapter 4-15 in the technical specification be met without any exclusions?		

Item 1.4: Heavy duty recovery tow truck superstructure		
Loading system: • Is Corten and Hardox steel or better used? • Independent stabilizing hydraulic legs? • Lifting equipment according to SANS 10388 with stowaway points? • Under lift system?		

• Safety access ladders, walkways (lined with non-slip material) with safety railings? • Hydraulic and light controls clearly marked?		
Operating capacity • Payload minimum/Lifting capacity of boom 20 000 kg (specify amount)? • Payload minimum/Lifting capacity of under-lift 8 000 kg (specify amount)? • Straight tow capacity (specify amount)? • Suspended tow capacity (specify amount)? • Boom angle of 30-40°? • Hydraulic system capacity and speed for the payload (specify details)?		
Sub systems and miscellaneous items • Can items in section 7, chapter 5,6,7,10,11,12 and 13 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 2: Rear load body with crane		
Construction requirements: • Can the material specifications or better be met? • SANS 1518 and 20013 can be met? • Can all construction requirements in section 7, chapter 4 be met?		
Operating capacity • Payload mass of 10 000-15 000 kg (specify amount)? • Crane (make and model)? • Lifting capacity of 13ton/m with 10 m outreach or better (specify amount)? • Knuckle rotator 8 tons (specify details and capacity)?		
Sub systems and miscellaneous items • Can items in section 7, chapter 6,9 and 12 in the technical specification be met without any exclusions?		

Item 3: Insulated aerial platform superstructure		
Aerial platform items • Is Corten steel or better used? • Working height of aerial platform? (specify amount) • Insulated voltage of aerial platform? (specify amount) • Designed to SANS 16368 or better? • Can requirements in Section 7 chapter 4 and 5 be met? • Safety access ladders, walkways (lined with non-slip material) with safety railings?		
Hydraulic system: • Can requirements in Section 7, chapter 6 and 7 be met (specify details)?		
Sub systems and miscellaneous items • Can items in section 7, chapter 8,11 and 13 in the technical specification be met without any exclusions?		

Item 4: High pressure street cleaning vehicle		
Tank and Jetting system: • What grade stainless steel is used? • Water tank capacity (recommended 6 500 liters)? • Safety access ladders, walkways (lined with non-slip material) with safety railings? • Two stage water level alarm? (specify details) • Can criteria in Section 7, chapter 4-6 be met without any exclusions? • Cleaning attachments; spray gun, spray broom and rotary spray broom? (please provide a catalogue/datasheet)		
Operating capacity • High pressure pump details (attach specifications)? • Auxiliary engine minimum power rating of 50 kW and 120 Nm of torque (specify amount)? • Noise rating (specify dBA ratings of system)? • Hose reel capacity of 50 m with 30º rotation minimum (specify amount)? • Guide rollers for hose?		
Sub systems and miscellaneous items • Can items in section 7, chapter 7-12 in the technical specification be met without any exclusions?		

Item 5: Sludge tanker superstructure		
Superstructure and material items • Designed to SANS 1518 or better? • Designed to SANS 20013 or better? • Headboard? • Hydraulic system operation as mentioned in section 7, chapter 4.4 "Tipping"? • Material specifications for: • Tank? • Tank seal?		
Tank • Mountings and mounting method of tank to chassis? • Sight glasses with level indication? • Top hinged hydraulic operated door? • Minimum of 6 hydraulic operating locking clamps for the tank door? • Manhole diameter and two stage entry/access system? • Safety access ladders, walkways with safety railings? • Safety harness points for working at heights? • Manhole height of 3800 mm for loading? • Extension funnel for 4500 mm loading chutes? • Electrical warnings for manhole and tank door? • Height and funnel? • NDT, water fill and pressure test? • Agitator and water system/cleaning apparatus (specify details)?		
Operating capacity • Payload minimum of 17 500 kg (specify amount). • Minimum volumetric capacity of 12 500 litres (specify amount). • Tilt angle? • Hydraulic system capacity (specify details)?		
Sub systems and miscellaneous items • Can items in section 7, chapter 5,6,7,10 and 13 in the technical specification be met without any exclusions?		

Item 6: 13-16 000 liter hook lift water tanker		
Tank construction: • What grade stainless steel is used for the tank? • What structural steel is used for the sub chassis? • Designed to SANS 1518 or better? • Water tank capacity 13-16 000 liters (specify amount)? • Safety access ladders, walkways (lined with non-slip material) with safety railings? • What pump is being supplied? (provide full specification) • Can criteria in Section 7, chapter 4-7 be met without any exclusions?		
Sub systems and miscellaneous items • Can items in section 7, chapter 8-12 in the technical specification be met without any exclusions?		

Item 7: 13-16 000 liter hook lift vacuum tanker		
Tank construction: • What grade stainless steel is used for the tank? • What structural steel is used for the sub chassis? • Designed to SANS 1518 or better? • Waste tank capacity 13-16 000 liters (specify amount)? • Safety access ladders, walkways (lined with non-slip material) with safety railings? • What pump is being supplied? (provide full specification) • Can criteria in Section 7, chapter 4-7 be met without any exclusions?		
Sub systems and miscellaneous items • Can items in section 7, chapter 8-12 in the technical specification be met without any exclusions?		

Item 8: Hook lift Rear tip body		
Superstructure • Can the material specifications or better be met (specify materials)? • SANS 1518 can be met? • Can all construction requirements in section 7, chapter 4 be met? • Can the tailgate and the operation work as intended with a hook lift? • Rear rollers and wear pads suitable for the application?		

Operating capacity • Payload mass of 14 000-16 000 kg (specify amount)? • Volume of tip body of 10-16m^3 (specify amount)? • Minimum tipping angle of 45° (specify amount)? • Hydraulic system capacity for the payload (specify details)?		
Sub systems and miscellaneous items • Can items in section 7, chapter 6,9 and 12 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 9: Hook lift 12 m aerial platform superstructure		
Vehicle and superstructure items • Designed within safe working loads and safety factors? • Can the suspension of the vehicle be uprated if required?		
Aerial platform items • Is Corten steel or better used? • Designed to SANS 16368 or better? • Can requirements in Section 7 chapter 4 and 5 be met? • Safety access ladders, walkways (lined with non-slip material) with safety railings?		
Hydraulic system: • Can requirements in Section 7, chapter 6 and 7 be met (specify details)?		
Sub systems and miscellaneous items • Can items in section 7, chapter ,8,11 and 13 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 10: Hook lift 20 m aerial platform superstructure		
Vehicle and superstructure items • Designed within safe working loads and safety factors? • Can the suspension of the vehicle be uprated if required?		
Aerial platform items • Is Corten steel or better used? • Designed to SANS 16368 or better? • Can requirements in Section 7 chapter 4 and 5 be met? • Safety access ladders, walkways (lined with non-slip material) with safety railings?		
Hydraulic system: • Can requirements in Section 7, chapter 6 and 7 be met (specify details)?		
Sub systems and miscellaneous items • Can items in section 7, chapter ,8,11 and 13 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 11: Mobile stage superstructure including multimedia equipment		
Loading and operating system: • What steel is being used for structural aspects of the superstructure? (provide details and where used) • What material is being used for superstructure panels? (provide details and where used) • What generator, batteries and inverter is being supplied? (provide catalogues and state how long the system will average operation) • Full length stage? • Retractable roof? • How would the stage be deployed? (specify details of mechanical and actuated option) • How would the retractable roof be deployed? (specify details of mechanical and actuated option) • Safety access walkways and staircases (lined with non-slip material) with safety railings?		

Sub systems and miscellaneous items • Can all AV equipment be supplied as per requirements? • What laptop, camera and screens are being provided? (provide catalogues or description sheet including make and model) • Can items in section 7, chapter 4-13 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 12: Mobile kitchen superstructure including kitchen appliances and equipment		
Loading and operating system: • What steel is being used for structural aspects of the superstructure? (provide details and where used) • What material is being used for superstructure panels? (provide details and where used) • What generator is being supplied? (provide catalogues and state how long the system will average operation) • How would the side entrance be deployed and secured? (specify details) • Safety access walkways and staircases (lined with non-slip material) with safety railings?		
Sub systems and miscellaneous items • Can all the kitchen equipment be supplied as per requirements? • Can you meet the necessary hygiene, health and safety, gas regulations and installation for homologation and licensing? • Can items in section 7, chapter 4-12 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 13: Mobile clinic superstructure		
Loading and operating system: • What steel is being used for structural aspects of the superstructure? (provide details and where used) • What material is being used for superstructure panels? (provide details and where used)		

• What generator is being supplied? (provide catalogues and state how long the system will average operation) • Safety access walkways and staircases (lined with non-slip material) with safety railings? • What wheelchair ramp/tail lift is being supplied? (provide catalogues and state how long the system will be installed into the rear of the superstructure/vehicle)		
Sub systems and miscellaneous items • Can all the equipment be supplied as per requirements? • Can you meet the necessary hygiene, health and safety regulations and installation for homologation and licensing? • Can items in section 7, chapter 4-12 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 14: 12-14 m scissors platform superstructure		
Vehicle and superstructure items • Designed within safe working loads and safety factors?		
Scissors platform items • Is Corten steel or better used? • Designed to SANS 16368 or better? • What height is the platform? (technical catalogue submitted) • Outriggers for stability required? • Can requirements in Section 7 chapter 4 and 5 be met? • Safety access ladders, walkways (lined with non-slip material) with safety railings?		
Hydraulic system: • Can requirements in Section 7, chapter 6 and 7 be met (specify details)?		
Sub systems and miscellaneous items • Can items in section 7, chapter ,8,11 and 13 in the technical specification be met without any exclusions?		

Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 15: Hook lift superstructures		
Design and Loading system: • Designed to SANS 1518 or better? • Designed to SANS 20013 or better? • Is Corten and Hardox steel or better used? • Compliant to DIN 30722? • Safety locking systems for jib and floor? (specify details) • Lateral guides for the containers stability when seated (specify pairs)? • Safety access ladders, walkways (lined with non-slip material) with safety railings? • Hydraulic controlled retractable container cover suitable for application? • Hydraulic controls clearly marked?		
Operating capacity • Payload for item 15.1 10 000 kg (specify amount)? • Payload for item 15.2 20 000 kg (specify amount)? • Tipping angle of 40° (specify angle range)? • Hydraulic system capacity for the payload (specify details)? • Rear and front outriggers for stability? • Optional cover for open containers for item 15.2? • Tow hitch for item 15.2?		
Sub systems and miscellaneous items • Can items in section 7, chapter 4 to 13 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 16: Mobile resources superstructure		
Loading and operating system: • What steel is being used for structural aspects of the superstructure? (provide details and where used)		

• What material is being used for superstructure panels? (provide details and where used) • What generator is being supplied? (provide catalogues and state how long the system will average operation) • What batteries and inverter is being supplied? (provide catalogues and state how long the system will average operation) • Safety access walkways and staircases (lined with non-slip material) with safety railings?		
Sub systems and miscellaneous items • Can all the equipment be supplied as per requirements? • Can items in section 7, chapter 4-12 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 17: Hook lift 28 m aerial platform superstructure		
Body items • Designed within safe working loads and safety factors?		
Aerial platform items • Is Corten steel or better used? • Designed to SANS 16368 or better? • Can requirements in Section 7 chapter 4 and 5 be met? • Safety access ladders, walkways (lined with non-slip material) with safety railings?		
Hydraulic system: • Can requirements in Section 7, chapter 6 and 7 be met (specify details)?		
Sub systems and miscellaneous items • Can items in section 7, chapter ,8,11 and 13 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 18: 28 m aerial platform superstructure		
Body items • Designed within safe working loads and safety factors to SANS 1518 or better/same?		
Aerial platform items • Is Corten steel or better used? • Designed to SANS 16368 or better? • Can requirements in Section 7 chapter 4 and 5 be met? • Safety access ladders, walkways (lined with non-slip material) with safety railings?		
Hydraulic system: • Can requirements in Section 7, chapter 6 and 7 be met (specify details)?		
Sub systems and miscellaneous items • Can items in section 7, chapter ,8,11 and 13 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 19: Converting a panel van to a multi passenger vehicle with disability access		
Vehicle items • Can the accessories in Section 7, Item 19, chapter 2 be met without any exclusions? • Can you comply to VC 8023 Compulsory specification for vehicles of category M2 and M3 when modifying the vehicle? • Can you successfully convert, homologate, meet compliance and license as a chartered passenger/wheelchair carrying vehicle? • Have you submitted references of converting panel cans to passenger carrying vehicles and complying to VC 8023 with meeting homologation, compliance and licensing requirements?		
Material and ramp access system: • What structural steel is being used? • Safe working load (minimum of 300 kgs)?		

• Safety mechanical systems? (specify details)		
Interior: • Can requirements in Section 7, Item 19, chapter 4 be met without any exclusions?		
Sub systems and miscellaneous items • Can items in section 7, chapter 5,8 and 9 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 20.1-20.5: Mobile electrical workshops for panel vans		
Vehicle items • Can all the vehicle accessory requirements in Chapter 2 be met?		
Rear loading area: • Can the storage spaces in chapter 4 be met without any exclusion? • What materials are being used (specify details and datasheets)? • What inverter is being supplied (make and model with datasheet)? • What batteries are being supplied (make and model with datasheet)? • What laptop and monitor/screen is being supplied (make and model with datasheet)?		
Sub systems and miscellaneous items • Can items in section 7, chapter 5,8,9 and 12 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 21: Riot defense superstructure		
Vehicle items • Can all the vehicle accessory requirements in Chapter 2 be met? • Can the vehicle front bumper be met as specified?		

• What are the safety levels of the windows and windscreen? • What are the safety levels of the driver's cab and the superstructure?		
System and superstructure construction: • What auxiliary engine is being provided (make, model and specification catalogue submitted)? • What pumping system is being provided (make, model and specification catalogue submitted)? • What water canon system is being provided (make, model and specification catalogue submitted)? • What additive system is being provided (make, model and specification catalogue submitted)? • Foam system and additive products being used (specification catalogue submitted? • What grade material are the tanks? • What material is being used for the superstructure/lockers/storage compartments? • What mounting method is used to mount the tank? • Water cannon specification (specify details and specification in catalogue)?		
Electrical/Pneumatic/Hydraulic equipment requirements: Can all the equipment requirements be met?		
Sub systems and miscellaneous items • Can items in section 7, chapter 7-9 in the technical specification be met without any exclusions?		

Item 22: Rapid intervention superstructure		
Vehicle items • Can all the vehicle accessory requirements in Chapter 2 be met? • What off road tyres are being provided?		

Foam and superstructure construction: • Foam system designed to PD 5500 Cat 2 or better? • What grade stainless is the tank? • What material is being used for the superstructure/lockers? • What mounting method is used to mount the tank? • Water cannon specification (specify details and specification in catalogue)?		
Equipment requirements: Can all the equipment requirements be met?		
Sub systems and miscellaneous items • Can items in section 7, chapter 7-9 in the technical specification be met without any exclusions?		

Item 23: Coastal patrol superstructure		
Vehicle items • Can all the vehicle accessory requirements in Chapter 2 be met? • What off road tyres are being provided?		
Corrosion protection and superstructure construction: • What material is being used for the superstructure/lockers? • What corrosion protection product is being used? (Waxoyl recommended) • What warranty is being provided for the products effectiveness against corrosion?		
Sub systems and miscellaneous items • Can items in section 7, chapter 7-9 in the technical specification be met without any exclusions?		

Item 24: Emulsion tanker superstructure		

Superstructure and material items
• Designed to SANS 1518 or better?
• Designed to SANS 20013 or better?
• Material specifications for:
  ○ Tank?
  ○ Insulation material for tank?		

• Can the sub systems all be encased for protection from the emulsion contents? • Can a drip tray and catchment tank be installed for overflow?		
Tank • Mountings and mounting method of tank to chassis? (specify details) • Level indication system? (specify details) • Rear platform? • Manhole diameter and two stage entry/access system? • Safety access ladders, walkways with safety railings? • Safety harness points for working at heights? • NDT, water fill and pressure test? • Agitator and water system/cleaning apparatus (specify details)?		
Capacity and operational items • Payload minimum of 13 000-16 000 kg (specify amount). • Minimum volumetric capacity of 12 000-16 000 litres (specify amount). • Heating system (specify details)? • Spray system with hoses and spray guns? (specify details) • Engine and high-pressure pump? (specify details)		
Sub systems and miscellaneous items • Can items in section 7, chapter 5,6,7,10 and 13 in the technical specification be met without any exclusions?		

Item 25.1 and 25.2: Diesel tank superstructure		
Superstructure and material items • Designed to SANS standards stipulated in Section 7, Item 25, chapter 2? • Material specifications for: • Tank? • Tank seal?		

Tank
• Mountings and mounting method of tank to chassis?
• Sight glass?
• What type of level indicator system is being provided?
• How will the tank be filled;
  ○ Item 25.1?
  ○ Item 25.2?
• Manhole diameter and automatic pressure relief for tank?
• Safety access ladders, walkways with safety railings?		

• Safety harness points for working at heights? • Is there a low-level indicator and safety cut off system for safety of the bowser pump? • Filtration system?		
Operating capacity • Volumetric capacity of 2 000-4 000 litres (specify amount) for item 25.1? • Volumetric capacity of 6 000-8 000 litres (specify amount) for item 25.2? • Bowser system (specify details)? • Bowser hose length?		
Sub systems and miscellaneous items • Can items in section 7, chapter 5,6,7 and 10 in the technical specification be met without any exclusions?		

Item 26: Mobile service superstructure		
Superstructure and material items • Designed to SANS standards stipulated in Section 7, Item 26, chapter 2? • Material specifications for: • Tanks? • Superstructure?		

Tanks
• Mountings and mounting method of tank to chassis?
• Sight glass?
• What type of level indicator system is being provided?
• How will the tanks be filled;
  ○ Oil?
  ○ Diesel?
• Tanks can be removed if required?
• Safety access ladders, walkways with safety railings on both sides and rear?
• Is there a low-level indicator and safety cut off system for safety of the bowser pump?
• Filtration system for each tank?		

Operating capacity • Volumetric capacity of 4 000-5 000 litres (specify amount) for diesel? • Volumetric capacity of 300-400 litres (specify amount) for oil tanks?		

• Volumetric capacity of 200-350 litres (specify amount) for coolant/water tank? • Bowser system (specify details)? • Bowser hose lengths? • 250-300l Compressor with electronic start (specify details)?		
Sub systems and miscellaneous items • Can items in section 7, chapter 5,6,7 and 10 in the technical specification be met without any exclusions?		

Item 27: Mobile service workshop superstructure		
Superstructure and material items • Designed to SANS standards stipulated in Section 7, Item 26, chapter 2? • Material specifications for: • Tanks? • Superstructure?		

Tanks
• Mountings and mounting method of tank to chassis?
• Sight glass?
• What type of level indicator system is being provided?
• How will the tanks be filled;
  ○ Oil?
  ○ Diesel?
• Tanks can be removed if required?
• Safety access ladders, walkways with safety railings on both sides and rear?
• Is there a low-level indicator and safety cut off system for safety of the bowser pump?
• Filtration system for each tank?		

Operating capacity • Volumetric capacity of 1 500-2 000 litres (specify amount) for diesel? • Volumetric capacity of 200-300 litres (specify amount) for oil tanks? • Volumetric capacity of 200-350 litres (specify amount) for coolant/water tank? • Bowser system (specify details)? • Bowser hose lengths? • 250-300l Compressor with electronic start (specify details)? • 3KVA welding generator with electronic start (specify details)? • Winch (specify details)?		

Sub systems and miscellaneous items • Can items in section 7, chapter 5,6,7 and 10 in the technical specification be met without any exclusions?		

Item 28: Prisoners transport superstructure		

Superstructure and material items
• Designed to SANS standards stipulated in Section 7, Item 28, chapter 2?
• Material specifications for:
  o Windows?
  o Superstructure?		

Superstructure • Rear can be constructed as specified in Section 7, Item 28, chapter 5? • Rear and side container lock type door? • How will the prisoners be restrained? • What CCTV system shall be supplied?		
Sub systems and miscellaneous items • Can items in section 7, chapter 5,6,7 and 10 in the technical specification be met without any exclusions?		

Item 29: Mobile workshop LDV customization		
Vehicle items • Can all the vehicle accessory requirements in Chapter 2 be met? • Winch specifications?		
Superstructure construction: • What material is being used for the gullwing canopy? • Has a product catalogue/drawing being provided showing the storage areas requested? • What compressor is being provided? • What batteries and inverter is being supplied? • What warranty is being provided for the products effectiveness against corrosion? • Can all items be met for Chapter 4?		

Sub systems and miscellaneous items • Can items in section 7, chapter 7-9 in the technical specification be met without any exclusions?		

Item 30: General purpose rear load body		
Construction requirements: • Can the material specifications or better be met? • SANS 1518 and 20013 can be met? • Can all construction requirements in section 7, chapter 5 be met? • Can the covering system be provided?		
Operating capacity • Payload mass capacity (specify amount)?		
Sub systems and miscellaneous items • Can items in section 7, chapter 6 to 13 in the technical specification be met without any exclusions?		

Item 31: Superstructure for transporting horses		
Construction requirements: • SANS 1518 and 20013 can be met?		
Loading and operating system: • What steel is being used for structural aspects of the superstructure? (provide details and where used) • What material is being used for superstructure panels? (provide details and where used) • Has a layout drawing of the interior with the horse's orientation being provided? • What type are the entrance doors and ramp? (specify details for rear and side) • Can the interior requirements be met without any exclusion in chapter 4?		
Sub systems and miscellaneous items • What air-conditioning system is being provided? • How will the entrances be deployed and secured? (specify details for rear and side) • What CCTV system is being provided? (specify details) • Can items in section 7, chapter 5-12 in the technical specification be met without any exclusions?		

Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 32: Crowd control customization to a LDV		
Vehicle items • Can all the vehicle accessory requirements in Chapter 2 be met?		
Superstructure construction: • What material is being used for the canopy? • What material is being used for the bumpers?		
Sub systems and miscellaneous items • Can items in section 7, chapter 5-9 in the technical specification be met without any exclusions?		

Item 33: Mobile Police station superstructure		
Loading and operating system: • What steel is being used for structural aspects of the superstructure? (provide details and where used) • What material is being used for superstructure interior, furnishings and fittings? (provide details and where used) • What generator is being supplied? (provide catalogues and state how long the system will average operation) • What UPS is being provided? (provide catalogues and state how long the system will average operation) • What CCTV system is being provided? (provide catalogues and state how long the system will average operation) • Safety access walkways and staircases (lined with non-slip material) with safety railings? • Can you provide the road barriers and lighting tower as required?		
Sub systems and miscellaneous items • Can all the equipment be supplied as per requirements? • Can you meet the necessary regulations and installation for homologation and licensing? • Can items in section 7, chapter 4-12 in the technical specification be met without any exclusions?		

Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 34: 8x4 Rear tipping superstructure with the option of it being heated		
Superstructure: • Can the material specifications or better be met? (Domex recommended with Hardox wear plates-data sheets to be submitted) • SANS 1518 and 20013 can be met? • Ribbed body design with stabilizer? • Can all construction requirements in section 7, chapter 4 be met? • Can the hydraulic system meet the required applications needs as laid out in section 7, Item 34? • Details of the covering system provided? • Heated body only; Can you provide a heated rear tipping body? (please supply the rear tipping body concept and information if so, including the heat transfer temperature for the interior of the body)		
Operating capacity • Payload mass of 18 000-24 000 kg (specify amount)? • Volume of tip body of 18-25m^3 (specify amount)? • Minimum tipping angle of 45° (specify amount)? • Hydraulic system capacity for the payload (specify details)?		
Sub systems and miscellaneous items Can items in section 7, Item 34 chapter 6,9 and 12 in the technical specification be met without any exclusions?		

Item 35.1 and 35.2: Item 35.2: Patrol unit conversion for police response vehicles And K-9 dog unit conversion for police response vehicles		
Vehicle items • Can all the vehicle accessory requirements in Chapter 2 be met? • What satellite navigation head-unit is being provided? • What suspension upgrade is being provided?		
Superstructure construction What light and siren products are being provided (Catalogue with makes and models)?		

What grade steel material/s are been used to manufacture for items; o Dog kennels? o Partition and Door panel protection? o Underbelly protection? o Nudge bar? o Rifle locks? Have examples of the dog kennel being provided (Catalogue or drawing provided)? Can the dog kennels be manufactured and installed as per specification in Section 7, Item 35? What are the details and where is the advanced driver training? (Catalogue with course and service provider portfolio shall be provided)		
Sub systems and miscellaneous items • Can items in section 7, chapter 4-6 in the technical specification be met without any exclusions?		

Item 36: Search and Rescue vehicle customization		
Vehicle items • Can all the vehicle accessory requirements in Chapter 2 be met? • What off road tyres are being provided? • What suspension upgrade is being provided?		
Superstructure construction What light and siren products are being provided (Catalogue with makes and models)? What bumpers are being provided (Catalogue or drawing provided)? What canopy and roof rack are being provided (Catalogue or drawing provided)? What grade steel material/s are been used to manufacture for items; o Front bumper? o Rear bumper? o Canopy? o Roof rack? o Skid plate and underbelly protection? What winch is being provided (Catalogue with make and model)? Can the canopy, roof rack and bumpers be manufactured, finished and installed as per specification in Section 7, Item 36?		

Corrosion protection • What corrosion protection product is being used? (Waxoyl recommended) • What warranty is being provided for the products effectiveness against corrosion?		
Sub systems and miscellaneous items • Can items in section 7, chapter 7-9 in the technical specification be met without any exclusions?		

Item 37: Armored mobile resources panel van customization		
Vehicle and superstructure items • Can all the vehicle accessory requirements in Chapter 2 be met? • What are the safety levels of the windows and windscreen? • What are the safety levels of the driver's cab and the loading bay exterior sides and doors?		
Loading and operating system: • What steel is being used for the interior structural aspects of the superstructure? (provide details and where used) • What generator is being supplied? (provide catalogues and state how long the system will average operation) • What air-conditioning unit is being provided?		
Sub systems and miscellaneous items • Can all the equipment be supplied as per requirements? • Can items in section 7, chapter 3-7 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 38: 4-5 Ton Rear Tipping Truck body with a custom crew cab		
Superstructure: • Is Corten and Hardox steel or similar/better used? (provide details and where used) • Crew cab ratings and details? (Dimensioned drawings showing door, windows and seats with a person sitting and standing in the interior) • Tip body payload capacity 4 000-5 000kg? (specify amount)		

• Hydraulic system and electrical drive rated for 5 000 kg? (specify amount) • Safety access walkways (lined with non-slip material) with safety railings? • Hydraulic controls clearly marked?		
Sub systems and miscellaneous items • Can items in section 7, chapter 4-13 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 39: customization of vehicle with a skid tank diesel refueling system		
Tank construction and customization: • What grade stainless steel is used for the tank? • Designed to SANS 10131 or better? • Fuel tank capacity minimum 500 liters (specify amount)? • What pump is being supplied? (provide full specification) • What dispensing system is being supplied? (provide full specification) • What generator is being supplied? (provide full specification) • Can criteria in Section 7, chapter 4-8 be met without any exclusions?		

Item 40: 7000L Combination Jetting/Vacuum Vehicle		
Vehicle and superstructure items • Designed to SANS 1518 and 20013 or better?		
Jetting and vacuum system: • What grade stainless steel is used? • Waste tank capacity (recommended 3000 liters)? • Water tank capacity (recommended 4000 liters)? • Safety access ladders, walkways (lined with non-slip material) with safety railings? • Can criteria in Section 7, chapter 4, 7, 8 be met without any exclusions?		
Operating capacity • High pressure pump 230l/min at 115 bars minimum (specify amount)? • Vacuum of minimum 400l/sec (specify amount)? • Gulley arm 150º rotation and 150mm diameter minimum (specify amount)?		

• Hose reel capacity of 180m with 180º rotation minimum (specify amount)? • Hydraulic system capacity and tip angle (min. of 40º) (specify details)? • Door safety mechanism?		
Sub systems and miscellaneous items • Can items in section 7, chapter 5,6,9-15 in the technical specification be met without any exclusions?		

Item 41: 6000L Auxiliary Engine Jetting Vehicle		
Vehicle and superstructure items		
Vehicle and superstructure items • Designed to SANS 1518 and 20013 or better?		
• Designed to SANS 1518 and 20013 or better?		
Jetting system:		
Vacuum system: • What grade stainless steel is used? • Water tank capacity (recommended 6000 liters)? • Waste tank capacity (recommended 6000 liters)? • Safety access ladders, walkways (lined with non-slip material) with safety railings? • Two stage water level alarm? (specify details) • Can criteria in Section 7, chapter 4-7 be met without any exclusions?		
Operating capacity		
Operating capacity • High pressure pump 230l/min at 115 bars minimum (specify amount)? • High suction capacity of 400l/min (specify amount)? • Auxiliary engine minimum power rating of 90 kW and 200Nm of torque (specify amount)? • Noise rating (specify dBA ratings of system)? • Pump type (make, model and specifications)? • Noise rating (specify dBA ratings of system)?		
Sub systems and miscellaneous items • Hose reel capacity of 180m with 30º rotation minimum (specify amount)? • Guide rollers for hose? • Can items in section 7, chapter 8-12 in the technical specification be met without any exclusions?		
Sub systems and miscellaneous items		
• Can items in section 7, chapter 8-12 in the technical specification be met without any exclusions?		

Item 42: 8000L Vacuum body and customisation		
Vehicle and superstructure items		
• Designed to SANS 1518 and 20013 or better?		

Item 43: 16000L Combination Jetting/Vacuum Vehicle		
Vehicle and superstructure items • Designed to SANS 1518 and 20013 or better?		

Jetting and vacuum system: • What grade stainless steel is used? • Waste tank capacity (recommended 8000 liters)? • Water tank capacity (recommended 8000 liters)? • Safety access ladders, walkways (lined with non-slip material) with safety railings? • Can criteria in Section 7, chapter 4, 7, 8 be met without any exclusions?		

Operating capacity
• High pressure pump 230l/min at 115 bars minimum (specify amount)?
• Vacuum of minimum 400l/sec (specify amount)?
• Gulley arm 150º rotation and 150mm diameter minimum (specify amount)?
• Hose reel capacity of 180m with 180º rotation minimum (specify amount)?
• Hydraulic system capacity and tip angle (min. of 40º) (specify details)?
• Door safety mechanism?
• Have you provided options for;
  ○ Close coupled PTO
  ○ In line PTO		

Sub systems and miscellaneous items • Can items in section 7, chapter 5,6,9-15 in the technical specification be met without any exclusions?		

Item 44: 13000L Vacuum body and customisation		
Vehicle and superstructure items • Designed to SANS 1518 and 20013 or better?		
Jetting system: • What grade stainless steel is used? • Waste tank capacity (recommended 13 000 liters)? • Safety access ladders, walkways (lined with non-slip material) with safety railings? • Can criteria in Section 7, chapter 4-7 be met without any exclusions?		
Operating capacity • High suction capacity of 400l/min (specify amount)? • Noise rating (specify dBA ratings of system)? • Pump type (make, model and specifications)?		

Sub systems and miscellaneous items • Can items in section 7, chapter 8-12 in the technical specification be met without any exclusions?		

Item 45: Construction Rear tip body		
Customisation: • Can the material specifications or better be met? • SANS 1518 and 20013 can be met? • Can all construction requirements in section 7, chapter 4 be met? • Can the hydraulic system meet the required applications needs as laid out in section 7?		
Operating capacity • Payload mass of 14 000-16 000 kg (specify amount)? • Volume of tip body of 10-16m^3 (specify amount)? • Minimum tipping angle of 45° (specify amount)? • Hydraulic system capacity for the payload (specify details)?		
Sub systems and miscellaneous items • Can items in section 7, chapter 6,9 and 12 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 46: Construction Rear tip body with crane		
Customisation: • Can the material specifications or better be met? • SANS 1518 and 20013 can be met? • Can all construction requirements in section 7, chapter 4 be met? • Can the hydraulic system meet the required applications needs as laid out in section 7?		
Operating capacity • Payload mass of 14 000-15 000 kg (specify amount)? • Volume of tip body of 10-16m^3 (specify amount)? • Minimum tipping angle of 45° (specify amount)? • Hydraulic system capacity for the payload (specify details)? • Crane (make and model)?		

• Lifting capacity of 13 ton/m with 10 m outreach or better (specify amount)? • Knuckle rotator 4.5-6 tons (specify details and capacity)? • Lifting bucket minimum of 1 tons (specify details and capacity)? • Log grapple minimum of 1 tons (specify details and capacity)?		
Sub systems and miscellaneous items • Can items in section 7, chapter 6,9 and 12 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 47: Construction Side tip body		
Customisation: • Can the material specifications or better be met? • SANS 1518 and 20013 can be met? • Can all construction requirements in section 7, chapter 4 be met? • Can the hydraulic system meet the required applications needs as laid out in section 7?		
Operating capacity • Payload mass of 14 000-16 000 kg (specify amount)? • Volume of tip body of 16-20m^3 (specify amount)? • Minimum tipping angle of 45° (specify amount)? • Hydraulic system capacity for the payload (specify details)?		
Sub systems and miscellaneous items • Can items in section 7, chapter 6,9 and 12 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Items 48, 49 and 50: Water tankers		

Tank construction:
• What grade stainless steel is used?
  ○ Item 48
  ○ Item 49
  ○ Item 50
• Water tank capacity (specify amount)?
  ○ Item 48 (6 500L)
  ○ Item 49 (14 000L)
  ○ Item 50 (18-22 000L)
• Safety access ladders, walkways (lined with non-slip material) with safety railings?
• Two stage water level alarm? (specify details)
• For the drinking water application tanker can you place your distribution outlets clear of obstructions and obstacles and/or provide guards, heat and safety shields were required on the vehicle?
• What pump is being supplied for drinking water application? (specify details)
  ○ Item 48.1
  ○ Item 49.1
  ○ Item 50.1
• Construction application water tanker bid on for item? (specify details)
  ○ Item 48.2
  ○ Item 49.2
  ○ Item 50.2
• What pump is being supplied for construction recycled water application? (specify details)
  ○ Item 48.2
  ○ Item 49.2
  ○ Item 50.2
• 'Pump and drive/go' operation for spraying whilst driving for the construction water tankers? (specify details)
• Can you provide the option of dispensing sensors for the water tanker contents?
• Can criteria in Section 7, chapter 4-7 be met without any exclusions?		

Sub systems and miscellaneous items • Can items in section 7, chapter 8-12 in the technical specification be met without any exclusions?		

Item 51: Welders vehicle		
Vehicle and superstructure items • Designed within safe working loads?		
Rear superstructure and machinery • Is Corten and Hardox steel or better used? • Does the welding machine meet the minimum requirements (technical catalogue shall be submitted)? • Safety access ladders, walkways (lined with non-slip material) with safety railings? • Can Section 7, chapters 4 and 5 be met without any exclusions?		
Sub systems and miscellaneous items • Can items in section 7, chapter 6-14 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recognized by the relevant SABS/SANS specification/standard?		

Item 42: 4 ton mobile workshop (plumbers body)		
Vehicle and superstructure items • Designed within safe working loads?		
Rear superstructure and machinery • Is Corten steel or better used? • Can all the storage lockers/boxes be built as laid out in Section 7, chapter 4? • Safety access ladders, walkways (lined with non-slip material) with safety railings for access to the rear body and roof? • Can Section 7, chapters 4 be met without any exclusions?		
Sub systems and miscellaneous items • Can items in section 7, chapter 5-12 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recognized by the relevant SABS/SANS specification/standard?		

Item 53: 4 ton Sewer truck		
Vehicle and superstructure items • Designed within safe working loads?		
Rear superstructure and reel system • Is Corten steel or better used? • What material (3CR12/stainless steel) is used for the solid bar reel? • Can all the storage lockers/boxes be built as laid out in Section 7, chapter 4? • Can the reel be built and mounted as in Section 7, chapter 4? • Safety access ladders, walkways (lined with non-slip material) with safety railings for access to the rear body and roof? • Can Section 7, chapters 4 be met without any exclusions?		
Sub systems and miscellaneous items • Can items in section 7, chapter 5-10 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recognized by the relevant SABS/SANS specification/standard?		

Item 54: Rear tipping body with crane		
Customisation: • Can the material specifications or better be met? • SANS 1518 and 20013 can be met? • Can all construction requirements in section 7, chapter 4 be met?		
Operating capacity • Payload mass of 6 000-8 000 kg (specify amount)? • Crane (make and model)? • Lifting capacity of 13ton/m with 10 m outreach or better (specify amount)? • Knuckle rotator 8 tons (specify details and capacity)? • Can the lifting accessories be supplied? (specify in a catalogue/datasheet)		
Sub systems and miscellaneous items • Can items in section 7, chapter 6,9 and 12 in the technical specification be met without any exclusions?		

Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 55: 4 ton mobile workshop with accommodation for a compressor		
Rear superstructure and machinery • Is Corten steel or better used? • Can all the storage lockers/boxes be built as laid out in Section 7, chapter 4? • Safety access walkways (lined with non-slip material) with safety railings for access to the rear body and roof? • Can Section 7, chapters 4 be met without any exclusions?		
Sub systems and miscellaneous items • Can items in section 7, chapter 5-12 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recognized by the relevant SABS/SANS specification/standard?		

Item 56: Pot Hole /3 Ton Rear Tipping Truck body		
Vehicle and superstructure items • Designed within safe working loads?		
Customisation: • Can all construction requirements in section 7, chapter 5, 8 and 9 be met? • Is Corten steel or better used? • Can the hydraulic system meet the required applications needs as laid out in section 7? • What heater system is being supplied for the bitumen tank? (specify details with a catalogue)		
Operating capacity • Payload minimum of 3 000 kg (specify amount)? • Rear Tipping angle of 45°? • Hydraulic system capacity for the payload (specify details)? • Three way tipping option offered? (specify details and how it functions)		

Sub systems and miscellaneous items • Can items in section 7, chapter 6,7,10,12 and 13 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 57: Skip loader/Tele-hoist vehicle		
Vehicle and superstructure items • Designed to SANS 1518 or better? • Designed to SANS 20013 or better?		
Loading system: • Is Corten and Hardox steel or better used? • Rear roller stabilizing legs? • Chain assemblies according to SANS 10388 with stowaway points? • Safety access ladders, walkways (lined with non-slip material) with safety railings? • Hydraulic controlled retractable skip cover suitable for application? • Hydraulic controls clearly marked?		
Operating capacity • Payload minimum of 15 000-20 000 kg (specify amount)? • Tipping angle of 50°? • Hydraulic system capacity for the payload (specify details)?		
Sub systems and miscellaneous items • Can items in section 7, chapter 6,7,8,10,12 and 13 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 58: 4 Ton Rear Tipping Truck body		
Vehicle and superstructure items • Designed within safe working loads ?		
Customisation: • Can all construction requirements in section 7, chapter 5, 8 and 9 be met? • Is Corten steel or better used? • Can the hydraulic system meet the required applications needs as laid out in section 7?		
Operating capacity • Payload minimum of 4 000 kg (specify amount)? • Tipping angle of 45°? • Hydraulic system capacity for the payload (specify details)?		
Sub systems and miscellaneous items • Can items in section 7, chapter 6,7,10,12 and 13 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 59: 12m aerial platform vehicle		
Vehicle and superstructure items • Can the suspension of the primary vehicle be uprated if your aerial platform load distribution causes bottoming of the suspension? • Designed within safe working loads? • Designed to SANS 20013 or better?		
Aerial platform and superstructure items • Is Corten steel or better used? • Designed to SANS 16368 or better? • Can requirements in Section 7 chapter 4 and 5 be met? • Safety access ladders, walkways (lined with non-slip material) with safety railings?		
Hydraulic system: • Can requirements in Section 7, chapter 6 and 7 be met (specify details)?		

Sub systems and miscellaneous items • Can items in section 7, chapter ,8,11 and 13 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 60: 20m aerial platform vehicle		
Vehicle and superstructure items • Can the suspension of the primary vehicle be uprated if your aerial platform load distribution causes bottoming of the suspension? • Designed within safe working loads? • Designed to SANS 20013 or better?		
Aerial platform and superstructure items • Is Corten steel or better used? • Designed to SANS 16368 or better? • Can requirements in Section 7 chapter 4 and 5 be met? • Safety access ladders, walkways (lined with non-slip material) with safety railings?		
Hydraulic system: • Can requirements in Section 7, chapter 6 and 7 be met (specify details)?		
Sub systems and miscellaneous items • Can items in section 7, chapter ,8,11 and 13 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 61: Electricians vehicle		
Vehicle and superstructure items • Designed within safe working loads?		

Rear superstructure and equipment • Is Corten and Hardox steel or better used? • Can Section 7, chapters 4 be met without any exclusions? • Safety access ladders, walkways (lined with non-slip material) with safety railings?		
Sub systems and miscellaneous items • Can items in section 7, chapter 5-10 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recognized by the relevant SABS/SANS specification/standard?		

Item 62: Water tank with drop sides tipping vehicle		
Vehicle and superstructure items • Designed within safe working loads?		
Customisation: • Can all construction requirements in section 7, chapters 4-5 be met? • Is Corten steel or better used? • Can the hydraulic system meet the required applications needs as laid out in section 7?		
Operating capacity • Payload minimum of load area (specify amount)? • Tank capacity (specify amount)? • Tipping angle of 45°? • Hydraulic system capacity for the payload (specify details)?		
Sub systems and miscellaneous items • Can items in section 7, chapter 9,10 and 12 in the technical specification be met without any exclusions?		
Specifications and standards Are supplied products and system/s in accordance and recgonised by the relevant SABS/SANS specification/standard?		

Item 63: Tyre truck		
Construction requirements: • Can the material specifications or better be met? • Designed with safety factors for the payload? • Can all construction requirements in section 7, chapter 4 be met?		
Operating capacity • Payload mass (specify amount)? • Crane (make and model)? (Catalogue to be supplied) • Lifting capacity of 1.8 ton/m with 4 m outreach or better (specify amount)? • Compressor (make and model)? (Catalogue to be supplied)		
Sub systems and miscellaneous items • Can items in section 7, chapter 6,9 and 12 in the technical specification be met without any exclusions?		

Item 64: Bull bar and tow bars		
Construction requirements: • What material are the bull bars being manufactured from? • ADR complaint? • Front tow hitches accommodated in fitment and design of bull bar? • Can you accommodate the necessary fabrication and installation for rear tow bars and heavy-duty tow hitches?		
Product details • Have you supplied a catalogue/datasheet of the tow bars being bid on?		
Sub systems and miscellaneous items • Can the relevant SABS/SANS standards be complied to?		

Item 65: Tail lifts		
Construction requirements: • What material are the tail lifts being manufactured from? • Can you accommodate the necessary fabrication and installation for rear tail lifts?		
Product details • Have you supplied a catalogue/datasheet of the tail lifts being bid on?		
Sub systems and miscellaneous items • Can the relevant SABS/SANS standards be complied to where applicable?		

SECTION 8: BILL OF QUANTITIES / SCHEDULE OF RATES / ACTIVITIES

Bidders shall provide pricing were the primary vehicle (chassis cab) is supplied by the eThekwini municipality and the bidder shall use this vehicle to erect the structural work and all components and systems to complete the subsystems to provide a fully operational specialised vehicle. This shall also include training, delivery, licensing, homologation and commissioning. Prices quoted shall exclude Value Added Tax (VAT).

Bidders are to note that chassis cabs supplied from eThekwini Municipality may have certain components and accessories already included in it, hence in this case the bidder shall remove that item from the supplied quote at the time of order for that specific chassis cab. Bidders are asked to be diligent in their quotes paying attention to the specification in Section 7 and the line by line items of Section 8 which make the total of the item.

Item 1.1: Rollback Recovery superstructure	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Superstructure and vehicle accessories		
Body customization (structural work)		
Hydraulic system (pump, tank, cylinders, valves, filters, piping and accessories)		
Hydraulic controls		
Power take off (PTO) unit		
Winch and controls		
Compressor		
Wheel lift system		
Crane with lifting tackle		
Electrical systems (lights, control systems etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items, consumables and hydraulic oil.		
Training		
Delivery, licensing, homologation and commissioning.		

Item 1.1.1: Superstructure and customisation		
Item 1.1.2: Superstructure and customisation with Option of Multipurpose crane with lifting tackle		

Item 1.2: Rollback Recovery superstructure	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Superstructure and vehicle accessories		
Body customization (structural work)		
Hydraulic system (pump, tank, cylinders, valves, filters, piping and accessories)		
Hydraulic controls		
Power take off (PTO) unit		
Winch and controls		
Wheel lift system		
Electrical systems (lights, control systems etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items, consumables and hydraulic oil.		
Training		
Delivery, licensing, homologation and commissioning.		
Item 1.2: Superstructure and customisation		

Item 1.3: Rollback Recovery Superstructure	**Price per item**	**Remarks**
Vehicle (chassis cab)		
Superstructure and vehicle accessories		
Body customization (structural work)		
Hydraulic system (pump, tank, cylinders, valves, filters, piping and accessories)		
Hydraulic controls		

Power take off (PTO) unit		
Winch and controls		
Electrical systems (lights, control systems etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items, consumables and hydraulic oil.		
Training		
Delivery, licensing, homologation and commissioning.		
Item 1.3: Superstructure and customisation		

Item 1.4: Heavy-duty recovery tow truck	**Price per item**	**Remarks**
Vehicle (Chassis cab)	**N/A**	**N/A**
Refurbishment of chassis and cab		
Vehicle accessories for chassis cab		
Body customization (structural work)		
Hydraulic system (pump, tank, cylinders, valves, filters, piping and accessories)		
Hydraulic controls		
Power take off (PTO) unit		
Electrical systems (lights, camera, monitor, control systems etc.)		
Winches and lifting equipment		
Oil cooler (if necessary)		
Prime and Paint; Chassis Cab Superstructure		
All relevant tools, consumables and hydraulic oil.		
Delivery, homologation, licensing, driver, operator and maintenance training and commissioning.		

Item 1.4: Superstructure and customisation		

Item 2: Rear load body with crane	**Price per item**	**Remarks**
Vehicle (Chassis)	**N/A**	**N/A**
Body customization (structural work)		
Hydraulic system (pump,tank, cylinders, valves, filters, piping and accessories)		
Hydraulic controls		
Power take off (PTO) unit		
Electrical systems (lights, camera, monitor etc.)		
Crane system		
Crane accessories; Rotator knuckle and lifting gear Log Grapple		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items, consumables and hydraulic oil.		
Training		
Delivery, licensing, homologation and commissioning.		
Item 2: Superstructure and customisation		

Item 3: Insulated aerial platform superstructure	**Price per item**	**Remarks**
Vehicle (Chassis)	**N/A**	**N/A**
Superstructure and vehicle accessories		
Body customization (structural work)		
Aerial platform with lifting bucket/structure		
Hydraulic system (pump, tank, cylinders, valves, filters, piping and accessories)		
Hydraulic controls		
Power take off (PTO) unit		

Electrical systems (lights, camera, monitor etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant finishing, consumables and hydraulic oil.		
Delivery, homologation, licensing and commissioning.		
Item 3: Superstructure and customisation		

Item 4: High Pressure Street cleaning superstructure	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Superstructure and vehicle accessories		
Body customization (structural work)		
Auxiliary Engine and pump		
Hosing and cleaning accessories		
Electrical systems (lights, control systems etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items, consumables and hydraulic oil.		
Training		
Delivery, licensing, homologation and commissioning.		
Item 4: Superstructure and customisation		

Item 5: Sludge tanker superstructure	**Price per item**	**Remarks**
Vehicle	**N/A**	**N/A**
Superstructure and vehicle accessories		
Superstructure (structural work)		
Hydraulic system (pump, tank, cylinders, valves, filters, piping and accessories)		
Hydraulic controls		

Power take off (PTO) unit		
Electrical systems		
Agitator and water system/cleaning apparatus		
Prime and Paint; Chassis Cab Superstructure		
All relevant consumables and hydraulic oil.		
Delivery, training, homologation, licensing and commissioning.		
Item 5: Superstructure and customisation		

Item 6: 13-16 000 liter hook lift water tanker	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Superstructure accessories		
Superstructure (tank, sub chassis etc.)		
Pump		
Hosing, valves and hose accessories		
Electrical systems (lights, battery, solar panel etc.)		
All relevant miscellaneous items, consumables and hydraulic oil.		
Delivery, training, licensing, homologation and commissioning.		
Item 6: Superstructure and customisation		

Item 7: 13-16 000 liter hook lift vacuum tanker	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Superstructure accessories		
Superstructure (tank, sub chassis etc.)		
Vacuum Pump		
Hosing, valves and hose accessories		

Electrical systems (lights, battery, solar panel etc.)		
All relevant miscellaneous items, consumables and hydraulic oil.		
Delivery, training, licensing, homologation and commissioning.		
Item 7: Superstructure and customisation		

Item 8: Hook lift rear tipper	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Superstructure accessories		
Superstructure		
Covering system		
All relevant miscellaneous items and consumables.		
Delivery, training, licensing, homologation and commissioning.		
Item 8: Superstructure and customisation		

Item 9: Hook lift 12 m Aerial platform superstructure	**Price per item**	**Remarks**
Vehicle (Chassis)	**N/A**	**N/A**
Superstructure accessories		
Body customization (structural work)		
Aerial platform with lifting bucket/structure		
Hydraulic system (controls, electrical drive, tank, valves, piping etc.)		
All relevant finishing, consumables and hydraulic oil.		
Delivery, homologation, training, licensing and commissioning.		
Item 9: Superstructure and customisation		

Item 10: Hook lift 20 m Aerial platform superstructure	**Price per item**	**Remarks**
Vehicle (Chassis)	**N/A**	**N/A**
Superstructure accessories		
Body customization (structural work)		
Aerial platform with lifting bucket/structure		
Hydraulic system (controls, electrical drive, tank, valves, piping etc.)		
All relevant finishing, consumables and hydraulic oil.		
Delivery, homologation, training, licensing and commissioning.		
Item 10: Superstructure and customisation		

Item 11: Mobile stage superstructure including multimedia equipment	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Superstructure and vehicle accessories		
Superstructure		
Stage actuation with controls; Mechanical system Automated system		
Retractable roof/awning with controls; Mechanical system Automated system		
Generator		
Batteries Inverter Solar recharge panels		
Monitor/screens Active loudspeakers Mixer Microphones Camera DVR Laptop		
Fridge		

Electrical systems (additional lights, control systems, cabling)		
Branding		
Prime and Paint; Chassis Cab Superstructure		
Finishing, relevant consumables		
Delivery, homologation, licensing, training and commissioning.		
Item 11.1: Superstructure and customisation with manual operated stage and roof awning systems		
Item 11.2: Superstructure and customisation with automated operated stage and roof awning systems		

Item 12: Mobile kitchen superstructure including kitchen appliances and equipment	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Superstructure and vehicle accessories		
Superstructure		
Kitchen appliances and equipment ; Stove Fridges Freezers Grill Deep fryer Food warmer Sink and water dispensing Storage lockers, shelves and counter tops Other		
Generator		
Electrical systems (additional lights, solar panel, control systems, cabling)		
Branding		
Prime and Paint; Chassis Cab Superstructure		
Finishing, relevant consumables		
Delivery, homologation, licensing, training and commissioning.		
Item 12: Superstructure and customisation		

Item 13: Mobile clinic superstructure including equipment	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Superstructure and vehicle accessories		
Superstructure		
Air conditioning		
Appliances and equipment; Fridge Sink and water dispensing Storage lockers, shelves and counter tops Desks, chairs, table on castors Other		
Generator		
Wheelchair ramp/Tail lift		
Electrical systems (additional lights, solar panel, control systems, cabling)		
Branding		
Prime and Paint; Chassis Cab Superstructure		
Finishing, relevant consumables		
Delivery, homologation, licensing, training and commissioning.		
Item 13: Superstructure and customisation		

Item 14: 12-14 m Scissors platform superstructure	**Price per item**	**Remarks**
Vehicle (Chassis)	**N/A**	**N/A**
Superstructure accessories		
Body customization (structural work)		
Power take off (PTO) unit		
Scissors platform with working platform		
Hydraulic system (controls, electrical drive, tank, valves, piping etc.)		
Prime and Paint; Chassis Cab Superstructure		

All relevant finishing, consumables and hydraulic oil.		
Delivery, homologation, training, licensing and commissioning.		
Item 14: Superstructure and customisation		

Item 15.1: Hook lift superstructure (10 ton)	**Price per item**	**Remarks**
Vehicle (Chassis)	**N/A**	**N/A**
Superstructure and Vehicle accessories		
Body customization (structural work)		
Hydraulic system (pump, tank, cylinders, valves, filters, piping and accessories)		
Hydraulic controls		
Power take off (PTO) unit		
Electrical systems (lights, camera, monitor etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant finishing, consumables and hydraulic oil.		
Delivery, homologation, licensing and commissioning.		
Item 15.1A: Superstructure and customisation		
Item 15.1B: Superstructure and customisation with covering system for open top containers		

Item 15.2: Hook lift superstructure (20 ton)	**Price per item**	**Remarks**
Vehicle (Chassis)	**N/A**	**N/A**
Superstructure and Vehicle accessories		
Body customization (structural work)		
Hydraulic system (pump, tank, cylinders, valves, filters, piping and accessories)		
Hydraulic controls		
Power take off (PTO) unit		

Electrical systems (lights, camera, monitor etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant finishing, consumables and hydraulic oil.		
Delivery, homologation, licensing and commissioning.		
Item 15.2A: Superstructure and customisation		
Item 15.2B: Superstructure and customisation with covering system for open top containers		

Item 16: Mobile resources centre superstructure including multimedia equipment	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Superstructure and vehicle accessories		
Superstructure		
Air conditioning		
Generator		
Batteries Inverter Solar recharge panels		
Monitor/screen Laptop		
Fridge		
Electrical systems (additional lights, control systems, cabling)		
Branding		
Prime and Paint; Chassis Cab Superstructure		
Finishing, relevant consumables		
Delivery, homologation, licensing, training and commissioning.		
Item 16: Superstructure and customisation		

Item 17: Hook lift 28 m Aerial platform superstructure	**Price per item**	**Remarks**
Vehicle (Chassis)	**N/A**	**N/A**
Superstructure accessories		
Body customization (structural work)		
Aerial platform with lifting bucket/structure		
Hydraulic system (controls, electrical drive, tank, valves, piping etc.)		
All relevant finishing, consumables and hydraulic oil.		
Delivery, homologation, training, licensing and commissioning.		
Item 17: Superstructure and customisation		

Item 18: 28 m Aerial platform superstructure	**Price per item**	**Remarks**
Vehicle (Chassis)	**N/A**	**N/A**
Superstructure accessories		
Body customization (structural work)		
Aerial platform with lifting bucket/structure		
Hydraulic system (controls, electrical drive, tank, valves, piping etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant finishing, consumables and hydraulic oil.		
Delivery, homologation, training, licensing and commissioning.		
Item 18: Superstructure and customisation		

Item 19: Conversion of panel van to a passenger carrying vehicle with disability access	**Price per item**	**Remarks**
Vehicle (Chassis)	**N/A**	**N/A**
Vehicle accessories		
Body customization (structural work and windows)		

Interior customization (floor, seats, wheelchair bays, railings etc.)		
Access ramp		
Air conditioning system		
In car entertainment system		
Lighting and electrical systems		
Painting and branding		
Delivery, homologation, training, licensing and commissioning.		
Item 19: Superstructure and customisation		

Item 20.1: Wireless network panel van customisation	**Price per item**	**Remarks**
Vehicle	**N/A**	**N/A**
Vehicle accessories		
Interior customization (storage areas)		
Batteries		
Inverter		
Electrical systems (all lights, switches, trunking, trailer, connectors connector, fan etc.)		
Towing coupler		
Water tank/caddy, reels, cargo nets and tie down points		
Roof rack		
Antenna mounting		
Finishing and relevant consumables.		
Installation, delivery and demonstration		
Item 20.1: Superstructure and customisation		

Item 20.2: Pilot panel van customisation	**Price per item**	**Remarks**
Vehicle	**N/A**	**N/A**
Vehicle accessories		
Interior customization (storage areas including roof)		
Roof rack		
Batteries		
Inverter		
Electrical systems (all lights, switches, trunking, trailer, connectors connector, fan etc.)		
Towing coupler with rear step		
Water tank/caddy, reels, cargo nets and tie down points		
Finishing and relevant consumables.		
Installation, delivery and demonstration		
Item 20.2: Superstructure and customisation		

Item 20.3: HV panel van customisation	**Price per item**	**Remarks**
Vehicle	**N/A**	**N/A**
Vehicle accessories		
Interior customization (storage areas including roof)		
Roof rack		
Electrical systems (all lights, switches, trunking, trailer, connectors connector, fan etc.)		
Towing coupler with rear step		
Water tank/caddy, reels, cargo nets and tie down points		
Finishing and relevant consumables.		
Installation, delivery and demonstration		
Item 20.3: Superstructure and customisation		

Item 20.4: Mobile resources unit panel van customisation	**Price per item**	**Remarks**
Vehicle	**N/A**	**N/A**
Vehicle accessories		
Airconditioning		
Interior customization (storage areas)		
Inverter and batteries		
Electrical systems (all lights, switches)		
Laptop and monitor screen		
Furniture and equipment		
Finishing and relevant consumables.		
Installation, delivery and demonstration		
Item 20.4: Superstructure and customisation		

Item 20.5: Test Officer van customisation	**Price per item**	**Remarks**
Vehicle	**N/A**	**N/A**
Vehicle accessories		
Interior customization (loading platform)		
Roof rack		
Electrical systems (all lights, switches, trunking, solar panel etc.)		
Rear bumper step		
Water tank/caddy		
Underbelly protection		
Rear retractable awning		
Low profile trolley jack		

Finishing and relevant consumables.		
Installation, delivery and demonstration		
Item 20.5: Superstructure and customisation		

Item 21: Riot defence superstructure	**Price per item**	**Remarks**
Vehicle	**N/A**	**N/A**
Vehicle accessories; B4 level windows and windscreen Windscreen guard with actuators and washer system Front wheel loader type actuated nudge bar Run flat tyres Reinforcing of doors Custom locks for doors Reinforced front grill		
Auxiliary engine and associated subcomponents		
Pumping system subcomponents		
High capacity batteries and solar panels		
Electrical systems (all lights, switches, controls) Pneumatic systems (valves, switches, controls)		
Tanks; Water Foam Additive		
Superstructure (encasing the entire body)		
Cameras and DVR system		
Water cannons; Roof Front		
Miscellaneous items (please list)		
Prime and Paint; Chassis Cab Superstructure		
Finishing and relevant consumables.		
Installation, homologation, licensing, delivery and demonstration		

Item 21: Superstructure and customisation		

Item 22: Rapid intervention superstructure	**Price per item**	**Remarks**
Vehicle	**N/A**	**N/A**
Vehicle accessories; Suspension upgrade Bulbar and fog lamps Winch Tow bar Multimedia system and reverse camera		
First attack foam system		
Lockers		
High capacity batteries		
Electrical systems (all lights, switches, controls)		
Equipment; Hydraulic equipment Category 3 equipment		
Miscellaneous items (please list)		
Finishing and relevant consumables.		
Installation, homologation, licensing, delivery and training		
Item 22: Superstructure and customisation		

Item 23: Coastal patrol superstructure	**Price per item**	**Remarks**
Vehicle	**N/A**	**N/A**
Vehicle accessories; Suspension upgrade Bulbar and fog lamps Winch Tow bar Multimedia system and reverse camera		
Corrosion protection; Under carriage, chassis and sub components Body Body panel interior		
Canopy/Lockers		
Electrical systems (all lights, switches, controls)		

Finishing and relevant consumables.		
Installation, delivery and training		
Item 23: Superstructure and customisation		

Item 24: Emulsion tanker superstructure	**Price per item**	**Remarks**
Vehicle	**N/A**	**N/A**
Superstructure and vehicle accessories		
Superstructure (structural work)		
Heating system (pump/drive, heaters, valves, filters, piping and accessories)		
Hydraulic system (engine, pump, tank, outlets, spray systems, etc)		
Power take off (PTO) unit (if required)		
Electrical systems		
Agitator and cleaning apparatus		
Prime and Paint; Chassis Cab Superstructure		
All relevant consumables and hydraulic oil.		
Delivery, training, homologation, licensing and commissioning.		
Item 24: Superstructure and customisation		

Item 25.1: 2 000 -4 000 liter diesel bowser tanker	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Superstructure accessories		
Superstructure (tank, sub chassis etc.)		
PTO/Drive system and hydraulics		
Bowser Pump, hosing, filtration, valves and hose accessories		

Electrical systems (lights, level indicator, etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items, consumables and hydraulic oil.		
Delivery, training, licensing, homologation and commissioning.		
Item 25.1: Superstructure and customisation		

Item 25.2: 6 000 -8 000 liter diesel bowser tanker	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Superstructure accessories		
Superstructure (tank, sub chassis etc.)		
PTO/Drive system and hydraulics		
Bowser Pump, hosing, filtration, valves and hose accessories		
Electrical systems (lights, level indicator, etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items, consumables and hydraulic oil.		
Delivery, training, licensing, homologation and commissioning.		
Item 25.2: Superstructure and customisation		

Item 26: Mobile service superstructure	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Superstructure accessories		
Superstructure (roof, panels, sub chassis, tool boxes, etc.)		
Tanks (diesel, oil, coolant/water)		
Compressor		

PTO/Drive system and hydraulics		
Bowser Pump/s, hosing, filtration, valves and hose accessories		
Electrical systems (lights, level indicator, etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items, consumables and hydraulic oil.		
Delivery, training, licensing, homologation and commissioning.		
Item 26: Superstructure and customisation		

Item 27: Mobile service workshop superstructure	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Superstructure accessories (winch, bulbar etc.)		
Superstructure (roof, panels, sub chassis, tool boxes, etc.)		
Tanks (diesel, oil, coolant/water)		
Compressor		
Welding generator		
PTO/Drive system and hydraulics		
Bowser Pump/s, hosing, filtration, valves and hose accessories		
Electrical systems (lights, level indicator, etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items, consumables and hydraulic oil.		
Delivery, training, licensing, homologation and commissioning.		
Item 27: Superstructure and customisation		

Item 28: Prisoners transport superstructure	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Superstructure accessories		
Superstructure (roof, panels, sub chassis, doors, windows, etc.)		
CCTV system		
Electrical systems (lights, etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items, consumables and hydraulic oil.		
Delivery, training, licensing, homologation and commissioning.		
Item 28: Superstructure and customisation		

Item 29: Mobile workshop LDV customization	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Vehicle accessories (interior accessories, tow bar, bulbar etc.)		
Superstructure (Gullwing canopy with shelving and storage, Jerry can storage, pull out rack for compressor and inverter etc.)		
Compressor and pneumatic outlets		
Batteries and inverter		
Engineering Vice and tailgate reinforcement		
Electrical systems (lights, remote switches, plug outlets etc.)		
All relevant miscellaneous items and consumables.		
Delivery, training, licensing and commissioning.		
Item 29: Superstructure and customisation		

Item 30: General purpose rear loading superstructure	**Price per item**	**Remarks**
Vehicle (Chassis)	**N/A**	**N/A**
Vehicle accessories		
Body customization (structural work, rear superstructure)		
Tarpaulin covering system		
Electrical systems (lights etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant finishing and consumables.		
Delivery, homologation, licensing and commissioning.		
Item 30: Superstructure and customisation		

Item 31: Superstructure for transporting horses	**Price per item**	**Remarks**
Vehicle (Chassis)	**N/A**	**N/A**
Vehicle accessories		
Body customization (structural work, rear superstructure, entrance/exits, ramps etc.)		
Interior of superstructure		
CCTV system		
Air-conditioning		
Electrical systems (lights etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant finishing and consumables.		
Delivery, homologation, licensing and commissioning.		
Item 31: Superstructure and customisation		

Item 32: Crowd control customisation to an LDV	**Price per item**	**Remarks**
Vehicle	**N/A**	**N/A**
Vehicle accessories		
Bumpers and under belly protection		
Canopy/Lockers		
Electrical systems (all lights, PA system, switches, controls etc.)		
Finishing and relevant consumables.		
Installation, delivery and training		
Item 32: Superstructure and customisation		

Item 33: Mobile police station superstructure	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Superstructure and vehicle accessories		
Air conditioner for superstructure		
Superstructure interior (storage areas and cupboards, workstations, seats, safe etc.)		
Appliances and equipment; Fridge Sink and water dispensing Other		
Generator and UPS		
CCTV system		
Electrical systems (additional lights, solar panel, control systems, cabling, AC outlets)		
Branding		
Prime and Paint; Chassis Cab Superstructure		
Finishing, relevant consumables		
Delivery, homologation, licensing, training and commissioning.		
Item 33: Superstructure and customisation		

Item 34.1: 8x4 Rear tipping superstructure	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Body customization (superstructure/structural work)		
Covering system		
Hydraulic system (pump, tank, cylinders, valves, filters, piping and accessories)		
Hydraulic controls		
Close coupled power take off (PTO) unit		
Electrical systems (lights, light bar, power points etc.)		
Oil cooler (if necessary)		
Prime and Paint; Chassis Cab Superstructure		
Finishing, relevant consumables and hydraulic oil.		
Delivery, homologation, licensing, training and commissioning.		
Item 34.1: Superstructure and customisation		

Item 34.2: 8x4 Heated rear tipping superstructure	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Modification of exhaust for heating of superstructure		
Body customization (superstructure/structural work with the heating system modification)		
Covering system		
Hydraulic system (pump, tank, cylinders, valves, filters, piping and accessories)		
Hydraulic controls		
Close coupled power take off (PTO) unit		
Electrical systems (lights, light bar, power points etc.)		
Oil cooler (if necessary)		

Prime and Paint; Chassis Cab Superstructure		
Finishing, relevant consumables and hydraulic oil.		
Delivery, homologation, licensing, training and commissioning.		
Item 34.2: Superstructure and customisation		

Item 35.1.1: K-9 dog unit conversion for police response light motor passenger vehicles	**Price per item**	**Remarks**
Vehicle accessories (nudge bar, underbelly protection, laminated protection film etc.)		
Bluetooth head unit with satellite navigation, reverse camera, speakers and mic		
Suspension upgrade (springs and shock absorbers)		
Lights (interior and exterior)		
Siren system		
Kennels (flooring, partition, back rest, padding)		
Rifle locks and safe		
Accessories for the dogs and boot storage		
Spare wheel		
Advanced driver training (for two employees including all costs)		
Delivery, adapters, trims, fasteners, consumables and installation		
Item 35.1.1: Superstructure and customisation		

Item 35.1.2: K-9 dog unit conversion for police response club and double cab vehicles	**Price per item**	**Remarks**
Vehicle accessories (nudge bar, underbelly protection, laminated protection film etc.)		
Bluetooth head unit with satellite navigation, reverse camera, speakers and mic		
Suspension upgrade (springs and shock absorbers)		
Lights (interior and exterior)		
Siren system		

Kennels (flooring, partition, back rest, padding)		
Rifle locks and safe		
Accessories for the dogs and boot storage		
Spare wheel		
Advanced driver training (for two employees including all costs)		
Delivery, adapters, trims, fasteners, consumables and installation		
Item 35.1.2: Superstructure and customisation		

Item 35.1.3: K-9 dog unit conversion for police response SUV type vehicles	**Price per item**	**Remarks**
Vehicle accessories (nudge bar, underbelly protection, laminated protection film etc.)		
Bluetooth head unit with satellite navigation, reverse camera, speakers and mic		
Suspension upgrade (springs and shock absorbers)		
Lights (interior and exterior)		
Siren system		
Kennels (flooring, partition, back rest, padding)		
Rifle locks and safe		
Accessories for the dogs and boot storage		
Spare wheel		
Advanced driver training (for two employees including all costs)		
Delivery, adapters, trims, fasteners, consumables and installation		
Item 35.1.3: Superstructure and customisation		

Item 35.2.1: Patrol unit conversion for police response light motor passenger vehicles	**Price per item**	**Remarks**
Vehicle accessories (nudge bar, underbelly protection, laminated protection film etc.)		
Bluetooth head unit with satellite navigation, reverse camera, speakers and mic		

Lights		
Siren system		
Interior (partition, door and window panels)		
Rifle locks and safe		
Delivery, adapters, trims, fasteners, consumables and installation		
Item 35.2.1: Superstructure and customisation		

Item 35.2.2: Patrol unit conversion for police response club and double cab vehicles	**Price per item**	**Remarks**
Vehicle accessories (nudge bar, underbelly protection, laminated protection film etc.)		
Bluetooth head unit with satellite navigation, reverse camera, speakers and mic		
Lights		
Siren system		
Interior (partition, door and window panels)		
Rifle locks and safe		
Delivery, adapters, trims, fasteners, consumables and installation		
Item 35.2.2: Superstructure and customisation		

Item 35.2.3: Patrol unit conversion for police response SUV type vehicles	**Price per item**	**Remarks**
Vehicle accessories (nudge bar, underbelly protection, laminated protection film etc.)		
Bluetooth head unit with satellite navigation, reverse camera, speakers and mic		
Lights		
Siren system		
Interior (partition, door and window panels)		
Rifle locks and safe		
Delivery, adapters, trims, fasteners, consumables and installation		

Item 35.2.3: Superstructure and customisation		

Item 36: Search and rescue vehicle customization	**Price per item**	**Remarks**
Suspension upgrade		
Tyre upgrade		
Vehicle accessories		
Lights		
Siren and PA system		
Canopy and roof rack		
Front and rear bumper with tow bars		
Winch		
Auxiliary power system		
Corrosion protection		
Finishing, cabling, isolator switch, rear electrical connector, fasteners, trunking etc.		
Delivery, supply and installation of search and rescue unit modification		
Item 36: Superstructure and customisation		

Item 37: Armoured resources panel van	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Vehicle accessories		
Armoring of vehicle and glass		
Air conditioning		
Generator		
Interior customization/structures		
Oxygen system		

Electrical systems (additional lights, control systems, cabling solar recharge panels, etc.)		
Branding		
Finishing, relevant consumables		
Delivery, homologation, licensing, training and commissioning.		
Item 37: Superstructure and customisation		

Item 38: Cage tipping vehicle with crew-cab	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Body customization: Crew Cab		
Body customization: Tip body		
Hydraulic system (pump,tank, cylinders, valves, filters, piping and accessories)		
Hydraulic controls		
PTO/Electric drive for hydraulic pump		
Electrical systems (additional lights, control systems, two way radio etc.)		
Oil cooler (if necessary)		
Prime and Paint; Chassis Cab Superstructure		
Finishing, relevant consumables and hydraulic oil.		
Delivery, homologation, licensing, training and commissioning.		
Item 38: Superstructure and customisation		

Item 39: Customization of vehicles with a skid tank diesel refueling system	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Vehicle accessories		

Skid Tank and mountings		
Pump and dispensing system		
Generator with mountings and cover		
Hose, hose reel, valves and hose accessories		
Electrical, lighting and coupling items		
All relevant miscellaneous items, consumables and finishing (painting)		
Delivery, training and commissioning.		
Item 39: Superstructure and customisation		

Item 40: 7 000L Combination Jetting/Vacuum superstructure	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Vehicle accessories (for chassis cab)		
Body customization (structural work)		
Hydraulic system (pump, tank, cylinders, valves, filters, piping and accessories)		
Hydraulic controls		
Power take off (PTO) unit		
Jetting system		
Vacuum system		
Hosing and hose accessories		
Electrical systems (lights, control systems etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items, consumables and hydraulic oil.		
Training		
Delivery, licensing, homologation and commissioning.		
Item 40: Superstructure and customisation		

Item 41: 6 000L Auxiliary Engine Jetting superstructure	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Vehicle accessories (for chassis cab)		
Body customization (structural work)		
Auxiliary Engine and pump		
Hosing and hose accessories		
Electrical systems (lights, control systems etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items, consumables and hydraulic oil.		
Training		
Delivery, licensing, homologation and commissioning.		
Item 41: Superstructure and customisation		

Item 42: 8 000L Vacuum body and customization	**Price per item**	**Remarks**
Vehicle (Chassis cab)	**N/A**	**N/A**
Vehicle accessories (for chassis cab)		
Body customization (structural work)		
Power take off (PTO) unit		
Vacuum system		
Hosing and hose accessories		
Electrical systems (lights, control systems etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items, consumables and hydraulic oil.		
Training		

Delivery, homologation and commissioning.		
Item 42: Superstructure and customisation		

Item 43.1: 16 000L Combination Jetting/Vacuum superstructure (Close coupled PTO)	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Vehicle accessories (for chassis cab)		
Body customization (structural work)		
Hydraulic system (pump, tank, cylinders, valves, filters, piping and accessories)		
Hydraulic controls		
Power take off (PTO) unit		
Jetting system		
Vacuum system		
Hosing and hose accessories		
Electrical systems (lights, control systems etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items, consumables and hydraulic oil.		
Training		
Delivery, licensing, homologation and commissioning.		
Item 43.1: Superstructure and customisation		

Item 43.1: 16 000L Combination Jetting/Vacuum superstructure (In line PTO)	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Vehicle accessories (for chassis cab)		
Body customization (structural work)		

Hydraulic system (pump, tank, cylinders, valves, filters, piping and accessories)		
Hydraulic controls		
Power take off (PTO) unit		
Jetting system		
Vacuum system		
Hosing and hose accessories		
Electrical systems (lights, control systems etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items, consumables and hydraulic oil.		
Training		
Delivery, licensing, homologation and commissioning.		
Item 43.2: Superstructure and customisation		

Item 44: 13 000L Vacuum body and customization	**Price per item**	**Remarks**
Vehicle (Chassis cab)	**N/A**	**N/A**
Vehicle accessories (for chassis cab)		
Body customization (structural work)		
Power take off (PTO) unit		
Vacuum system		
Hosing and hose accessories		
Electrical systems (lights, control systems etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items, consumables and hydraulic oil.		
Training		

Delivery, homologation and commissioning.		
Item 44: Superstructure and customisation		

Item 45: Construction Rear tip body	**Price per item**	**Remarks**
Vehicle (Chassis)	**N/A**	**N/A**
Body customization (structural work)		
Hydraulic system (pump, tank, cylinders, valves, filters, piping and accessories)		
Hydraulic controls		
Power take off (PTO) unit		
Electrical systems (lights, monitor etc.)		
Covering system		
Prime and Paint; Chassis Cab Superstructure		
All relevant finishing, consumables and hydraulic oil.		
Delivery, homologation, licensing and commissioning.		
Item 45: Superstructure and customisation		

Item 46: Construction Rear tip body with crane	**Price per item**	**Remarks**
Vehicle (Chassis)	**N/A**	**N/A**
Body customization (structural work)		
Hydraulic system (pump, tank, cylinders, valves, filters, piping and accessories)		
Hydraulic controls		
Power take off (PTO) unit		
Electrical systems (lights, camera, monitor etc.)		
Crane system		
Covering system		

Crane accessories; Lift bucket, Rotator knuckle and lifting tackle		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items, consumables and hydraulic oil.		
Training		
Delivery, licensing, homologation and commissioning.		
Item 46: Superstructure and customisation		
Option of Crane accessory: Log Grapple		

Item 47: Construction Side tip body	**Price per item**	**Remarks**
Vehicle (Chassis)	**N/A**	**N/A**
Body customization (structural work)		
Hydraulic system (pump, tank, cylinders, valves, filters, piping and accessories)		
Hydraulic controls		
Covering system		
Power take off (PTO) unit		
Electrical systems (lights, camera, monitor etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant finishing, consumables and hydraulic oil.		
Delivery, homologation, licensing and commissioning.		
Item 47: Superstructure and customisation		

Item 48.1: 6 500 liter water tanker (Drinking water application)	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Vehicle accessories (for chassis cab)		
Body customization (structural work)		

Pump		
Hosing and hose accessories		
Electrical systems (lights, camera system etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items, consumables and hydraulic oil.		
Training		
Delivery, licensing, homologation and commissioning.		
Item 48.1: Superstructure and customisation		
Option of water level and dispensing sensors		

Item 48.2: 6 500 liter water tanker (Construction application)	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Vehicle accessories (for chassis cab)		
Body customization (structural work)		
Pump		
Spray bar and hose accessories		
Electrical systems (lights, camera system etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items, consumables and hydraulic oil.		
Training		
Delivery, licensing, homologation and commissioning.		
Item 48.2: Superstructure and customisation		
Option of water level and dispensing sensors		

Item 49.1: 14 000 liter water tanker (Drinking water application)	**Price per item**	**Remarks**

Vehicle (chassis cab)	**N/A**	**N/A**
Vehicle accessories (for chassis cab)		
Body customization (structural work)		
Pump		
Hosing and hose accessories		
Electrical systems (lights, camera system etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items, consumables and hydraulic oil.		
Training		
Delivery, licensing, homologation and commissioning.		
Item 49.1: Superstructure and customisation		
Option of water level and dispensing sensors		

Item 49.2: 14 000 liter water tanker (Construction application)	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Vehicle accessories (for chassis cab)		
Body customization (structural work)		
Pump		
Spray bar and hose accessories		
Electrical systems (lights, camera system etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items, consumables and hydraulic oil.		
Training		
Delivery, licensing, homologation and commissioning.		

Item 49.2: Superstructure and customisation		
Option of water level and dispensing sensors		

Item 50.1: 18-22 000 liter water tanker (Drinking water application)	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Vehicle accessories (for chassis cab)		
Body customization (structural work)		
Pump		
Hosing and hose accessories		
Electrical systems (lights, camera system etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items, consumables and hydraulic oil.		
Training		
Delivery, licensing, homologation and commissioning.		
Item 50.1: Superstructure and customisation		
Option of water level and dispensing sensors		

Item 50.2: 18-22 000 liter water tanker (Construction application)	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Vehicle accessories (for chassis cab)		
Body customization (structural work)		
Pump		
Hosing and hose accessories		
Electrical systems (lights, camera system etc.)		

Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items, consumables and hydraulic oil.		
Training		
Delivery, licensing, homologation and commissioning.		
Item 50.2: Superstructure and customisation		
Option of water level and dispensing sensors		

Item 51: Welders body	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Vehicle accessories (for chassis cab)		
Body customization (structural work)		
Welding machines and cables		
Electrical systems (lights, reverse camera etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items and consumables		
Training		
Delivery, licensing, homologation and commissioning.		
Item 51: Superstructure and customisation		

Item 52: 4 ton mobile workshop (plumbers body)	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Vehicle accessories (for chassis cab)		
Body customization (structural work)		
Electrical systems (lights, reverse camera etc.)		

Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items and consumables		
Delivery, licensing, homologation and commissioning.		
Item 52: Superstructure and customisation		

Item 53: 4 ton sewer body	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Vehicle accessories (for chassis cab)		
Body customization (structural work and reel system)		
Electrical systems (lights, reverse camera etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items and consumables		
Delivery, licensing, homologation and commissioning.		
Item 53: Superstructure and customisation		

Item 54: Rear tipping body with crane	**Price per item**	**Remarks**
Vehicle (Chassis)	**N/A**	**N/A**
Body customization (structural work)		
Hydraulic system (pump,tank, cylinders, valves, filters, piping and accessories)		
Hydraulic controls		
Power take off (PTO) unit		
Electrical systems (lights, camera, monitor etc.)		
Crane system		
Crane accessories (rotator knuckle with lifting tackle, lift bucket)		
Prime and Paint; Chassis Cab Superstructure		

All relevant miscellaneous items, consumables and hydraulic oil.		
Training		
Delivery, licensing, homologation and commissioning.		
Item 54: Superstructure and customisation		
Option with Log grapple crane lifting accessory		

Item 55: 4 ton mobile workshop with accommodation for a compressor	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Vehicle accessories (for chassis cab)		
Body customization (structural work)		
Electrical systems (lights, reverse camera etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items and consumables		
Delivery, licensing, homologation and commissioning.		
Item 55: Superstructure and customisation		

Item 56: Pot Hole /3 Ton Rear Tipping Truck body	**Price per item**	**Remarks**
Vehicle (Chassis)	**N/A**	**N/A**
Vehicle accessories		
Body customization (structural work)		
Hydraulic system (pump, tank, cylinders, valves, filters, piping and accessories)		
Hydraulic controls		
Power take off (PTO) unit		
Electrical systems (lights, camera, monitor etc.)		
Bitumen tank heater		

Prime and Paint; Chassis Cab Superstructure		
All relevant finishing, consumables and hydraulic oil.		
Delivery, homologation, licensing and commissioning.		
Item 56.1: Superstructure and customisation		
Item 56.2: Superstructure and customisation with the option of a three way rear tipping body		

Item 57: Skip loader/Tele-hoist superstructure	**Price per item**	**Remarks**
Vehicle (Chassis)	**N/A**	**N/A**
Vehicle accessories		
Body customization (structural work)		
Hydraulic system (pump, tank, cylinders, valves, filters, piping and accessories)		
Hydraulic controls		
Power take off (PTO) unit		
Lifting chains		
Skip covering system		
Electrical systems (lights, camera, monitor etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant finishing, consumables and hydraulic oil.		
Delivery, homologation, licensing and commissioning.		
Item 57: Superstructure and customisation		

Item 58.1: 4 Ton Rear Tipping Truck body	**Price per item**	**Remarks**
Vehicle (Chassis)	**N/A**	**N/A**

Vehicle accessories		
Body customization (structural work)		
Hydraulic system (pump,tank, cylinders, valves, filters, piping and accessories)		
Hydraulic controls		
Power take off (PTO) unit		
Electrical systems (lights, camera, monitor etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant finishing, consumables and hydraulic oil.		
Delivery, homologation, licensing and commissioning.		
Item 58.1: Superstructure and customisation		
Option of fixed drop side storage area between driver's cab headboard and tip body for LWB chassis cab		

Item 58.2: 4 Ton Rear Tipping Truck body with caged sides	**Price per item**	**Remarks**
Vehicle (Chassis)	**N/A**	**N/A**
Vehicle accessories		
Body customization (structural work)		
Hydraulic system (pump,tank, cylinders, valves, filters, piping and accessories)		
Hydraulic controls		
Power take off (PTO) unit		
Electrical systems (lights, camera, monitor etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant finishing, consumables and hydraulic oil.		
Delivery, homologation, licensing and commissioning.		
Item 58.2: Superstructure and customisation		

Option of fixed drop side storage area between driver's cab headboard and tip body for LWB chassis cab		

Item 59: 12m Aerial platform	**Price per item**	**Remarks**
Vehicle (Chassis)	**N/A**	**N/A**
Vehicle accessories		
Body customization (structural work)		
Aerial platform with lifting bucket/structure		
Hydraulic system (pump, tank, cylinders, valves, filters, piping and accessories)		
Hydraulic controls		
Power take off (PTO) unit		
Electrical systems (lights, camera, monitor etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant finishing, consumables and hydraulic oil.		
Delivery, homologation, licensing and commissioning.		
Item 59: Superstructure and customisation		
Option of uprating the suspension		

Item 60: 20m Aerial platform	**Price per item**	**Remarks**
Vehicle (Chassis)	**N/A**	**N/A**
Vehicle accessories		
Body customization (structural work)		
Aerial platform with lifting bucket/structure		
Hydraulic system (pump, tank, cylinders, valves, filters, piping and accessories)		
Hydraulic controls		
Power take off (PTO) unit		

Electrical systems (lights, camera, monitor etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant finishing, consumables and hydraulic oil.		
Delivery, homologation, licensing and commissioning.		
Item 60: Superstructure and customisation		

Item 61: Electricians truck	**Price per item**	**Remarks**
Vehicle (Chassis)	**N/A**	**N/A**
Vehicle accessories		
Body customization (structural work)		
Electrical systems (lights, camera, monitor etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant finishing, consumables and hydraulic oil.		
Delivery, homologation, licensing and commissioning.		
Item 61: Superstructure and customisation		

Item 62: Water tanker with drop sides tipping vehicle	**Price per item**	**Remarks**
Vehicle (chassis cab)	**N/A**	**N/A**
Vehicle accessories (for chassis cab)		
Body customization (structural work-tank and drop sides including tailgate)		
Pump		
Hosing and hose accessories		
Electrical systems (lights, control systems etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant miscellaneous items, consumables and hydraulic oil.		

Training		
Delivery, licensing, homologation and commissioning.		
Item 62: Superstructure and customisation		

Item 63: Tyre truck	**Price per item**	**Remarks**
Vehicle (Chassis)	**N/A**	**N/A**
Vehicle accessories		
Body customization (structural work)		
Crane		
Hydraulic system (pump, tank, cylinders, valves, filters, piping, controls and accessories)		
Compressor		
Power take off (PTO) unit		
Electrical systems (lights, camera, monitor etc.)		
Prime and Paint; Chassis Cab Superstructure		
All relevant finishing, consumables and hydraulic oil.		
Delivery, homologation, licensing and commissioning.		
Item 63: Superstructure and customisation		

Item 64: Bull bars and Tow bars	**A: 7 to 12 Ton Medium trucks**		**B: 13 to 18 Ton Heavy Trucks**		**C: Min. 20 Ton Extra Heavy Trucks**	
	Total for item (Excl. VAT) to tender form	**Make and model**	**Total for item (Excl. VAT) to tender form**	**Make and model**	**Total for item (Excl. VAT) to tender form**	**Make and model**
Item 64.1						
Item 64.2						
Item 64.3						
Item 64.4						
Item 64.5.1 40 mm Rockinger						

Item 64.5.2 50 mm Rockinger						
Item 64.5.3 40 mm Rockinger (Low position install)						
Item 64.5.4 50 mm Rockinger (Low position install)						
Item 64.6.1 40 mm Rockinger						
Item 64.6.2 50 mm Rockinger						

Item 65: Tail lifts	**A: Foldable**		**B: Retractable**		**C: Cantilever**	
	Total for item (Excl. VAT) to tender form	**Make and model**	**Total for item (Excl. VAT) to tender form**	**Make and model**	**Total for item (Excl. VAT) to tender form**	**Make and model**
Item 65.1 (500 kg)						
Item 65.2 (750 kg)						
Item 65.3 (1000 kg)						
Item 65.4 (1500 kg)						
Item 65.5 (2000 kg)						
Item 65.6 (2500 kg)						
Item 65.7 (3000 kg)						
Item 65.8 (3500 kg)						

SECTION 9 : OFFICIAL TENDER FORM

Part A: OFFER BY TENDERER - In response to **Tender Number : 1J-18539** I / we hereby offer to supply the goods / services detailed hereunder in accordance with the Technical Specification, and subject to the Standard and Special Conditions of Tender (Goods/Services), and General and Special Conditions of Contract, which accompanied your Tender (with which I / we acknowledge myself / ourselves to be fully acquainted) at the price stated below, or in the case of individual rates are indicated in Section 8 : Bill Of Quantities / Schedule of Rates / Activities.

Item 1.1: Rollback Recovery superstructure	Price incl. vat
Item 1.1.1: Superstructure and customisation	
Item 1.1.2: Superstructure and customisation with Option of Multipurpose crane with lifting tackle	

Item 1.2: Rollback Recovery superstructure	Price incl. vat
Item 1.2: Superstructure and customisation	

Item 1.3: Rollback Recovery Superstructure	Price incl. vat
Item 1.3: Superstructure and customisation	

Item 1.4: Heavy-duty recovery tow truck	Price incl. vat
Item 1.4: Superstructure and customisation	

Item 2: Rear load body with crane	Price incl. vat
Item 2: Superstructure and customisation	

Item 3: Insulated aerial platform superstructure	Price incl. vat
Item 3: Superstructure and customisation	

Item 4: High Pressure Street cleaning superstructure	Price incl. vat
Item 4: Superstructure and customisation	

Item 5: Sludge tanker superstructure	Price incl. vat
Item 5: Superstructure and customisation	

Item 6: 13-16 000 liter hook lift water tanker	Price incl. vat
Item 6: Superstructure and customisation	

Item 7: 13-16 000 liter hook lift vacuum tanker	Price incl. vat
Item 7: Superstructure and customisation	

Item 8: Hook lift rear tipper	Price incl. vat
Item 8: Superstructure and customisation	

Item 9: Hook lift 12 m Aerial platform superstructure	Price incl. vat
Item 9: Superstructure and customisation	

Item 10: Hook lift 20 m Aerial platform superstructure	Price incl. vat
Item 10: Superstructure and customisation	

Item 11: Mobile stage superstructure including multimedia equipment	Price incl. vat
Item 11.1: Superstructure and customisation with manual operated stage and roof awning systems	
Item 11.2: Superstructure and customisation with automated operated stage and roof awning systems	

Item 12: Mobile kitchen superstructure including kitchen appliances and equipment	Price incl. vat
Item 12: Superstructure and customisation	

Item 13: Mobile clinic superstructure including equipment	Price incl. vat
Item 13: Superstructure and customisation	

Item 14: 12-14 m Scissors platform superstructure	Price incl. vat
Item 14: Superstructure and customisation	

Item 15.1: Hook lift superstructure (10 ton)	**Price incl. vat**
Item 15.1A: Superstructure and customisation	
Item 15.1B: Superstructure and customisation with covering system for open top containers	

Item 15.2: Hook lift superstructure (20 ton)	**Price incl. vat**
Item 15.2A: Superstructure and customisation	
Item 15.2B: Superstructure and customisation with covering system for open top containers	

Item 16: Mobile resources centre superstructure including multimedia equipment	**Price incl. vat**
Item 16: Superstructure and customisation	

Item 17: Hook lift 28 m Aerial platform superstructure	**Price incl. vat**
Item 17: Superstructure and customisation	

Item 18: 28 m Aerial platform superstructure	**Price incl. vat**
Item 18: Superstructure and customisation	

Item 19: Conversion of panel van to a passenger carrying vehicle with disability access	**Price incl. vat**
Item 19: Superstructure and customisation	

Item 20.1: Wireless network panel van customisation	**Price incl. vat**
Item 20.1: Superstructure and customisation	

Item 20.2: Pilot panel van customisation	**Price incl. vat**
Item 20.2: Superstructure and customisation	

Item 20.3: HV panel van customisation	Price incl. vat
Item 20.3: Superstructure and customisation	

Item 20.4: Mobile resources unit panel van customisation	Price incl. vat
Item 20.4: Superstructure and customisation	

Item 20.5: Test Officer van customisation	Price incl. vat
Item 20.5: Superstructure and customisation	

Item 21: Riot defence superstructure	Price incl. vat
Item 21: Superstructure and customisation	

Item 22: Rapid intervention superstructure	Price incl. vat
Item 22: Superstructure and customisation	

Item 23: Coastal patrol superstructure	Price incl. vat
Item 23: Superstructure and customisation	

Item 24: Emulsion tanker superstructure	Price incl. vat
Item 24: Superstructure and customisation	

Item 25.1: 2 000 -4 000 liter diesel bowser tanker	Price incl. vat
Item 25.1: Superstructure and customisation	

Item 25.2: 6 000 -8 000 liter diesel bowser tanker	Price incl. vat
Item 25.2: Superstructure and customisation	

Item 26: Mobile service superstructure	Price incl. vat
Item 26: Superstructure and customisation	

Item 27: Mobile service workshop superstructure	Price incl. vat
Item 27: Superstructure and customisation	

Item 28: Prisoners transport superstructure	Price incl. vat
Item 28: Superstructure and customisation	

Item 29: Mobile workshop LDV customization	Price incl. vat
Item 29: Superstructure and customisation	

Item 30: General purpose rear loading superstructure	Price incl. vat
Item 30: Superstructure and customisation	

Item 31: Superstructure for transporting horses	Price incl. vat
Item 31: Superstructure and customisation	

Item 32: Crowd control customisation to an LDV	Price incl. vat
Item 32: Superstructure and customisation	

Item 33: Mobile police station superstructure	Price incl. vat
Item 33: Superstructure and customisation	

Item 34.1: 8x4 Rear tipping superstructure	Price incl. vat
Item 34.1: Superstructure and customisation	

Item 34.2: 8x4 Heated rear tipping superstructure	**Price incl. vat**
Delivery, homologation, licensing, training and commissioning.	
Item 34.2: Superstructure and customisation	

Item 35.1.1: K-9 dog unit conversion for police response light motor passenger vehicles	**Price incl. vat**
Item 35.1.1: Superstructure and customisation	

Item 35.1.2: K-9 dog unit conversion for police response club and double cab vehicles	**Price incl. vat**
Item 35.1.2: Superstructure and customisation	

Item 35.1.3: K-9 dog unit conversion for police response SUV type vehicles	**Price incl. vat**
Item 35.1.3: Superstructure and customisation	

Item 35.2.1: Patrol unit conversion for police response light motor passenger vehicles	**Price incl. vat**
Item 35.2.1: Superstructure and customisation	

Item 35.2.2: Patrol unit conversion for police response club and double cab vehicles	**Price incl. vat**
Item 35.2.2: Superstructure and customisation	

Item 35.2.3: Patrol unit conversion for police response SUV type vehicles	**Price incl. vat**
Item 35.2.3: Superstructure and customisation	

Item 36: Search and rescue vehicle customization	**Price incl. vat**
Item 36: Superstructure and customisation	

Item 37: Armoured resources panel van	**Price incl. vat**
Item 37: Superstructure and customisation	

Item 38: Cage tipping vehicle with crew-cab	Price incl. vat
Item 38: Superstructure and customisation	

Item 39: Customization of vehicles with a skid tank diesel refueling system	Price incl. vat
Item 39: Superstructure and customisation	

Item 40: 7 000L Combination Jetting/Vacuum superstructure	Price incl. vat
Item 40: Superstructure and customisation	

Item 41: 6 000L Auxiliary Engine Jetting superstructure	Price incl. vat
Item 41: Superstructure and customisation	

Item 42: 8 000L Vacuum body and customization	Price incl. vat
Item 42: Superstructure and customisation	

Item 43.1: 16 000L Combination Jetting/Vacuum superstructure (Close coupled PTO)	Price incl. vat
Item 43.1: Superstructure and customisation	

Item 43.1: 16 000L Combination Jetting/Vacuum superstructure (In line PTO)	Price incl. vat
Item 43.2: Superstructure and customisation	

Item 44: 13 000L Vacuum body and customization	Price incl. vat
Item 44: Superstructure and customisation	

Item 45: Construction Rear tip body	Price incl. vat
Item 45: Superstructure and customisation	

Item 46: Construction Rear tip body with crane	Price incl. vat

Item 46: Superstructure and customisation	
Option of Crane accessory: Log Grapple	

Item 47: Construction Side tip body	**Price incl. vat**
Item 47: Superstructure and customisation	

Item 48.1: 6 500 liter water tanker (Drinking water application)	**Price incl. vat**
Item 48.1: Superstructure and customisation	
Option of water level and dispensing sensors	

Item 48.2: 6 500 liter water tanker (Construction application)	**Price incl. vat**
Item 48.2: Superstructure and customisation	
Option of water level and dispensing sensors	

Item 49.1: 14 000 liter water tanker (Drinking water application)	**Price incl. vat**
Item 49.1: Superstructure and customisation	
Option of water level and dispensing sensors	

Item 49.2: 14 000 liter water tanker (Construction application)	**Price incl. vat**
Item 49.2: Superstructure and customisation	
Option of water level and dispensing sensors	

Item 50.1: 18-22 000 liter water tanker (Drinking water application)	**Price incl. vat**
Item 50.1: Superstructure and customisation	
Option of water level and dispensing sensors	

Item 50.2: 18-22 000 liter water tanker (Construction application)	**Price incl. vat**
Item 50.2: Superstructure and customisation	

Option of water level and dispensing sensors	

Item 51: Welders body	**Price incl. vat**
Item 51: Superstructure and customisation	

Item 52: 4 ton mobile workshop (plumbers body)	**Price incl. vat**
Item 52: Superstructure and customisation	

Item 53: 4 ton sewer body	**Price incl. vat**
Item 53: Superstructure and customisation	

Item 54: Rear tipping body with crane	**Price incl. vat**
Item 54: Superstructure and customisation	
Option with Log grapple crane lifting accessory	

Item 55: 4 ton mobile workshop with accommodation for a compressor	**Price incl. vat**
Item 55: Superstructure and customisation	

Item 56: Pot Hole /3 Ton Rear Tipping Truck body	**Price incl. vat**
Item 56.1: Superstructure and customisation	
Item 56.2: Superstructure and customisation with the option of a three way rear tipping body	

Item 57: Skip loader/Tele-hoist superstructure	**Price incl. vat**
Item 57: Superstructure and customisation	

Item 58.1: 4 Ton Rear Tipping Truck body	**Price incl. vat**
Item 58.1: Superstructure and customisation	

Option of fixed drop side storage area between driver's cab headboard and tip body for LWB chassis cab	

Item 58.2: 4 Ton Rear Tipping Truck body with caged sides	**Price incl. vat**
Item 58.2: Superstructure and customisation	
Option of fixed drop side storage area between driver's cab headboard and tip body for LWB chassis cab	

Item 59: 12m Aerial platform	**Price incl. vat**
Item 59: Superstructure and customisation	
Option of uprating the suspension	

Item 60: 20m Aerial platform	**Price incl. vat**
Item 60: Superstructure and customisation	

Item 61: Electricians truck	**Price incl. vat**
Item 61: Superstructure and customisation	

Item 62: Water tanker with drop sides tipping vehicle	**Price incl. vat**
Item 62: Superstructure and customisation	

Item 63: Tyre truck	**Price incl. vat**
Item 63: Superstructure and customisation	

Item 64: Bull bars and Tow bars	**A: 7 to 12 Ton Medium trucks**		**B: 13 to 18 Ton Heavy Trucks**		**C: Min. 20 Ton Extra Heavy Trucks**	
	Total for item (incl. VAT) to tender form	**Make and model**	**Total for item (incl. VAT) to tender form**	**Make and model**	**Total for item (incl. VAT) to tender form**	**Make and model**
Item 64.1						
Item 64.2						
Item 64.3						
Item 64.4						

Item 64.5.1 40 mm Rockinger						
Item 64.5.2 50 mm Rockinger						
Item 64.5.3 40 mm Rockinger (Low position install)						
Item 64.5.4 50 mm Rockinger (Low position install)						
Item 64.6.1 40 mm Rockinger						
Item 64.6.2 50 mm Rockinger						

Item 65: Tail lifts	**A: Foldable**		**B: Retractable**		**C: Cantilever**	
	Total for item (incl. VAT) to tender form	**Make and model**	**Total for item (incl. VAT) to tender form**	**Make and model**	**Total for item (incl. VAT) to tender form**	**Make and model**
Item 65.1 (500 kg)						
Item 65.2 (750 kg)						
Item 65.3 (1000 kg)						
Item 65.4 (1500 kg)						
Item 65.5 (2000 kg)						
Item 65.6 (2500 kg)						
Item 65.7 (3000 kg)						
Item 65.8 (3500 kg)						

I / We hereby agree that this tender will hold good and remain open for acceptance as specified in the Conditions of Tender or during such other period as may be specified in the Special Conditions of Tender.

eThekwini Vendor Portal Registration Number: **PR**

C.S.D Registration Number: **MAAA**

S.A.R.S Pin Number:

Completion of the following is compulsory. Failure to declare the following will invalidate your offer.

Declaration of Interest

Are any of the entity's directors, managers, principle shareholder or stakeholders currently in the service of the state or have been in the service of the state in the past twelve (12) months? ☐ Yes ☐ No				
Is any spouse, child or parent of the entity's directors, managers, principle shareholder or stakeholder currently in the service of the state or have been in the service of the state in the past twelve (12) months? ☐ Yes ☐ No				
Name of entity's member	**Position in Entity**	**Name of Relative (if applicable)**	**Name of State Institution**	**Nature of Relationship**
Do you or any other directors, managers, principle shareholder or stakeholder of your entity have any relationship (spouse, family, friend, associate) with persons in the service of the state and/or who may be involved with the evaluation of this quotation? If yes please furnish particulars below ☐ Yes ☐ No				
Name of entity's member	**Position in Entity**	**Name of Relative (if applicable)**	**Name of State Institution**	**Nature of Relationship**

Refer to the Consolidated MBD Documents in Section 4(d) for the definition of "in service of the State"

*** Signature :** _____ *** Name** *(capitals)*: _____

Date: _____ **Capacity:** _____

*** Name of Business:** _____ **Tel:** _____

Address: _____ **Fax:** _____

_____

*** Denotes Mandatory Information**

Failure to complete the Mandatory Information and sign this Tender Form will invalidate the tender

Part B: ACCEPTANCE BY PURCHASER - The Purchaser, as represented by the following Official, hereby accepts the Tenderer's offer in terms of the Conditions of Tender, Specifications, and Conditions of Contract.

Signature: **Name** *(capitals)*:

Date: **Capacity:**

SECTION 10: ANNEXURES (if applicable)

Insert as required