



correctional services

Department:
Correctional Services
REPUBLIC OF SOUTH AFRICA

TENDER DOCUMENT

FOR

MAINTENANCE OF STANDBY GENERATOR SETS IN MTHATHA MANAGEMENT AREA. (EASTERN CAPE REGION)

(24 MONTHS CONTRACT)

TENDER NUMBER: RCECB 5/2021

Consisting of:

Volume 1: The Tender (Returnable)

Volume 2: The Contract (This document)

Compiled by:

Compiled for:

Department of Correctional
Services
Private Bag X9013
EAST LONDON

Date:

CRS NO:

TENDERERS NAME:

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THE CONTRACT (Volume 2)

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THE CONTRACT (Volume 2)

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C3.1 Scope of work

C 3.1: SCOPE OF WORKS

Project title:	Maintenance of Standby Generator Sets in MTHATHA Management Area, (Eastern Cape Region)
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C3. Scope of Works

The work is comprised of

a) Routine servicing and maintenance of standby generator sets at the following facilities:

1. Bizana CC
2. Flagstaff CC
3. Lusikisiki CC
4. Mt Fletcher CC
5. Mt Frere CC
6. Mt Ayliff CC
7. Ngqeleni CC
8. Umtata Medium CC
9. Umtata Remand CC
10. Ntabankulu CC

b) Emergency repairs as may from time to time be required

c) Upgrading of equipment as may from time to time be requested in writing by the contractor for approval by DCS.

The contractor will be required to visit sites whereby they have to replace dysfunctional Generator Sets to confirm the following:

- Generator size (KV rating)
- Cable size
- Electrical infrastructure in the plant room and
- Loading

At least the contractor should provide design drawings to indicate Generator connection to the Correctional Facility.

a) ORDER OF THE WORKS

Not applicable

b) BUILDINGS OCCUPIED

All of the Correctional Facilities listed above are currently occupied and functioning. The maintenance contractor will be required to advise the Correctional Facility management in advance of the dates and times when the planned maintenance activities are to take place and to ensure that the functioning of the Correctional Facility is not disrupted.

c) ACCESS

Arrange with the Correctional Facility management for access to plant rooms.

C3.2 Health and Safety/ Covid 19 Specification

C3.2: HEALTH AND SAFETY/COVID 19 SPECIFICATION

Project title:	Maintenance of Standby Generator Sets in MTHATHA Management Area. (Eastern Cape Region)
Tender No:	RECB 5/2021

FOREWORD:

- *Complies with Occupational Health and Safety Act No. 85 of 1993 and Construction Regulations of July, 2003.
- *use as a management tool in order to comply with OH & S Act
- *Act takes preference over this document
- *Act must be used as the minimum requirement
- *contact originator of this document if unclear of anything.

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C3.2 HEALTH AND SAFETY SPECIFICATION

1. INTRODUCTION AND BACKGROUND

The Construction Regulations No. R1010 of 18th July, 2003, requires the Client to prepare a pre-construction Health and Safety specification, with all existing risks identified.

PURPOSE OF HEALTH AND SAFETY SPECIFICATION

To assist in achieving compliances with the Occupational Health and Safety Act No. 85 of 1993 and the Construction Regulations of July, 2003, in order to, as far as is practicable, reduce or eliminate incidents or injuries.

The Principal Contractor shall use this specification as a basis for the drafting of his and any Contractor's construction Health and Safety plans.

The Specification sets out the requirements to be followed by all Contractors so that the Health and Safety of all persons who may be affected by the construction may receive the same priority as other project facets.

IMPLEMENTATION

The Health and Safety specification forms an integral part of the contract, and the Principal Contractor is required to use it when drawing up his Health and Safety plan. He must forward a copy to all Contractors at their bidding stage to enable them to prepare their own Health and Safety plans.

2. HEALTH AND SAFETY SPECIFICATION.

2.1 SCOPE

This specification covers the requirements for eliminating and mitigating incidents and injuries at (Company/Site/Project). The scope addresses legal compliance, hazard identification and risk assessment, risk control, and promoting a Health and Safety culture on the project. The specification also provides for the protection of those persons other than employees.

2.2 INTERPRETATION.

Application

This specification is a compliance document drawn up in terms of the Occupational Health and Safety Act No.85 of 1993, and the Construction Regulations of July, 2003, and is therefore binding.

Definitions

The definitions as listed in the Occupational Health and Safety Act and Construction Regulations shall apply.

2.3 MINIMUM ADMINISTRATIVE REQUIREMENTS.

2.3.1 Notification of intention to commence construction work.

The Principal Contractor shall notify the Provincial Director of Labour in writing before construction work commences, a copy of which shall be kept in the Health and Safety file.

2.3.2 Assignment of Principal Contractor's/Contractor's responsible person to supervise Health and Safety on site.

The appointments shall be made in writing, a copy of which is to be kept in the Health and Safety file.

2.3.3 Competence of the responsible person/s.

The criteria as stipulated under the definition of "competent" in the Construction Regulations shall apply.

2.3.4 Compensation for Occupational Injuries and Diseases Act 130 of 1993.

The Principal Contractor shall keep a copy of the letter of good standing with his Compensation Assuror in the Health and Safety file as proof of registration. Each contractor shall provide a copy of his letter of good standing to the Principal Contractor for the Health and Safety file.

2.3.5 Occupational Health and Safety policy.

The Principal Contractor and each Contractor shall submit a Health and Safety policy signed by its Chief Executive Officer, outlining the Employers objectives and how they will be implemented.

2.3.6 Health and Safety organogram.

The Principal Contractor and each Contractor shall prepare an organogram detailing each site management Health and Safety appointment of the competent person.

2.3.7 Preliminary Hazard Identification and Risk Assessment. (HIRA)

The Principal Contractor shall cause a hazard identification to be performed by a competent person before the commencement of construction work. The assessed risks shall form part of the construction phase Health and Safety plan submitted for approval by the Client. The assessment must include:

- a) a list of hazards and potential hazards;
- b) a documented risk assessment based on the list of hazards;
- c) a set of safe work procedures (method statements) to eliminate, reduce or control the risks;
- d) a monitoring and review procedure as the risks change.

The Principal Contractor shall ensure that all Contractors inform, instruct and train their workers regarding any hazards, risks and related safe work procedures before any work commences and thereafter at regular intervals as conditions change. Contractors are to conduct their own toolbox talks weekly, and submit proof of these talks to the Principal Contractor. Contractors are to conduct risk assessments specific to their operations and submit a copy to the Principal Contractor.

2.3.8 Health and Safety representatives.

The Principal Contractor and Contractors shall appoint in writing and provide training for Health and Safety representatives who shall carry out inspections of the workplace, keep records and report all findings to the responsible person, and at Health and Safety meetings. A representative is required once 20 employees are on site, and one representative for every 50 employees thereafter.

2.3.9 Health and Safety committees.

The Principal Contractor shall ensure that committee meetings are held monthly and minutes are kept. The responsible person shall chair the meetings and all representatives are to attend. Contractors shall hold their own meetings, with a copy being forwarded to the Principal Contractor's responsible person.

2.3.10 Health and Safety training

- a) Induction. The Principal Contractor shall ensure that all site personnel undergo site-specific Health and Safety induction training before they start work. A record of attendance shall be kept in the Health and Safety file.
- b) Awareness. The Principal Contractor shall ensure that on-site toolbox talks take place at least once per week, dealing with risks relevant to the work at hand. Contractors shall provide proof to the Principal Contractor.

2.3.11 General record keeping. The Principal Contractor shall keep and maintain Health and Safety records to demonstrate compliance with this Specification, with the OH & S Act, and with the Construction Regulations. He shall ensure that all records of incidents/accidents, emergency procedures, training, inspections, audits, etc, are kept in the Health and Safety file. He shall ensure that all contractors maintain such a file.

2.3.12 Health and Safety audits, monitoring and reporting.

The Client shall conduct monthly Health and Safety audits of the work place as well as an audit of the administration of correctional and safety. The Principal Contractor shall conduct similar audits monthly of any contractor, who will in turn audit any sub-contractor.

2.3.13 Emergency procedures.

The Principal Contractor must prepare a detailed emergency procedure for approval by the Client prior to commencement on site. The procedure shall detail the response plan, including:

- a) list of key competent personnel;
- b) details of emergency services;

- c) actions to be taken in the event of an emergency;
- d) information on any hazardous material/situation.

Emergency procedures shall include: fire; chemical spill; injury; damage; hazardous substances; bomb threat; major incident/accident.

The Principal Contractor shall advise the Client in writing of any such event, including action taken. A contact list of all service providers (fire dept. ambulance, police, doctor, Correctional Facility) shall be available to site personnel.

2.3.14 First aid boxes and first aid equipment.

The Principal Contractor shall appoint a certified first aider in writing. A copy of the certificate shall be placed in the Health and Safety file. An adequately stocked first aid box must be provided by the Principal Contractor, as well as a first aid station. A contractor with 5 or more employees must provide his own first aid box. Where there are 10 or more employees, a certified first aider must be appointed and be on site at all times.

2.3.15 Accident/incident reporting and investigation.

The Principal Contractor must investigate all injuries and report to the Client.

The P.C. may categorize incidents as follows: incidents; first aid; medical; disabling; fatal. He will detail the procedure to follow for each such event.

2.3.16 Hazards and potentially hazardous situations.

The Principal Contractor shall immediately notify any contractors and the Client in writing of any hazardous or potentially hazardous situation that may arise during the performance of construction activities.

2.3.17 Personal Protective Equipment.

The Principal Contractor shall ensure that all site employees wear the P.P.E. as identified in the risk assessment. He is to ensure that an adequate supply of p.p.e. is available on request as either replacement for lost items or worn out items. A record is to be kept of issues to each employee. Each contractor is responsible for supplying his own staff with p.p.e.

2.3.18 Occupational Health and Safety signage.

The Principal Contractor must provide adequate on-site signage. Examples are: no unauthorized entry; visitors report to site office; site office; hard hat area; construction vehicles; noise zone; first aid. Signs are to be posted on access routes, entrances, scaffolding, and other risk areas.

2.3.19 Contractors and sub-contractors.

The Principal Contractor shall ensure that all contractors comply with this Specification, the OH & S Act, Construction Regulations and any other relevant legislation that may relate to the activities. A contractor shall ensure compliance of any sub-contractor appointed by him.

2.3.20 Public and site visitor correctional and safety.

The Principal Contractor shall ensure that every person working on or visiting the site, as well as the general public, shall be made aware of the dangers likely to arise from site activities, including the precautions to be taken to avoid or minimize those dangers. Appropriate Health and Safety notices and signs shall be posted up. Both the Client and the Principal Contractor have a duty in terms of the OH & S Act to do all that is reasonably practicable to prevent members of the public and site visitors from being affected by the construction activities. The site must be suitably hoarded at all times with a limited number of restricted access points. Adequate notices are to be displayed.

Hoarding is to be inspected daily and gates locked at the end of each work day.

2.3.21 Penalties

Penalties may be imposed on Contractors who do not comply with this Health and Safety Specification.

2.4 PHYSICAL REQUIREMENTS

2.4.1 Existing structures.

Any existing structure must be deemed safe by means of a structural inspection and report compiled by a competent person and forwarded to the Client and the Principal Contractor.

2.4.2 Edge protection and penetrations.

The Principal Contractor must ensure that all edges and openings are guarded and demarcated at all times until permanent protection is erected. The guards must be constructed of scaffold type tubing, with guardrails, painted yellow, located one meter above floor level.

2.4.3 Stacking of materials.

The Principal Contractor must appoint in writing a stacking supervisor and all materials, formwork and other equipment is stacked and stored safely, on level, firm ground, out of access ways and height complying with regulations.

2.4.4 Hazardous Chemical Substances. (h.c.s)

The Principal Contractor is to appoint a competent person in writing to control the storage, transport and use of any h.c.s. Material safety data sheets (msds) are to be maintained and available on site. First aiders are to be informed of the presence of h.c.s. and how to treat incidents.

2.4.5 Asbestos and asbestos work.

The removal and maintenance of asbestos containing products must be conducted under controlled conditions as specified in the Asbestos Regulations.

A set of safe work procedures must be drawn up by the Principal Contractor and submitted to the Client for approval.

2.4.6 Demolition work.

A competent person is to be appointed in writing to supervise and control all demolition work on site.

A method statement on the procedure to be followed in demolishing the structure is to be developed by a competent person prior to the work being carried out.

The Construction Regulations section 12 conditions shall apply.

2.5 PLANT AND MACHINERY

2.5.1 Construction plant.

This includes all types of plant used in the construction process, and must comply with the OH & S Act and the Construction Regulations.

The Principal Contractor shall appoint a competent person in writing to inspect and record the findings of such inspections.

Only authorized competent persons are to operate such machinery. Appropriate p.p.e. and clothing must be provided, used and maintained.

2.5.2 Fire extinguishers and fire fighting equipment.

The Principal Contractor and Contractors shall provide adequate, serviced and maintained fire fighting equipment, located at suitable locations on site. Appropriate notices and signs must be posted up.

2.5.3 Hired plant and machinery.

The Principal Contractor shall ensure that the hired plant and machinery is safe for use and complies with 2.5.1 above.

2.5.4 Scaffolding/working in elevated positions.

The Principal Contractor must submit a risk-specific fall protection plan to the Client for approval before any work commences. All scaffolding must comply with SANS 10085 standards.

Scaffolding must be declared safe for use by a competent person who has been appointed in writing, with the register being updated weekly, after inclement weather, after alterations, after an accident, and before dismantling.

Adequate protection must be provided over a walkway, pavement or public access.

The fall protection plan must include a risk assessment and safe work procedures. All persons working at height must be evaluated for physical and psychological fitness. Training must be provided. All openings and edges must be adequately guarded. Workers must be trained in the use of fall harnesses, which must be kept in a good condition.

All scaffolding must be complete with guard rails and toe boards and be fully boarded.

2.5.5 Roof work.

All roof work must be conducted in accordance with Construction Regulation 8, with a fall protection plan in place.

2.5.6 Formwork and support work.

The Principal Contractor shall appoint a competent person in writing to inspect the formwork and support work immediately before, during and after the placement of concrete and thereafter on a daily basis until the removal thereof.

Notices and signs are to be posted. Walkways, passages and pavements are to be protected from falling objects.

2.5.7 Ladders and ladder work.

The Principal Contractor shall appoint a competent person in writing to inspect all ladders monthly and record such findings in a register. Ladders are to extend one meter above a landing and must be secured at the top and have a secure, non-slip base.

2.5.8 Electrical installations and portable electric tools.

The Client must ensure that the Principal Contractor is aware of the position of all electrical power lines. The P.C. must comply with the electrical installation regulations, electrical machinery regulations and the construction regulations. The P.C. shall carry a copy of the Certificate of Compliance. Temporary electrical installations must be inspected weekly. Portable electrical tools are to be visually inspected daily with a register updated monthly.

2.6 OCCUPATIONAL CORRECTIONAL.

2.6.1 Occupational hygiene.

Exposure to occupational correctional hazards in construction is common and Contractors must ensure that proper correctional and hygiene measures are in place to prevent exposure to such hazards. Prevent inhalation, ingestion, absorption and noise induced hearing loss.

2.6.2 Welfare facilities.

The Principal Contractor must supply sufficient toilets (1 per 30 workers), changing facilities, hand wash facilities, soap, toilet paper and hand drying material. There must be safe, clean storage areas for workers to store personal belongings and clean, sheltered eating areas.

2.6.3 Alcohol and other drugs.

No alcohol or other drugs will be allowed on site. No one under the influence of alcohol or drugs will be allowed on site. Any person suffering from any illness/condition which may affect his safety on site must report to his supervisor.

Disciplinary action is to be taken against anyone found under the influence whilst on site.

3. PRINCIPAL CONTRACTOR COMPLIANCE DATES

<u>Requirement</u>	<u>Submission date</u>
A) Health and Safety plan	
B) Notification of intention to Commence construction	Before commencement on site.
C) Assignment of responsible Persons to supervise Construction work.	Before commencement on site.

D)	Competence of responsible Persons	Together with H & S Plan
E)	Occupational Health and Safety policy	Together with H&S Plan
F)	Health and Safety organogram	Together with H&S Plan
G)	Initial hazard identification And risk assessment	Together with H&S Plan

4. Assignment of Principal Contractor's responsible persons

Appointment	Reference
A) CEO Assignee	OH&S Act sect. 16(2)
B) Construction work supervisor	CR 6.1
C) Subordinate supervisor	CR6.2
D) Correctional & safety representatives	OH&S Act sect. 17
E) Incident investigator	GAR 8
F) Risk assessment co-ordinator	CR7
G) Fall protection plan co-ord.	CR8
H) First aiders	GSR 3
I) Scaffold inspector/supervisor	SANS 10085 & CR14
J) Scaffold erector	GSR13D
K) Formwork/support work	CR10
L) Excavation inspector	CR11
M) Ladder inspector	GSR13A
N) Temporary electrical installation	CR22
O) Fire fighting equipment inspector	CR27
P) Safety officer	CR6.6
Q) Demolition Supervisor	CR 12(1)

5. GENERAL COMPLIANCE REQUIREMENTS

1. Construction Health and Safety plan.	Monthly review.
2. Health and Safety file.	Open, at meetings.
3. OH&S Act regulations	Monthly review.
4. Induction training.	Every worker
5. Toolbox talks.	Weekly
6. Correctional & safety reports	Monthly.
7. Emergency procedures	Monthly.
8. Risk assessments	Monthly.
9. Safe work procedures	Before start.
10. General inspections.	Daily, weekly.
11. List of contractors.	Update weekly.
12. Workman's compensation.	Ongoing.
13. Section 37 Mandatory	Ongoing.

6. PRELIMINARY RISK ASSESSMENT

(Available from the MBA upon request)

7. ACKNOWLEDGEMENT OF RECEIPT

I, representing

Principal Contractor/Contractor, have received the Health and Safety Specification in good order and shall ensure that the Principal Contractor/Contractor and its personnel comply with all obligations/requirements/specifications in respect thereof.

This document is legally binding in terms of Regulation 4(1) (a) of the Construction Regulations 2003.

Signature of Principal Contractor/Contractor. Date:

Signature of Client/Client's Agent. Date:

C3.3 Technical Specifications

C3.3 TECHNICAL SPECIFICATION - STANDBY POWER SYSTEMS

Project title:	Maintenance of Standby Generator Sets in MTHATHA Management. (Eastern Cape Region)
Tender No:	RCECB 5/2021

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C3.3 10	DIESEL GENERATORS: TECHNICAL DETAILS

C3.3 01 SCOPE

- C3.5 01.01 This specification comprises all aspects regarding the repair, upgrade, new installation and maintenance of standby power systems. The standby power sources consist of diesel generator sets at locations listed in the plant inventory (Appendix B)
- C3.5 01.02 This specification shall form an integral part of the repair and maintenance contract document and shall be read in conjunction with the Additional Specifications included with this document.

C3.3 02 STANDARD SPECIFICATIONS, REGULATIONS AND CODES

- C3.5 02.01 The latest edition, including all amendments up to date of tender of the following specifications, publication and codes of practice shall be read in conjunction with this specification and shall deemed to form part thereof.
- C3.5 02.02 SABS Specifications
- 02.02.01 SABS 0400: National Building Regulations
- 02.02.02 SABS 0142: Wiring Code
- C3.5 02.03 Department of Correctional Services Specification PW 774
- C3.5 02.04 Occupational Health and Safety Act of 1993
- C3.5 02.05 Manufacturer's specifications and maintenance instructions
- C3.5 02.06 Additional requirements

Equipment and material supplied and installed shall be new and unused. The Contractor shall ensure that all safety regulations and measures are applied and enforced during repair and maintenance work on cabling, wiring, fuel tanks, batteries and diesel engines.

C3.5 03 OPERATING AND MAINTENANCE MANUALS

C3.5 03.01 The Contractor shall be responsible for the compilation of a complete set of Operating-and-Maintenance manuals.

This shall be done in accordance with the Additional Specification SB – Operating and Maintenance manuals.

All information shall be recorded and reproduced in electronic format as well as supplying the Engineer with three sets of hard copies.

C3.5 03.02 Over and above what is specified in the Additional Specification – SB Operating and Maintenance manuals, the Operating and Maintenance Manual to be compiled shall be structured and shall at least include the following:

03.02.01 Description of installation

a) Complete system description of each standby power source. This shall be done for each installation individually. The system description shall contain detailed information regarding the supply configuration (cabling, distribution boards), the switching arrangement (change-over and override facilities) and the refuelling procedure as well as the earthing, fire and lightning protection arrangement.

b) Service records

03.02.02 Commissioning Data

a) Complete commissioning, test and inspection data of standby power system.

This shall be done for each installation individually. The commissioning data will comprise voltage and output current measurements, running hour meter readings, battery voltage during starting and engine compression tests.

03.02.03 Operating Data

- a) Safety precautions to be implemented.
- b) Operation of systems; automatic, manual and bypass switching.
- c) Emergency starting and forced change-over procedure.

03.02.04 Maintenance instructions

- a) Recommended service intervals with service descriptions.
- b) Projected service life of:
 - diesel engine to next overhaul
 - diesel engine starter batteries
- c) Trouble shooting diagrams.
- d) Schedule of consumable spares.

C3.5 04 TEST AND INSPECTIONS PRIOR TO PRACTICAL COMPLETION OF REPAIR WORK

C3.5 04.01 It is the responsibility of the Contractor to provide all labour, accessories and properly calibrated and certified measuring instruments necessary to record the following parameters:

- 04.01.01 Output phase voltages
- 04.01.02 Output current per phase
- 04.01.03 Insulation testing at 500V
- 04.01.04 System earthing resistance testing by means of wheat stone bridge instrument
- 04.01.05 Load testing, utilising dummy loads if required by the engineer

The Contractor is responsible for the arrangement of such tests. He shall give at least 72 hours notice to the Engineer prior to the test date.

C3.5 05 LOGGING AND RECORDING PROCEDURES

- C3.5 05.01 The Contractor shall as part of this Contract institute a Recording system as part of his Maintenance Control Plan as defined in the Additional Specification SA – General Maintenance. This shall consist of a Record book at each site which shall be utilised to log and record all faults, system checks, services, overhauls, breakdowns, maintenance visits, inspections, etc.
- C3.5 05.02 The logbook shall be stored in a safe place inside each generator room and shall only be utilised by the Contractor and Engineer. A copy of the monthly entries and recordings into this logbook shall be submitted by the Contractor together with his monthly report to DCS.
This logbook shall be structured to at least include the following:
- 05.02.01 Monthly inspection and maintenance actions.
05.02.02 Scheduled services.
05.02.03 Breakdown / call out reports.
05.02.04 Major overhaul or battery replacements.

C3.5 08 RE-COMMISSIONING OF INSTALLATION

On practical completion of any repair work that may be required, battery replacement and services, the installations shall be put into operation.

C3.5 09 REPAIR WORK TO STANDBY POWER INSTALLATIONS

- C3.5 09.01 The various systems shall be repaired during the first phase of the repair and maintenance contract.
- C3.5 09.02 The scope of the repair work shall include, but shall not be limited to the activities listed below.
- C3.5 09.03 The Contractor shall record the repair actions in tabular format before the Contractor's responsibility for maintenance commences.
- C3.5 09.04 Repair work shall be executed within the approved period for repairs.
- C3.5 09.05 New equipment and material (eg. batteries, fuel pumps, starter motor, etc) shall be supplied with a written guarantee confirming a defects liability period of 12 months from date of practical completion. These guarantees shall be furnished in favour of the Department of Correctional Services.

C3.5 10 STANDBY GENERATORS: TECHNICAL DETAILS

Installation Description

The installations consist of the equipment listed in appendix B. Note that the details listed are as currently available and it will be required of the contractor to survey and report on each installation with a view to identifying repair work required and update up the Department's data base of mechanical equipment.

PLANNED MAINTENANCE OF GENERATORS

FF11.01 Initial Report on Condition of Plant

The contractor will be required to draw up a report on the condition of the plant at the commencement of the contract. This report will be used to identify and prioritise repair work required to be carried out on the plant. The report must address at least the following items:

- a) Make, type, condition and maximum power output of the diesel engine
- b) Make, model, condition, and kVA rating of the alternator
- c) Type and condition of change-over panel (relay or PLC based, manual or automatic change-over)
- d) Condition of exhaust system
- e) Condition of starter battery
- f) Make and type of governor
- g) Voltage and current ratings under load (Note that this may only be checked after prior arrangement with the Head of Centre)
- h) Record of fan belt sizes, fuse sizes and ratings, air filter makes, models and types
- i) Clear, digital (3 mega pixels or more) photographs of each item of equipment are required. The photographs must be in sharp focus, properly lit so that all details are clearly visible together with any equipment code numbers that may be present.
- j) Condition of Plant Room
- k) Confirm running hours
- l) Recommendations

FF 11.03 Three - Monthly inspection (Generator Set)-this will be determined by client

- (a) The following activities shall be executed during the monthly generator inspections:
 - Note the following in the logbook:

Hour meter reading	Hours
Hours run since last service	Hours
Type of service carried out	Hours
 - Check oil level and top up as required.
 - Check oil viscosity for dilution by water or fuel. Take an oil sample and send it away for analysis
 - Check starter battery terminals and apply contact grease.
 - Check battery cables for damage and secure terminations.
 - Check battery electrolyte or indicator in the case of maintenance free batteries

- Check battery voltage and record.
- Check battery voltage drop during engine cranking and record.
- Check battery charger operation after cranking test.
- Check starter motor for abnormal noise.
- Check diesel engine while running for noise, vibration, or loose components.
- Check all flexible hoses for leaks, corrosion, and ageing.
- Check all engine V-belts.
- Monitor engine / alternator coupling for noise.

(b) Verify that alarm functions are operational by simulation:

- Low oil pressure.
- High engine temperature.
- Low engine coolant level.
- Abnormal speed.
- Synchronising failure (if applicable)
- Cooling water pump failure.
- Cooling tower fan failure (if applicable).
- Low battery voltage.
- Low fuel day tank.
- Fuel pump failure.
- Low fuel bulk tank (if applicable).

(c) Test that following alarms trigger correctly by creating the alarm condition:

- Unit not in auto: turn selector switch to manual or test
- Battery charger failure: switch off AC supply to battery charger
- Auxiliary supply failure: switch off auxiliary power supply

(d) Alternator shall be checked for accumulation of dust on the regulator and for any loose components.

(e) Test run shall be undertaken, if possible on load, and volt, ampere and frequency readings recorded.

(f) Alternator shall be cleaned and switched back into 'auto' mode.

(g) Complete Log Book

Failure simulation to be done observing which part of the institution is covered by the generator.
Reports to be submitted after the whole exercise.

FF11.04 Annual inspection (Generator Set)-to be done at the presence of DCS staff

The following activities shall be carried out every twelve months:

1. Note the following in the logbook:

Oil sample #	(To be analysed and report on results)
Hour meter reading	Hours
Hours run since last service	Hours
Type of service carried out	Hours

2. Check fan belt:
 - a) Condition
 - b) Tension - adjust if required
 - c) Pulleys
 3. Clean radiator air passage and check that the coolant is correct
 4. Check that oil cooler air passages clear - clean if required.
 5. Check all radiator hoses and clamps + tightened as required.
 6. Check oil level & take sample for analysis.
 7. Change fuel filters, primary fuel filter/water trap.
 8. Bleed fuel system.
 9. Remove air filter.
 10. Check turbo for free rotation and bearing wear.
 11. Check seal faces of elements, air cleaner hoses and clamps for dust ingress.
 12. Fit new/cleaned * air filter. Fit new air filter at 960 hr service
 13. Check jacket water heater is operational.
 14. Check that all guards are in position and secure.
 15. Check battery charger
 16. Top up battery water (if not maintenance free battery)
Usage: Normal..... Excessive.....
 17. Check battery cable lugs, clean and tighten as required.
 18. Start engine and run on load (where possible) for 15 minutes recording V, A, Hz at 5 minute intervals.
 19. Oil pressure..... (Hot) Water temperature..... Oil temperature.....
 20. Listen for unusual noises: Starting Running
Stopping
 21. If prime power: Change load to other
 22. Let engine run for another 6 minutes on air cooled engines, 10 minutes on water cooled engines.
 23. Drain oil, change filters, refill oil (Deutz - clean centrifugal filter in fan boss and change gaskets) Take oil sample for Hino, Mitsubishi or any reputable place - clean centrifugal filter.
 24. Restart and check for oil, water etc. leaks, tighten joints etc. as required.
 25. Check that the charge alternator/ generator is operating.
 26. Check operation of safety shut-off
 - a) Low oil pressure
 - b) High water temperature
 27. When engine has stopped, top up oil
 28. Check alternator coupling and terminals (remove cover)
 29. Blow dust out of alternator.
 30. Check all air vents on alternator are clear and secure.
 31. Fuel tanks :
 - a) Drain off
 - b) Check - level control switch
- electric/hand pump
- Check for correct operation of:
- Low fuel level
 - low fuel
 - engine cut out and alarm
 - covers and breathers
 - pipes and fittings
- c) Change in-line filter

32. Exhaust: Check manifolds, silencer tail pipe, supports, etc.
33. Check air ducts.
34. Check generator set base, engine/alternator mountings etc.
35. Clean down engine, alternator and mounting base.
36. Panel:

- Check - circuit breaker
- Voltmeter and selector
- Ammeters
- Hz meter
- Hour meter
- Spare fuse of each amperage

37. Plant room:

- a) Clean the room
- b) Check the Lighting
- c) Check & position duct covers.

38. Complete Log Book.

After done with all results in place it must be presented to the progress meeting

FF 11.05 Six-Monthly inspection (Control/change-over panel)

1. CONTROL PANEL:

- a) Blow out panel. (Do not use compressed air)
- b) Check tightness of all connections
- c) Check alternator MCB contacts and record trip settings
- d) Replace defective indicator lamps in panel. Fill rack with full quota of spare lamps (where fitted)
- e) Replace defective fuses in panel. Fill rack with full quota of spare fuses sized as required (where fitted)
- f) Check changeover contactor coils, contacts and mechanical interlock (if not mechanical – specify (where fitted)

2. FUEL SYSTEM

- a) Check all electrical connections on fuel alarm panel.
- b) Check fuel transfer pump electrical connections
- c) Check for correct free travel and electrical operation of float switches

3. ENGINE BATTERY CHARGE ALTERNATOR

- a) Clean out and check electrical connections, holding down bolts, adjustments of drive belts.
- b) Check and record battery voltage
- c) Check and record battery charge rate

4. BATTERIES

- a) Clean & grease terminals. Change battery clamps if necessary
- b) Check S.G. of Battery No. 1 (if not maintenance free type)
- c) Check S.G. of Battery No. 2 (if not maintenance free type)
- d) Check/fill battery cells to working level
- e) Battery No. 1 Make & No
- f) Battery No. 2 Make & No.

5. ENGINE STARTER:

- a) Check condition of Bendix
- b) Check commutator
- c) Check brushes
- d) Check contacts on slave solenoid
- e) Check starter sensor relay (i.e. disengages on start)

6. FUEL (STOP/START) SOLENOID

- a) Check travel
- b) Check condition of linkages
- c) Check connections

7. MAIN ALTERNATOR:

- a) Blow out main frame. (Do not use compressed air)
- b) Check all connections for tightness
- c) Listen for noisy bearings and report on same
- d) Where nipples provided, grease bearings
- e) Check all diode connections
- f) Check holding down bolts

8. TESTING:

- a) Check manual mode start
- b) Check test mode start
- c) CARRY OUT "AMF" TEST AND RUN ON LOAD (Minimum time of) 15 minutes
Specify and record actual time
Time MCB off:
Time engine start:
Time alternator "On Load":
Time MCB reset "On":

DIESEL FUEL TANK AND DIESEL FUEL CLEANING REGIME FOR IN-SITU STORAGE TANKS WORK
METHOD STATEMENT

Upon arrival on site: Explain procedures to be followed.

1. Technical team to report to duly authorised person on site and establish site specific requirements pertaining to safety and authorisation.
2. Present confirmation of staff accredited credentials and equipment verification for inspection.
3. Obtain written permission to commence work on applicable document
4. Cordon off work area with applicable PPE safety cones/ safety tapes/ warning signs.
5. Ensure all personnel follow procedures relating to safety requirements pertaining sampling, tank cleaning, fuel remediation for above and below ground tanks.
6. Open up manhole covers on underground tanks and allow ventilating.

Drawing of diesel fuel sample: Explain procedures to be followed.

7. Draw samples of the fuel prior to the commencement of the cleaning of the tanks. Samples shall be drawn utilising recognised diesel tank sampling equipment as per procedure as reflected and defined in DN10/07.
8. Samples shall be drawn from the tanks and sealed in the presence of duly appointed representative and provided to them.

Setting up and commencement of diesel cleaning process:

Explain procedures to be followed:

9. Select and utilize volume appropriate systems fully compliant with department's specification.
10. Set up equipment and connect to power supply point as identified.

11. Commence with the tank cleaning and fuel remediation service to the diesel tanks which will remove/ remediate the following:
 - Tank bottom debris
 - Free, Entrained and Emulsified water
 - Solid contaminants
 - Bio-film build up/ accumulation on tank walls and if applicable on baffle supports
12. Commence with phase 1 the removal of bulk contaminant from the tank environment and dispose of contaminant in a suitable container for later disposal at a recognized facility.
13. Once heavy bottom contaminant has been removed from the tank environment, proceed with phase 2 of the process which incorporates EPA approved fuel catalyst at a dosage ratio of 5000:1 and dialysis flow mode to remove fouling from tank walls and initiate the fuel remediation process.
14. Once fuel and system monitoring debris extraction monitoring indicates a remediated fuel state, proceed to phase 3 of which incorporates additional accredited Induction Technology and fine filtration to remove any fine particulate and microbe elimination.

After completion of diesel fuel cleaning process: Explain procedures to be followed.

15. Advise client's duly authorised person that the work has been completed.
16. Draw two after samples again as per DN10/07 One to be provide to departments duly authorised person the other to be submitted to Wearcheck, a recognised accredited independent laboratory for analysis and SANS 342 compliance.
17. Close all ports on fuel tank, remove equipment and waste and leave area clean
18. Provide a report confirming completion and successful remediation and cleaning per tank and obtain departments duly authorised person signature confirming such.
19. Provide a certificate stipulating volumes of waste contaminant removed from each tank and once handed over a safe disposal certificate from an accredited waste disposal facility for such waste.
20. Provide an Independent SANS 342 laboratory analysis confirming fuel remediation status per tank (excluding sulphur content compliance and raising of flashpoint levels.)

Signature of Contractor: _____

Name of Contractor:

Contractor's Company Stamp

C2.1 Pricing instructions

C 2.1: PRICING INSTRUCTIONS

Project title:	Maintenance of Standby Generator Sets in MTHATHA Management Area. (Eastern Cape Region)
Tender No:	RECB 5/2021

1. **BILLS OF QUANTITIES**

These Bills of Quantities contain pages numbered as indicated in the index and the Tenderer is required to check the same.

Should any page be found to be missing, or in duplicate, or if any reproduction is indistinct, or if any ambiguity arises as to the meaning of any item or description, or if these Bills of Quantities contain any obvious errors, then the Tenderer must immediately inform the Engineer and have the same rectified or explained, as the case may be. No claim will afterwards be considered where the Tenderer has failed to comply with these instructions.

No alteration, erasure, amendment or note is to be made in the text of these Bills of Quantities and should any such alteration, erasure, amendment or note be made by the Tenderer it will be recognised, but these Bills of Quantities as prepared by the Engineer will be adhered to.

2 **CONTRACT DOCUMENTS**

The Bill of Quantities form part of and must be read in conjunction with the Specification which document contains the full descriptions of the work to be done and material and equipment to be used and unless otherwise described in the Bill of Quantities, reference should be made to the Specification for the full meaning of descriptions of work to be done and materials and equipment to be used in this service.

3 **PRICED BILL**

Tenders shall be submitted for initial consideration on the declaration of the total value of the sectional Bills. The Bills priced in detail must be made available within 7 days upon request after the closing date of tenders.

4 **ARITHMETIC ERRORS**

The tender price arithmetically corrected where necessary and not the amount stated on the form of tender shall constitute the contract price of the successful Tenderer.

No error in the calculation of schedule rates which may be discovered subsequent to the submission of a tender, will constitute grounds for a claim of any description. A tender that is incomplete or insufficient in any respect may result in the disqualification of such tender.

5 **ALTERATIONS**

No alteration, erasure or addition is to be made in the text of the Bills of Quantities. Should any alteration, erasure or addition be made, it will not be recognised but the original wording of the Bills of Quantities will be adhered to.

6 **ADJUSTMENTS**

The Priced Bills of Quantities of the successful Tenderer will be checked and the Engineer reserves the right to call for adjustments to any individual price and to rectify any discrepancy whilst the total arithmetically correct tender price, as submitted, remains unaltered.

7 **RESPONSIBILITY OF TENDERER**

The responsibility for the accuracy of the quantities written into the Bill remains with the person who prepared the Bill. The Tenderer shall be relieved of responsibility of measuring quantities at the tender

stage, and the tender sum submitted shall be in respect of the quantities set out in the Bills, although he will be required to make his assessment of items such as brackets, fixing, etc., from details stated in the Bills and shall include in the item prices for such small installation materials as are required for the complete installation in accordance with the Specification.

8 QUANTIFICATION OF ITEMS

The successful Tenderer and the Employer or his Agent may agree that the total of any Bill or Bills, including any variations by way of additions thereto or deductions there from, represents a fair and accurate quantification of the items set out in the Bills and the parties may agree final payment on that basis. In the event of any dispute as to the quantities, then the disputed item or items shall be adjusted where necessary.

9 ORDERING OF MATERIALS

These Bills of Quantities are not to be used for ordering purposes. Any orders placed by the Contractor on the basis of these Bills of Quantities shall be at his own risk.

10 VARIATIONS

Variations in the scope and extent of the work included in the Bills shall be allowed to meet the Employer's requirements and shall be measured and costed at rates entered in the Bills, where appropriate, and shall form an addition to or deduction from the total Bills. Any items or variation for which rates have not been included in the Bills shall be agreed and priced as non-scheduled items in accordance with the provisions of the contract.

The rules governing the extent and costing of the variation shall be those provided for in the form of Conditions of Contract. Variations to the planning before the work has been executed shall be priced as above. Alterations to work already executed cannot necessarily be priced as above and must be reviewed on its merits.

Unless a separate rate for the supply and for the installation of any item is specifically called for, the supply and installation costs of any item shall be fully included in the unit price.

11 DESCRIPTION OF ITEMS

The description of each item shall, unless otherwise stated herein, be held to include making, conveying and delivering, unloading, storing, unpacking, hoisting, setting, fitting and fixing in position, cutting and waste, patterns, models and templates, plant, temporary works, return of packing, establishment charges, profit and all other obligations arising out of the conditions of contract. Rates for maintenance items shall in addition include for all labour, consumables, lubricating and engine oil, transport, accommodation and subsistence and living out allowances.

12 WASTE ALLOWANCE

All measurements are net, unless otherwise stated, and Tenderers must allow in the rate for wastage.

13 DAYWORKS

The quantities and rates included for day work shall form part of the tender price, but Tenderers shall note that this item must be regarded as provisional and will only be payable to the Contractor if and when a written order to this effect has been issued.

14 PROVISIONAL SUMS

All provisional sums shall be expended as directed by the Engineer and any balance remaining shall be deducted from the amount of the contract sum.

All items described as "Provisional" shall be measured as executed and paid for according to prices in the Bills of Quantities and any unexpended amounts shall be deducted from the amount of the contract sum. No work for which "Provisional" items are provided shall be commenced without written instructions from the Engineer.

15 PIPE & CABLE QUANTITIES

The quantities given in the Bill for piping, cables, etc cannot be regarded as exact and are subject to measurement on site after completion of the service and adjustments will be made according to the unit rates given in the Bill.

Note: Checking of Piping & Cable Lengths

Notwithstanding the fact that the lengths of pipes and cables as given in the Bills of Quantities have been measured from scaled drawings, the contractor shall check such lengths on site before ordering the piping or cables, as he will not be paid for excess piping and cable after the completion of the service. Any allowance for off-cuts shall be made in the unit rates. The final measurements shall be based on the net route length of the piping or cables concerned.

16 VALUE ADDED TAX OR OTHER LEGAL DUTIES PAYABLE

All items priced in this Bill of Quantities shall exclude any tax applicable to the particular service article equipment or accessory and these net priced items will be used for normal variations on the contract.

The tax value will be added at the ruling % rate to all payments and valuations i.e. net price + VAT.

Part 3: Bill of Quantities
(Please see attached Annexure – A)

MAINTENANCE OF STANDBY GENERATORS					
PRELIMINARY & GENERAL					
ITEM	DESCRIPTION	UNITS	QTY	RATE	AMOUNT
	PRELIMINARY & GENERAL				
1	Contractual Items				
1.1	Provisions of Sureties	Sum			-
1.2	Insurances	Sum			-
1.4	Guarantee of the Works	Sum			-
1.5	Health and Safety Implementation	Sum			
2	Fixed Cost Items				
2.2	Other (Specify)	Sum			
3	Time Related Items				
3.1	Project Supervision	Months			-
3.2	Project Administration	Months			-
4	Call Out Fee				
4.1	Call out fee operating costs fro breakdown calls logged				
4.2	Charge required by contractor on item 4.1 above				
5	Commissioning (Test and Commissioning)	Sum			-
6	Training of officials on the operation and daily maintenance of equipment supplied and installed under this contract				
6.1	Staff Training (Proof of training must be provided)	Sum			-
a	Operational Training Safe Usage of all new Equipment Apply effective Heigene Control on Equipment				
b	Technical Training: Fault Finding and corrective operation. Energy Savings. Regular maintenance.				
6	Nett amount for the fulfillment of all conditions as stipulated in the Conditions of Contract and Specifications	Sum			
Carried Forward to Summary					

GENERATOR/PLANTROOM BILL OF QUANTITIES.

BILL No 1 - Bizana CC

<u>Items</u>	<u>Description</u>	<u>Qty</u>	<u>Rate</u>	<u>Amount</u>
1	INITIAL REPORT ON CONDITION OF PLANT			
	1.1 The contractor is required to draw up a report on the condition of the plant at the commencement of the contract. This report will be used to prioritise repair work to be carried out on the plant. See item FF 11.01 on Volume 2 page 18			
1.2	REPAIR WORK TO STANDBY GENERATOR SET			
	Clean plant room(s) / plant area			
	1.2.1 Seal sleeves with chicken wire and builder's foam			
	1.2.2 Place 500g rodent poison cartridges in cable trenches			
	1.2.3 Clean and paint floor with epoxy floor paint			
	As per item FF11.01 (a -l) Volume 2 page 18			
	Diesel Engine			
	1.2.4 Carry out initial service of engine			
	1.2.5 Steam clean engine, alternator and day tank			
	1.2.6 Inspect rubber hoses, wiring and report on condition			
	As per item FF11.01 (a -l) Volume 2 page 18			
	Starter Battery			
	1.2.7 Service existing starter battery			
	1.2.8 Carry out cold start volt drop test on starter battery and record results			
	As per item FF11.01 (a -l)			
	Alternator			
	1.2.9 Open alternator terminal box, inspect and clean slip-rings and brushgear, tighten cable terminations			
	1.2.10 Check and record earthing value			
	As per item FF11.01 (a -l) Volume 2 page 18			
	Change-over Panel			
	1.2.11 Disassemble, clean, service and test change-over switchgear and contactors.			
	1.2.12 Service alarm panel			
	1.2.12 Simulate and verify all alarm and shut-down conditions : record results			
	1.2.13 Replace all inoperative lamps, sirens and meters			
	As per item FF11.01 (a -l) Volume 2 page 18			
2	PLANT SERVICE AND MAINTANANCE			
	3.1 Three (3)- Monthly inspection (Generator Set) - This will be determined by the client	8		
	As per item FF11.03 Volume 2 page 19			
	3.2 Annual Inspection (12)- Monthly inspection (Generator Set) - To be done at the presence of DCS	2		
	As per item FF11.04 Volume 2 page 20			
	3.3 Six (6)- Monthly inspection (Control/change-over panel)	4		
	As per item FF11.05 Volume 2 page 22			
	Amount Carried Forward to Summary			

GENERATOR/PLANTROOM BILL OF QUANTITIES.

BILL No 2 - FLAGSTAFF CC

<u>Items</u>	<u>Description</u>	<u>Qty</u>	<u>Rate</u>	<u>Amount</u>
1	INITIAL REPORT ON CONDITION OF PLANT			
	1.1 The contractor is required to draw up a report on the condition of the plant at the commencement of the contract. This report will be used to prioritise repair work to be carried out on the plant. See item FF 11.01 on Volume 2 page 18			
1.2	REPAIR WORK TO STANDBY GENERATOR SET			
	Clean plant room(s) / plant area			
	1.2.1 Seal sleeves with chicken wire and builder's foam			
	1.2.2 Place 500g rodent poison cartridges in cable trenches			
	1.2.3 Clean and paint floor with epoxy floor paint As per item FF11.01 (a -l) Volume 2 page 18			
	Diesel Engine			
	1.2.4 Carry out initial service of engine			
	1.2.5 Steam clean engine, alternator and day tank			
	1.2.6 Inspect rubber hoses, wiring and report on condition As per item FF11.01 (a -l) Volume 2 page 18			
	Starter Battery			
	1.2.7 Service existing starter battery			
	1.2.8 Carry out cold start volt drop test on starter battery and record results As per item FF11.01 (a -l)			
	Alternator			
	1.2.9 Open alternator terminal box, inspect and clean slip-rings and brushgear, tighten cable terminations			
	1.2.10 Check and record earthing value As per item FF11.01 (a -l) Volume 2 page 18			
	Change-over Panel			
	1.2.11 Disassemble, clean, service and test change-over switchgear and contactors.			
	1.2.12 Service alarm panel			
	1.2.12 Simulate and verify all alarm and shut-down conditions : record results			
	1.2.13 Replace all inoperative lamps, sirens and meters As per item FF11.01 (a -l) Volume 2 page 18			
2	PLANT SERVICE AND MAINTANANCE			
	3.1 Three (3)- Monthly inspection (Generator Set) - This will be determined by the client As per item FF11.03 Volume 2 page 19	8		
	3.2 Annual Inspection (12)- Monthly inspection (Generator Set) - To be done at the presence of DCS As per item FF11.04 Volume 2 page 20	2		
	3.3 Six (6)- Monthly inspection (Control/change-over panel) As per item FF11.05 Volume 2 page 22	4		
	Amount Carried Forward to Summary			

GENERATOR/PLANTROOM BILL OF QUANTITIES.

BILL No 3 - LUSIKISIKI CC

<u>Items</u>	<u>Description</u>	<u>Qty</u>	<u>Rate</u>	<u>Amount</u>
1	INITIAL REPORT ON CONDITION OF PLANT			
	1.1 The contractor is required to draw up a report on the condition of the plant at the commencement of			
	the contract. This report will be used to prioritise repair work to be carried out on the plant.			
	See item FF 11.01 on Volume 2 page 18			
1.2	REPAIR WORK TO STANDBY GENERATOR SET			
	Clean plant room(s) / plant area			
	1.2.1 Seal sleeves with chicken wire and builder's foam			
	1.2.2 Place 500g rodent poison cartridges in cable trenches			
	1.2.3 Clean and paint floor with epoxy floor paint			
	As per item FF11.01 (a -l) Volume 2 page 18			
	Diesel Engine			
	1.2.4 Carry out initial service of engine			
	1.2.5 Steam clean engine, alternator and day tank			
	1.2.6 Inspect rubber hoses, wiring and report on condition			
	As per item FF11.01 (a -l) Volume 2 page 18			
	Starter Battery			
	1.2.7 Service existing starter battery			
	1.2.8 Carry out cold start volt drop test on starter battery and record results			
	As per item FF11.01 (a -l)			
	Alternator			
	1.2.9 Open alternator terminal box, inspect and clean slip-rings and brushgear, tighten cable terminations			
	1.2.10 Check and record earthing value			
	As per item FF11.01 (a -l) Volume 2 page 18			
	Change-over Panel			
	1.2.11 Disassemble, clean, service and test change-over switchgear and contactors.			
	1.2.12 Service alarm panel			
	1.2.12 Simulate and verify all alarm and shut-down conditions : record results			
	1.2.13 Replace all inoperative lamps, sirens and meters			
	As per item FF11.01 (a -l) Volume 2 page 18			
2	PLANT SERVICE AND MAINTANANCE			
	3.1 Three (3)- Monthly inspection (Generator Set) - This will be determined by the client	8		
	As per item FF11.03 Volume 2 page 19			
	3.2 Annual Inspection (12)- Monthly inspection (Generator Set) - To be done at the presence of DCS	2		
	As per item FF11.04 Volume 2 page 20			
	3.3 Six (6)- Monthly inspection (Control/change-over panel)	4		
	As per item FF11.05 Volume 2 page 22			
	Amount Carried Forward to Summary			

GENERATOR/PLANTROOM BILL OF QUANTITIES.

BILL No 4 - MT FLETCHER CC

<u>Items</u>	<u>Description</u>	<u>Qty</u>	<u>Rate</u>	<u>Amount</u>
1	INITIAL REPORT ON CONDITION OF PLANT			
	1.1 The contractor is required to draw up a report on the condition of the plant at the commencement of			
	the contract. This report will be used to prioritise repair work to be carried out on the plant.			
	See item FF 11.01 on Volume 2 page 18			
1.2	REPAIR WORK TO STANDBY GENERATOR SET			
	<u>Clean plant room(s) / plant area</u>			
	1.2.1 Seal sleeves with chicken wire and builder's foam			
	1.2.2 Place 500g rodent poison cartridges in cable trenches			
	1.2.3 Clean and paint floor with epoxy floor paint			
	As per item FF11.01 (a -l) Volume 2 page 18			
	<u>Diesel Engine</u>			
	1.2.4 Carry out initial service of engine			
	1.2.5 Steam clean engine, alternator and day tank			
	1.2.6 Inspect rubber hoses, wiring and report on condition			
	As per item FF11.01 (a -l) Volume 2 page 18			
	<u>Starter Battery</u>			
	1.2.7 Service existing starter battery			
	1.2.8 Carry out cold start volt drop test on starter battery and record results			
	As per item FF11.01 (a -l)			
	<u>Alternator</u>			
	1.2.9 Open alternator terminal box, inspect and clean slip-rings and brushgear, tighten cable terminations			
	1.2.10 Check and record earthing value			
	As per item FF11.01 (a -l) Volume 2 page 18			
	<u>Change-over Panel</u>			
	1.2.11 Disassemble, clean, service and test change-over switchgear and contactors.			
	1.2.12 Service alarm panel			
	1.2.12 Simulate and verify all alarm and shut-down conditions : record results			
	1.2.13 Replace all inoperative lamps, sirens and meters			
	As per item FF11.01 (a -l) Volume 2 page 18			
2	PLANT SERVICE AND MAINTANANCE			
	3.1 Three (3)- Monthly inspection (Generator Set) - This will be determined by the client	8		
	As per item FF11.03 Volume 2 page 19			
	3.2 Annual Inspection (12)- Monthly inspection (Generator Set) - To be done at the presence of DCS	2		
	As per item FF11.04 Volume 2 page 20			
	3.3 Six (6)- Monthly inspection (Control/change-over panel)	4		
	As per item FF11.05 Volume 2 page 22			
	Amount Carried Forward to Summary			

GENERATOR/PLANTROOM BILL OF QUANTITIES.

BILL No 5 - MT AYLIFF CC

<u>Items</u>	<u>Description</u>	<u>Qty</u>	<u>Rate</u>	<u>Amount</u>
1	INITIAL REPORT ON CONDITION OF PLANT			
	1.1 The contractor is required to draw up a report on the condition of the plant at the commencement of			
	the contract. This report will be used to prioritise repair work to be carried out on the plant.			
	See item FF 11.01 on Volume 2 page 18			
1.2	REPAIR WORK TO STANDBY GENERATOR SET			
	Clean plant room(s) / plant area			
	1.2.1 Seal sleeves with chicken wire and builder's foam			
	1.2.2 Place 500g rodent poison cartridges in cable trenches			
	1.2.3 Clean and paint floor with epoxy floor paint			
	As per item FF11.01 (a -l) Volume 2 page 18			
	Diesel Engine			
	1.2.4 Carry out initial service of engine			
	1.2.5 Steam clean engine, alternator and day tank			
	1.2.6 Inspect rubber hoses, wiring and report on condition			
	As per item FF11.01 (a -l) Volume 2 page 18			
	Starter Battery			
	1.2.7 Service existing starter battery			
	1.2.8 Carry out cold start volt drop test on starter battery and record results			
	As per item FF11.01 (a -l)			
	Alternator			
	1.2.9 Open alternator terminal box, inspect and clean slip-rings and brushgear, tighten cable terminations			
	1.2.10 Check and record earthing value			
	As per item FF11.01 (a -l) Volume 2 page 18			
	Change-over Panel			
	1.2.11 Disassemble, clean, service and test change-over switchgear and contactors.			
	1.2.12 Service alarm panel			
	1.2.12 Simulate and verify all alarm and shut-down conditions : record results			
	1.2.13 Replace all inoperative lamps, sirens and meters			
	As per item FF11.01 (a -l) Volume 2 page 18			
2	PLANT SERVICE AND MAINTANANCE			
	3.1 Three (3)- Monthly inspection (Generator Set) - This will be determined by the client	8		
	As per item FF11.03 Volume 2 page 19			
	3.2 Annual Inspection (12)- Monthly inspection (Generator Set) - To be done at the presence of DCS	2		
	As per item FF11.04 Volume 2 page 20			
	3.3 Six (6)- Monthly inspection (Control/change-over panel)	4		
	As per item FF11.05 Volume 2 page 22			
	Amount Carried Forward to Summary			

GENERATOR/PLANTROOM BILL OF QUANTITIES.

BILL No 6 - MT FRERE CC

<u>Items</u>	<u>Description</u>	<u>Qty</u>	<u>Rate</u>	<u>Amount</u>
1	INITIAL REPORT ON CONDITION OF PLANT			
	1.1 The contractor is required to draw up a report on the condition of the plant at the commencement of			
	the contract. This report will be used to prioritise repair work to be carried out on the plant.			
	See item FF 11.01 on Volume 2 page 18			
1.2	REPAIR WORK TO STANDBY GENERATOR SET			
	Clean plant room(s) / plant area			
	1.2.1 Seal sleeves with chicken wire and builder's foam			
	1.2.2 Place 500g rodent poison cartridges in cable trenches			
	1.2.3 Clean and paint floor with epoxy floor paint			
	As per item FF11.01 (a -I) Volume 2 page 18			
	Diesel Engine			
	1.2.4 Carry out initial service of engine			
	1.2.5 Steam clean engine, alternator and day tank			
	1.2.6 Inspect rubber hoses, wiring and report on condition			
	As per item FF11.01 (a -I) Volume 2 page 18			
	Starter Battery			
	1.2.7 Service existing starter battery			
	1.2.8 Carry out cold start volt drop test on starter battery and record results			
	As per item FF11.01 (a -I)			
	Alternator			
	1.2.9 Open alternator terminal box, inspect and clean slip-rings and brushgear, tighten cable terminations			
	1.2.10 Check and record earthing value			
	As per item FF11.01 (a -I) Volume 2 page 18			
	Change-over Panel			
	1.2.11 Disassemble, clean, service and test change-over switchgear and contactors.			
	1.2.12 Service alarm panel			
	1.2.12 Simulate and verify all alarm and shut-down conditions : record results			
	1.2.13 Replace all inoperative lamps, sirens and meters			
	As per item FF11.01 (a -I) Volume 2 page 18			
2	PLANT SERVICE AND MAINTANANCE			
	3.1 Three (3)- Monthly inspection (Generator Set) - This will be determined by the client	8		
	As per item FF11.03 Volume 2 page 19			
	3.2 Annual Inspection (12)- Monthly inspection (Generator Set) - To be done at the presence of DCS	2		
	As per item FF11.04 Volume 2 page 20			
	3.3 Six (6)- Monthly inspection (Control/change-over panel)	4		
	As per item FF11.05 Volume 2 page 22			
	Amount Carried Forward to Summary			

GENERATOR/PLANTROOM BILL OF QUANTITIES.

BILL No 7 - NGQELENI CC

<u>Items</u>	<u>Description</u>	<u>Qty</u>	<u>Rate</u>	<u>Amount</u>
1	INITIAL REPORT ON CONDITION OF PLANT			
	1.1 The contractor is required to draw up a report on the condition of the plant at the commencement of the contract. This report will be used to prioritise repair work to be carried out on the plant. See item FF 11.01 on Volume 2 page 18			
1.2	REPAIR WORK TO STANDBY GENERATOR SET			
	<u>Clean plant room(s) / plant area</u>			
	1.2.1 Seal sleeves with chicken wire and builder's foam			
	1.2.2 Place 500g rodent poison cartridges in cable trenches			
	1.2.3 Clean and paint floor with epoxy floor paint			
	As per item FF11.01 (a -l) Volume 2 page 18			
	<u>Diesel Engine</u>			
	1.2.4 Carry out initial service of engine			
	1.2.5 Steam clean engine, alternator and day tank			
	1.2.6 Inspect rubber hoses, wiring and report on condition			
	As per item FF11.01 (a -l) Volume 2 page 18			
	<u>Starter Battery</u>			
	1.2.7 Service existing starter battery			
	1.2.8 Carry out cold start volt drop test on starter battery and record results			
	As per item FF11.01 (a -l)			
	<u>Alternator</u>			
	1.2.9 Open alternator terminal box, inspect and clean slip-rings and brushgear, tighten cable terminations			
	1.2.10 Check and record earthing value			
	As per item FF11.01 (a -l) Volume 2 page 18			
	<u>Change-over Panel</u>			
	1.2.11 Disassemble, clean, service and test change-over switchgear and contactors.			
	1.2.12 Service alarm panel			
	1.2.12 Simulate and verify all alarm and shut-down conditions : record results			
	1.2.13 Replace all inoperative lamps, sirens and meters			
	As per item FF11.01 (a -l) Volume 2 page 18			
2	PLANT SERVICE AND MAINTANANCE			
	3.1 Three (3)- Monthly inspection (Generator Set) - This will be determined by the client	8		
	As per item FF11.03 Volume 2 page 19			
	3.2 Annual Inspection (12)- Monthly inspection (Generator Set) - To be done at the presence of DCS	2		
	As per item FF11.04 Volume 2 page 20			
	3.3 Six (6)- Monthly inspection (Control/change-over panel)	4		
	As per item FF11.05 Volume 2 page 22			
	Amount Carried Forward to Summary			

GENERATOR/PLANTROOM BILL OF QUANTITIES.

BILL No 8 - MTHATHA MEDIUM CC

<u>Items</u>	<u>Description</u>	<u>Qty</u>	<u>Rate</u>	<u>Amount</u>
1	INITIAL REPORT ON CONDITION OF PLANT			
	1.1 The contractor is required to draw up a report on the condition of the plant at the commencement of			
	the contract. This report will be used to prioritise repair work to be carried out on the plant.			
	See item FF 11.01 on Volume 2 page 18			
1.2	REPAIR WORK TO STANDBY GENERATOR SET			
	<u>Clean plant room(s) / plant area</u>			
	1.2.1 Seal sleeves with chicken wire and builder's foam			
	1.2.2 Place 500g rodent poison cartridges in cable trenches			
	1.2.3 Clean and paint floor with epoxy floor paint			
	As per item FF11.01 (a -l) Volume 2 page 18			
	<u>Diesel Engine</u>			
	1.2.4 Carry out initial service of engine			
	1.2.5 Steam clean engine, alternator and day tank			
	1.2.6 Inspect rubber hoses, wiring and report on condition			
	As per item FF11.01 (a -l) Volume 2 page 18			
	<u>Starter Battery</u>			
	1.2.7 Service existing starter battery			
	1.2.8 Carry out cold start volt drop test on starter battery and record results			
	As per item FF11.01 (a -l)			
	<u>Alternator</u>			
	1.2.9 Open alternator terminal box, inspect and clean slip-rings and brushgear, tighten cable terminations			
	1.2.10 Check and record earthing value			
	As per item FF11.01 (a -l) Volume 2 page 18			
	<u>Change-over Panel</u>			
	1.2.11 Disassemble, clean, service and test change-over switchgear and contactors.			
	1.2.12 Service alarm panel			
	1.2.12 Simulate and verify all alarm and shut-down conditions : record results			
	1.2.13 Replace all inoperative lamps, sirens and meters			
	As per item FF11.01 (a -l) Volume 2 page 18			
2	PLANT SERVICE AND MAINTANANCE			
	3.1 Three (3)- Monthly inspection (Generator Set) - This will be determined by the client	8		
	As per item FF11.03 Volume 2 page 19			
	3.2 Annual Inspection (12)- Monthly inspection (Generator Set) - To be done at the presence of DCS	2		
	As per item FF11.04 Volume 2 page 20			
	3.3 Six (6)- Monthly inspection (Control/change-over panel)	4		
	As per item FF11.05 Volume 2 page 22			
	Amount Carried Forward to Summary			

GENERATOR/PLANTROOM BILL OF QUANTITIES.				
BILL No 9 - MTHATHA REMAND CC				
Items	Description	Qty	Rate	Amount
1	INITIAL REPORT ON CONDITION OF PLANT			
	1.1 The contractor is required to draw up a report on the condition of the plant at the commencement of			
	the contract. This report will be used to prioritise repair work to be carried out on the plant.			
	See item FF 11.01 on Volume 2 page 18			
1.2	REPAIR WORK TO STANDBY GENERATOR SET			
	Clean plant room(s) / plant area			
	1.2.1 Seal sleeves with chicken wire and builder's foam			
	1.2.2 Place 500g rodent poison cartridges in cable trenches			
	1.2.3 Clean and paint floor with epoxy floor paint			
	As per item FF11.01 (a -l) Volume 2 page 18			
	Diesel Engine			
	1.2.4 Carry out initial service of engine			
	1.2.5 Steam clean engine, alternator and day tank			
	1.2.6 Inspect rubber hoses, wiring and report on condition			
	As per item FF11.01 (a -l) Volume 2 page 18			
	Starter Battery			
	1.2.7 Service existing starter battery			
	1.2.8 Carry out cold start volt drop test on starter battery and record results			
	As per item FF11.01 (a -l)			
	Alternator			
	1.2.9 Open alternator terminal box, inspect and clean slip-rings and brushgear, tighten cable terminations			
	1.2.10 Check and record earthing value			
	As per item FF11.01 (a -l) Volume 2 page 18			
	Change-over Panel			
	1.2.11 Disassemble, clean, service and test change-over switchgear and contactors.			
	1.2.12 Service alarm panel			
	1.2.12 Simulate and verify all alarm and shut-down conditions : record results			
	1.2.13 Replace all inoperative lamps, sirens and meters			
	As per item FF11.01 (a -l) Volume 2 page 18			
2	PLANT SERVICE AND MAINTANANCE			
	3.1 Three (3)- Monthly inspection (Generator Set) - This will be determined by the client	8		
	As per item FF11.03 Volume 2 page 19			
	3.2 Annual Inspection (12)- Monthly inspection (Generator Set) - To be done at the presence of DCS	2		
	As per item FF11.04 Volume 2 page 20			
	3.3 Six (6)- Monthly inspection (Control/change-over panel)	4		
	As per item FF11.05 Volume 2 page 22			
	Amount Carried Forward to Summary			

GENERATOR/PLANTROOM BILL OF QUANTITIES.

BILL No 10 - NTABANKULU CC

<u>Items</u>	<u>Description</u>	<u>Qty</u>	<u>Rate</u>	<u>Amount</u>
1	INITIAL REPORT ON CONDITION OF PLANT			
	1.1 The contractor is required to draw up a report on the condition of the plant at the commencement of the contract. This report will be used to prioritise repair work to be carried out on the plant. See item FF 11.01 on Volume 2 page 18			
1.2	REPAIR WORK TO STANDBY GENERATOR SET			
	<u>Clean plant room(s) / plant area</u>			
	1.2.1 Seal sleeves with chicken wire and builder's foam			
	1.2.2 Place 500g rodent poison cartridges in cable trenches			
	1.2.3 Clean and paint floor with epoxy floor paint			
	As per item FF11.01 (a -l) Volume 2 page 18			
	<u>Diesel Engine</u>			
	1.2.4 Carry out initial service of engine			
	1.2.5 Steam clean engine, alternator and day tank			
	1.2.6 Inspect rubber hoses, wiring and report on condition			
	As per item FF11.01 (a -l) Volume 2 page 18			
	<u>Starter Battery</u>			
	1.2.7 Service existing starter battery			
	1.2.8 Carry out cold start volt drop test on starter battery and record results			
	As per item FF11.01 (a -l)			
	<u>Alternator</u>			
	1.2.9 Open alternator terminal box, inspect and clean slip-rings and brushgear, tighten cable terminations			
	1.2.10 Check and record earthing value			
	As per item FF11.01 (a -l) Volume 2 page 18			
	<u>Change-over Panel</u>			
	1.2.11 Disassemble, clean, service and test change-over switchgear and contactors.			
	1.2.12 Service alarm panel			
	1.2.12 Simulate and verify all alarm and shut-down conditions : record results			
	1.2.13 Replace all inoperative lamps, sirens and meters			
	As per item FF11.01 (a -l) Volume 2 page 18			
2	PLANT SERVICE AND MAINTANANCE			
	3.1 Three (3)- Monthly inspection (Generator Set) - This will be determined by the client	8		
	As per item FF11.03 Volume 2 page 19			
	3.2 Annual Inspection (12)- Monthly inspection (Generator Set) - To be done at the presence of DCS	2		
	As per item FF11.04 Volume 2 page 20			
	3.3 Six (6)- Monthly inspection (Control/change-over panel)	4		
	As per item FF11.05 Volume 2 page 22			
	Amount Carried Forward to Summary			

STANDBY GENSETS PROVISIONAL COST AMOUNTS

[illegible]

Bill of Quantities

[illegible]

Asset Register
(Please see attached Annexure – B)

STANDBY GENERATORS FOR MTHATHA MANAGEMENT AREA

CENTRE	CAPACITY IN KVA	SERIAL NUMBER	BRAND NAME	LAST DATE OF SERVICE	STATUS / COMMENTS
Bizana CC	25KVA ;	87306548	Dongfeng Cummins	15-Jun-16	Gen Set is not working but it has been recommended and approved for replacement. PI to be confirmed.
Elliotdale CC	N/A	N/A	N/A	N/A	Gen Set is not available but it is part of the upcoming of renovation project, PI to be confirmed.
Flagstaff CC	100KVA ;	Serial No. 6B080306177	Voxgen	Feb-19	Gen Set is working
Lusikisiki CC	160kVA	Not provided	Perkins	Mar-21	Gen Set is working
Mt Ayliff CC	60kVA ;	Serial No.HC540246B	Lovato RGK 60	Mar-20	Gen Set is working.
Mt Fletcher CC	100kVA ;	Serial No. PL3646/6	Powerink	Aug-19	Get Set is Working no problems at moment
Mt Frere CC	63kVA ;	Serial No. 080424A	Baifa	Mar-18	Generator is under repairs.
Ngqeleni CC	30kVA ;	CM51027*U212489L	Crompton Greave	Mar-17	Gen Set is working.
Mthatha Remand CC	20kVA ;	355987-10	UNELEC	25-Feb-13	Gen Set need to be upgraded. Supply power does cater for PASSAGE LIGHTS. Gen set is also old. IT IS WORKING.
Mthatha Medium CC	200kVA ;	2WB02560	Caterpillar	2020 FEB 08	Gen Set is working
Poultry Mthatha	30kVA ;	A1060095	YANMAR	Apr-19	Gen Set is NOT working
Sallypot Mthatha		B12C101766	Stamford	19-Apr	Gen Set is NOT working.
Mqanduli CC	N/A	N/A	N/A	N/A	New Gen Set to be installed PI was issued for the installation of a new Gen Set.
Ntabankulu CC	25kVA ;	Serial No. CEW427F/G	Lovato	Jan-21	Gen Set is working