



**health**

Department:  
Health  
PROVINCE OF KWAZULU-NATAL

DIRECTORATE:

Townhill Office Park, 35 Hyslop Road, Block 1  
P/ BAG X 9051 Pietermaritzburg 3201  
Tel: 033 940 2526 Email: Ernest.Zulu@kznhealth.gov.za

Infrastructure Development

**AMENDMENT**

Date: 26 OCTOBER 2023	File No:
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**SUBJECT: ST. MARYS MISSION HOSPITAL: GENERATOR REPLACEMENT ZNB 5245-2023-H: SITE BRIEFING AMENDMENTS**

Page Number	Item Number	Description Amendment	Comment
67	T2.36 #2	All CVs to have TRACEABLE REFERENCES Wiremans Licence OR Master Installation Electrician will be accepted and must include proof of Qualifications and Certification of Wiremans Licence OR Installation Electrician	
112	2.3.1-2.3.6	All construction material will be Grade 3CR12 Stainless Steel	
112	2.3.9	SIM card can be loaded with 5GB per month OR 300GB once off	
112	2.3.10	This includes existing cables which must be terminated and accompany the portable unit below in 2.3.11	
112	2.3.11	Generator may be housed within a canopy or container. Container/Canopy must include day tank, LV and control panel. The assembled portable generator must be able to used as a portable loan unit with the existing cables used as trailing cables.	
112	2.3.14	Allow for +-40m of cable ROUTE not total cable length	
114	2.3.42	To be removed. Do not price for this item. (Duplicated)	
114	2.3.45	To be removed. Do not price for this item. (Duplicated)	
114	2.3.46	Addition to the matter below. Inlet louvres to be replaced. Like for like. To be designed in conjunction with ventilation item 2.3.18.	Quantity = 1
Note		Take note of the removal of old and rigging in of new genset. All brickwork to be reinstated. As per Annexure 10:Section 8 Radiator Extractor Ducting to be replaced.	

Kind Regards,

**J. Pillay**

Electrical Engineer

eThekwini Management Hub

26 October 2023

**ST. MARYS MISSION HOSPITAL: GENERATOR REPLACEMENT ZNB 5245-2023-H: SITE BRIEFING AMENDMENTS**

# ST. MARY'S HOSPITAL – NURSES RESIDENCE GENERATOR REPLACEMENT

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PROVINCE OF KWAZULU-NATAL  
DEPARTMENT OF HEALTH

BID No. ZNB 5245/2023-H

ST. MARY'S HOSPITAL – NURSES RESIDENCE GENERATOR REPLACEMENT

PART ONE

PROJECT SPECIFICATIONS

1 NOTES TO BIDDERS

- 1.1 The institutions will remain open and operational at all times therefore the Contractor shall make the necessary arrangements with the Institutional Management and maintenance staff for any power outages that are required. This may necessitate weekend work
- 1.1.2 All items to be priced fully inclusive of all charges e.g. labour, transport, scaffolding, materials, profit, etc., but excluding Value Added Tax.
- 1.1.3 The Administration reserves the right to negotiate prices in the Schedule of Prices.
- 1.1.4 All redundant material and rubble shall to be removed from the institution's property immediately. Material removed from site must have approval for site removal together with appropriate disposal certificate.
- 1.1.5 All equipment and materials used in this contract shall be that which is specified or approved prior to submission and closure of the bid.
- 1.1.6 The Contractor is advised to examine all the drawings (if any) and to visit the site prior to tendering to acquaint him/herself with the nature of the work to be done and access to the siting of the existing buildings etc., as no claim will be allowed on the grounds of ignorance of the conditions under which the work will be executed.
- 1.1.7 All items in the Schedule of Prices are **PROVISIONAL** and subject to re-measure after installation.
- 1.1.8 The Schedule of Prices shall be read in conjunction with the Scope of Work. Any discrepancies or omissions shall be brought to the attention of the Project Leader immediately.
- 1.1.9 **Preference will be given to Bidders who have registered offices / workshops within the borders of the Province of KwaZulu-Natal. This is in an effort to reduce response times to call outs for breakdowns in the more remote areas of the Province.**
- 1.1.10 **Only Contractors who are registered with a CIDB Grading of 4 EB OR 4 EP or higher shall be considered.**

1.2 SCOPE OF CONTRACT

- 1.2.1 The Scope of the Contract is contained in Part Three (Particular Specification) contained hereunder.

1.3 PERIOD OF CONTRACT

**Nine (9) Months** as the completion period for the Contract from the date of site handover.

**1.4 SITE AND MODE OF PROCEDURE**

The work contained in this contract will be carried out on the site of St. Mary's Hospital eThekweni in the Province of KwaZulu-Natal.

Damage to the existing buildings - Bidders to note that any damages done or occurring to any of the buildings will be repaired at the expense of the contractor/ Bidder.

The work undertaken shall be to the satisfaction of the KwaZulu-Natal Department of Health.

**1.5 SATISFACTORY INSTALLATION**

All work shall be carried out according to the Department of Health's Standard Preambles to all Trades, the OHS Act, National Building Code of Practices and Regulations, the KZN DOH Policy Document for the Design of Electrical Installations and the SANS 10142-1 Wiring Code.

Copies of these documents are available from the office of the Manager, Infrastructure Development KwaZulu-Natal Department of Health, Townhill Office Park, 35 Hyslop Road, Pietermaritzburg and may be obtained on request.

PROVINCE OF KWAZULU-NATAL

BID No. ZNB 5245/2023-H

ST. MARY'S HOSPITAL  
INSTALLATION OF NEW 250KVA STANDBY GENERATOR AND BULK DIESEL TANK

PART TWO

TECHNICAL SPECIFICATION

1. GENERAL: OUTDOOR CANOPY TYPE STANDBY GENERATOR

FAILURE TO COMPLETE THE SCHEDULE OF INFORMATION IN ITS ENTIRETY SHALL LEAD TO THE DISQUALIFICATION OF THE BID.

The standby generator set herein specified is to be installed at ST. MARY'S HOSPITAL located in eThekweni Health District. The ambient temperatures are 40°C maximum and 10°C minimum and +- 500m above mean sea level.

In order to best meet South Africa's employment targets, locally assembled generator sets will receive preference.

*Due to the critical nature of this installation, ONLY genuine and accredited DIESEL GENERATOR SET MANUFACTURERS / ASSEMBLERS with Local 24 hour support and IN HOUSE maintenance facilities will be considered.*

*When pricing this document, allowance must be made for the installation to be carried out after hours and / or over a weekend at a time suitable to the KZN Department of Health's institution.*

*Prior to any shutdown it should be agreed with the Health Institution whether any temporary standby plant is required. Apart from this, downtime must be kept to a minimum and once an installation starts, it must be completed and commissioned without any interruptions.*

*The Tenderer must provide documented proof that they have the staff and capacity to carry out this type of installation. Including additional rotational staff on standby in the event of increased staff infection due to Covid19.*

The whole of the installation shall be carried out in accordance with:

- The Department of Health Policy Document on the Design of Electrical Installations Revision 7 of 2013.
- All low voltage switchgear and control gear assemblies are to comply to SABS 1473 Part 1 - 1989 /IEC 439 - 1 1985.
- An Electrical Certificate of Compliance, in accordance with the SANS 10142-1 Wiring Code will be required for all Electrical Works.
- The Occupational Health and Safety Act and Regulations 85 of 1993.

- The Municipal By-laws and any special requirements of the Supply Authorities of the area or district concerned.
- Local Fire Regulations.
- National Building Regulations – SANS 10400 Part T
- The contractor should fully familiarise himself with these documents prior to quoting.

The **Indoor Type** stand-alone standby generator set herein specified is to be installed at St. Mary's Hospital. The ambient temperatures are 40°C maximum and 10°C minimum and is approximately 300m above sea level.

## 2. SCOPE OF CONTRACT

The contract comprises the design, manufacture, assembly, delivery to site, off-loading at site, installation, testing, commissioning and handing over in first class working order of a complete standby diesel generating set and all ancillary equipment necessary to comply with the requirements of this specification.

The plant generally shall comprise a diesel engine coupled to an alternator mounted on a common base, a set of starting batteries, automatic charging unit, interconnecting cables, a control panel housing the generator M.C.C.B. and all necessary switchgear, including the changeover equipment and on-load bypass switch, together with a fuel system, capable of running the set for **72 hours at full load**.

- Manufacture, supply and deliver a single 250 kVA, 400V, 50Hz, diesel standby generator set
- Supply and deliver all the needed protection equipment, electrical panels, cables and terminations needed for the complete installation.
- Supply, deliver, install and commission LV Panel (3CR12) – including change-over & bypass switches, breakers, bus-bars and associated wiring
- Decommission, rig out, containerise as per DOH specifications and deliver to Wentworth Hospital Strategic Stores:
  - Existing 120kVA diesel generator.
  - Existing LV Panel and peripheral/ancillary equipment, day-tank
  - Exhaust, radiator louvres
- Manufacture, supply, deliver and install the engine exhaust for generator.
- Base tank to be installed beneath the generator and in conjunction with bulk tank, **have sufficient capacity to allow for 72 hour standby power. (i.e. Generator must be able to run for 72 hrs at 100% load.)**
- Self Bunded Bulk tank to feed generator day tank - All pipework and electronic cables to be necessary for the capacity upgrade to be installed.
- Supply, deliver and install, test and commission dedicated fuelling point for bulk tank.
- Supply and install the standard controller with WebNet reporting module, which allows remote monitoring of the plant and diesel system.
- **Balancing of 3-Phase loads at substation/meter room and Main Distribution Board to the Nurses Residence**
- Install new warning enclosure linked to all generator alarms, complete with siren and strobe.
- Fuel System to comprise of a water/fuel separator complete with new housing and filter.

- Refurbish the Substation/Meter Room. This includes paintwork and finish of walls, floor and ceiling:
  - a) Including: doors, windows, vents, cable tunnels, lighting, LV panels and make good wall-mounted drawings.
  - b) Flooring: Cleaning, making good of the surface and painting. Sand down, patch inconsistencies with rock set and apply two coats of epoxy floor paint (grey).
  - c) Cable tunnels to be cleaned and covers to be replaced/added if necessary.
  - d) Walls: Cleaning, making good of the surface and painting; this is to allow for any building/civil works that must take place. The doors and frame should be replaced if necessary to accommodate the larger sized generator into the plant room. All brickwork and plaster to be reinstated and must returned to its original state as per the existing building material. Sand down, patch inconsistencies with rock set and apply two coats of epoxy floor paint (grey)
  - e) Ceiling: Cleaning, making good of the surface, sand down, patch inconsistencies with rock set and apply two coats of white enamel paint.
  - f) Paint colour to be discussed during site handover. Paint specification should be Class 4 – “Typical area”.
  - g) Lighting lux levels must adhere to OHS Act (No.85 of 1993) and SANS 10400, SANS 10114-1 lighting requirements. Contractor to install additional lighting if necessary.
  - h) Wall-mounted drawings – refer to Part 17 & 18 within Part 2 of this document.
  - i) Renew water proofing and gutters.
  - j) Remove redundant cable ladders/trays
  - k) Respray Generator plant room doors
  - l) Replace Substation/Meter Room door
  
- Repaint/Respray panel doors within meter room; red to indicate Essential Supply
- Install and commission the fire protection for the generator set.
  - ***NB: Contractor to engage with local fire chief (inspection authority) before installation prior to issuing for fire compliance certificate for the generator plant room.***
  - **Supply, deliver and install fire detectors (Contractor may utilise existing Fire Detection and Alarm Panel)**
  - **Supply, deliver and install fire extinguisher equipment (mounted)**
  - **Supply, deliver and install diesel spill kit**
- Install sound attenuation system whereby the sound level does not exceed 70dB(A) 1m away from the genset.
- An Earth Mat should be installed (if not already in place) of sufficiently low impedance to match the generator rating.
- Submission of Electrical Engineers Design:
  - Submission of Engineers Design Report for KZN DOH approval
  - Submission of Single Line Diagram for KZN DOH approval
- Obtain Fire Compliance of the Installation which includes generator and bulk fuel storage unit.
- Obtain Electrical Certification of Compliance for the electrical installation
- Training to be provided to selected staff at the ST. MARY’S HOSPITAL

- Maintain the installations for 1 year after Practical Completion. (6 services to the generator and diesel tank installations which includes fuel remediation and tank cleaning.)
- As built drawings: standby plant arrangement, schematics of plant room, complete electrical system.
- Heat Extraction and Plant room lighting to form part of the Essential supply from the generator.

### 3. PLANT LOCATION

The standby diesel generating set shall to be installed as indicated under Part Two Particular Specification which forms part of this document.

Tenderers are advised to acquaint themselves with the site conditions including access, as no claim on the grounds of want of knowledge will be entertained.

The set shall consist of an indoor-type unit.

The standby diesel generating set shall to be located as indicated under Part Two Particular Specification which forms part of this document.

**Tenderers are advised to acquaint themselves with the site conditions including access, as no claim on the grounds of want of knowledge will be entertained.**

### 4. PLANT DUTIES

The diesel generating set and its ancillary equipment shall normally operate as an automatic mains failure unit. It shall be capable of delivering its full rated output at any time and any ambient conditions likely to occur at the site. The generating set will not be required to be synchronized with the main supply.

### 5. SYSTEM

The system to which the plant is to be connected is 3 phase, 4 wire, 400 volt between phases and 230 volt between phase and neutral, with a frequency of 50 Hz.

### 6. RATING

**Note: The units shall be capable of delivering:**

- a. 250 kVA at 0.8 power factor at PRIME POWER.

**The unit shall deliver 100% of the initial load + - 15 sec after start up.**

The rating of the diesel generating set shall be based on operation of the set when equipped with all necessary accessories such as radiator fan, air cleaners, lubricating oil pump, fuel transfer pump, fuel injection pump, water circulating pump, and battery charging alternator.

The generator set shall be capable of delivering the specified output continuously under the site conditions without overheating. The engine shall be capable of delivering an output of 110% of the specified output for one hour in any period of 12 hours consecutive running in accordance with BS5514.



## 7. DIESEL ENGINE

### 7.1. Type

The engine shall be of the multi cylinder, four stroke cycle, cold starting, direct injection, compression ignition type, suitable for operation on diesel fuel.

Only genuine engines with full local Original Equipment Manufacturer (O.E.M.) backup will be accepted. Grey products and "copies" will under no circumstances be accepted and will lead to the Tender being rejected.

### 7.2. Cooling System

The engine shall be of the water cooled type and the cooling system shall be of sufficient capacity to cool the engine when the set is delivering its full rated load in the ambient conditions specified in Clause 1.

The engine shall be equipped with a heavy duty type radiator, complete with engine driven fan and centrifugal water circulating pump and a thermostat to maintain the engine at the makers recommended temperature level. **The radiator core MUST be a tropical core.**

A thermostatically controlled immersion heater shall be provided and fitted in the engine cooling circuit to ensure easy starting of the engine at any ambient temperature.

The heater shall be so fitted that it can easily be withdrawn without having to drain the system. The heater shall be suitable for a 220 volt 50 Hz supply.

A low radiator level shutdown sensor switch shall be fitted in the radiator header tank. A separate temperature sensor must be fitted on the block for the normal high engine temperature shutdown and gauge.

**The sight gauge shall be easily accessible for reading purposes and it shall be safe and easy to top up the coolant without having to climb inside or over the unit. This includes indoor and outdoor units.**

### 7.3. Speed

The engine speed shall not exceed 1500 R.P.M. at normal full load conditions.

### 7.4. Fuel

The engine shall be capable of satisfactory performance on a commercial grade of distilled petroleum fuel oil such as Number 2 fuel oil. (Commercial grade diesel fuel: **50ppm**).

### 7.5. Rating

The engine shall be suitable for continuous running at the specified speed, delivering its rated output at the specified site conditions.

In addition the engine shall be capable of delivering 110 % load for one hour, after the set has been running at full load for a period of six hours and shall, after the overload period of one hour be capable of maintaining the rated output continuously without any undue mechanical strain, overheating, incomplete fuel combustion or other ill effects.

The engine shall have sufficient capacity to start up and shall within 15 seconds from mains failure, supply the **full rated load** at the specified voltages and frequency.

#### 7.6. Governor

The engine shall be of the latest electronic type, or controlled by a governor to maintain governed speed for 50 Hz operation. Class A1 governing in accordance with B.S. 5514 as amended is required.

#### 7.7. Fuel System

The complete system including bulk tank and base tank shall be sized to allow the set to run for 72 hours at full load.

An engraved label shall be installed in a conspicuous area on the generator control panel that indicates the following:

- Base tank capacity.
- Bulk tank capacity
- Full load litres per hour consumption.

##### 7.7.1 Base tank

The fuel tank shall be an integral part of the base frame of the generator set. The tank shall have sufficient capacity to run the engine on full load for a minimum period of 12 hours.

The base tank shall be a closed channel self-bund walled type that shall be of sufficient capacity to contain any spillage, equivalent to 80% in volume of the base tank. A float level alarm connected to the generator controller shall be incorporated into the bund area located such that the alarm will be activated when 50% of the volume of the bund area has been reached in the event of any diesel fuel leakage.

The base tank shall not exceed 2000 litre's capacity, be fitted with a suitable filter, breather pipe, visual gauge, removable inspection cover, drain, filler cap, low level and extra low shutdown alarm sensors. These shall supply an audible and visible signal on the control panel.

The base tank shall be fitted with the following:

- A suitable fuel filter.
- Breather pipe
- Visual dial fuel level indicator
- Removable inspection cover
- Tamper proof drain plug
- Filler pipe & lockable cap
- Low level and extra low shutdown alarm sensors. These shall supply an **audible alarm** and visible indication on the control panel.
- Spillage containment sensor. It shall supply an **audible alarm** and visible indication on the control panel.
- Fuel level indicator to send signal to DSE controller to indicate Base tank fuel level AND Bulk tank fuel level.

In addition, pump, solenoid valve start, stop sensors are required to control the automatic filling of the base tank from a remote free standing tank if applicable.

The set shall be supplied with a hand operated “wing pump” with oil resistant hose at a length of no less than 10m. The hose shall be of the “push lock” type and shall be sufficient in length to extend to the door for filling from 200 litre drums.

Drain plugs shall be constructed in such a manner that shall prevent the removal of such drain plug by conventional means i.e. shifting spanner, pliers etc.

- a. Contractor to provide DIESEL DRUM PUMP KIT (56l/m) with K33 METER 220V. Kit to include CONTROL, 10M HOSE, BUNG ADAPTOR & RISER TUBE
- b. Contractor to provide 12 Volt 40l/min Diesel Pump complete with hose, gun, and meter, 30 minute per hour duty cycle & UR Inline Screen Filter 1” for Diesel.

#### 7.7.2 Bulk Tank

The bulk fuel tank shall consist of an ISO 9001 quality containerised double walled tank mounted on a steel reinforced concrete plinth of suitable MPa strength to carry the weight of a fully fuelled bulk tank and canopy type generator. The size and configuration of the bulk tank shall be matched to the size of generator to enable the generator to run continuously for a minimum period of 72 hours on full load.

The composite bulk tank together with all interconnecting supply and return pipes, low level alarm, visual fuel level indicators (a. Mechanical and b. Digital gauge on an LCD display), lockable shut off valves, breather and an automatic filling system shall be provided and installed to the base tank. This installation shall be carried out by a specialized petrochemical installation contractor in accordance with SABS 0131 Part 2/1979 and SABS 089 Part 3/1991.

In the event of the standard bulk tank size being in between the required volume, the next largest size must be supplied

The automatic filling of the base tank, from the bulk tank, shall be controlled by level switches mounted in the base tank. These switches shall start and stop the electric self-priming pump, or solenoid valve system.

Manually operated filling of the base tank from the bulk tank shall be by way of a spring loaded push button switch that shall switch off the pump if the push button switch is released by the operator. Drain plugs shall be constructed in such a manner that shall prevent the removal of such drain plug by conventional means i.e. shifting spanner, pliers etc.

The construction of the reinforced concrete plinth and other minor civil work shall form part of this contract.

The bulk tank shall be fitted with the following:

- A suitable fuel filter.
- Breather pipe
- Visual dial fuel level indicator
- Removable inspection cover
- Tamper proof drain plug
- Filler pipe & lockable cap
- Low level and extra low shutdown alarm sensors. These shall supply an audible alarm and visible indication on the control panel.
- Spillage containment sensor. It shall supply an audible alarm and visible indication on the control panel.

- Fuel level indicator to send signal to DSE controller to indicate Base tank fuel level AND Bulk tank fuel level.

The bulk tank shall be inspected including:

- pressure testing,
- wall thickness and integrity inspection,
- Diesel cleaning/remediation.

#### 7.8. Lubricating

The engine shall be provided with a forced feed lubricating system with a gear type lubricated oil pump for supplying oil under pressure to the main bearings, crank pin bearings, pistons, piston pins, timing gears, camshaft bearings, valve rocker mechanism and all other moving parts.

Full flow replaceable element type oil filters, conveniently located for servicing, shall be provided. Filters shall be provided with a spring loaded by-pass valve to ensure circulation if the filters become clogged.

#### 7.9. Cylinder Liners

The engine shall be provided with removable wet or dry type cylinder liners of close grained alloy iron.

#### 7.10. Air Cleaners

The engine shall be provided with one or more dry type air cleaners which shall provide positive air filtration.

#### 7.11. Exhaust System

The engine shall be fitted with an efficient Grade 304 stainless steel exhaust system coastal areas. Flexible bellows shall be fitted between the exhaust outlet and the silencer. The flexible piping must on no account be used to form a bend or compensate for misalignment. The silencer shall be located within, or on top of the canopy. The silencer shall be of the highly efficient type suitable for use in clinical areas and shall be capable of providing **35 to 50 decibels of suppression. Silencer type to be Hospital Plus Grade - Exhaust noise reduction of 35 to 50 dBA**

The silencer and discharge piping shall be suitably supported.

The exhaust pipe inside the plant room shall be suitably lagged then clad in galvanized or polished stainless steel sheet.

The end of the exhaust shall be cut to a 45 degree angle, in order to prevent rain ingress and mesh shall be welded into the end to prevent birds or rodents from entering the pipe.

Openings through the wall are to be neatly drilled by the Standby Plant Contractor and stainless steel flashing plates must be fitted both sides. Exhausts to be fitted with "venturi effect" cowls designed for Diesel Exhaust gas stacks. Cowls should be suitable for preventing weather ingress and up to 15% flue dilution, reducing heat and pollution concentration

**The end of the exhaust pipe shall protrude beyond the eaves of the building by at least 300mm to prevent the accumulation of soot on the eaves of the building.**

#### 7.12. Flywheel

The flywheel shall be designed to limit the cyclic irregularities to within the limits laid down in B.S. 5514 as amended.

#### 7.13. Engine Starting

The engine shall be equipped with a 12/24 volt starting system of sufficient capacity to crank the engine at a speed, which will allow starting of the engine.

The starting equipment shall include a 12/24 volt D.C. starter motor engaging directly on the flywheel ring gear. A heavy duty battery charging alternator and maintenance free batteries of the Delco/Deltec type shall be supplied. The batteries shall be mounted in a lockable battery box. Battery technology to be used must be **rated at a minimum of 100AH with a minimum warranty period of 5 years and a minimum of 2000 cycles.**

The batteries shall be connected to the engine with suitably rated P.V.C. insulated flexible leads.

The batteries shall have sufficient capacity to provide three automatic attempts to start immediately followed by three manual attempts without any appreciable drop in voltage. The automatic attempts to start shall each be of not less than 10 seconds duration with 10 second intervals between and the manual attempts shall be based on the same cranking period.

A device shall be provided to limit the cranking time of each automatic attempt to start, to the 10 seconds specified above and to provide three automatic attempts after which the automatic starting mechanism will cut out until manually reset and at the same time sound an audible alarm and illuminate the L.E.D. on the generator controller. The engine driven battery charging alternator shall have sufficient capacity to recharge the batteries back to normal starting requirements in not more than six hours.

A battery charging unit of the trickle charge type shall be provided to maintain the batteries at full capacity when the set is at rest. The charging equipment shall be connected so that the battery is normally charged from the mains, but is also charged under mains failure conditions from the diesel generating plant and if required via an inhibitor relay to prevent dual charging. The unit shall be complete with voltmeter, push button test, D.C. and A.C. protective gear. The charging unit shall be incorporated in the diesel generator control cabinet.

#### 7.14. Engine Instruments

As per the Deep Sea DSE 7320 Controller fitted with DSE Webnet DSE890 Gateway complete with separate GPS and GSM antennae.

#### 7.15. Safety Controls

The engine shall be equipped with the safety controls as specified in 11.4.

#### 7.16. Engine/Alternator Coupling and Base

The engine and alternator shall be direct coupled and arranged for operation at 400/230 volt, 50Hz and 1500 RPM.

A steel fabricated base-frame (incorporating the day fuel tank) with anti-vibration mounts between the engine / alternator combination and base shall be provided and must be able to be placed directly on the plant room floor..

## 8. RADIATOR EXTRACT DUCTING

A galvanized duct shall be provided and installed between the radiator face and outlet louver to positively expel and duct the hot air out of the canopy. A flexible section shall be fitted between the radiator face and duct in order to prevent the recirculation of hot discharged air.

## 9. A.C. GENERATOR

As per the engine requirements, only genuine and locally supported recognised Original Equipment Manufacturers (O.E.M.) alternators will be acceptable. Grey products and copies from the East are unacceptable and will result in the Tender being rejected.

### 9.1. Rating

The generator shall be a 400/230 volt, 3 phase, and 4 wire 50 Hz machine. The generator rating shall be applicable for continuous service application.

**Note: The units shall be capable of delivering 250kVA, both at 0.8 power factor.  
The unit shall deliver 100% of the initial load + - 15 sec after start up.**

### 9.2. Construction and Manufacture

The generator shall be a revolving field type, coupled directly to the engine flywheel through a flexible disc for positive alignment. The generator housing shall bolt directly to the engine flywheel housing and shall be equipped with a heavy duty ball bearing support for the rotor. The motor shall be dynamically balanced up to 25 % over speed.

The generator shall be of heavy duty compact design. Insulation shall be Class H as recognised by B.S.5514.

The generator field excitation shall be performed by a rotating exciter mounted on the generator motor shaft through a brushless rotating diode system. The voltage regulator shall be of the static-magnetic type with silicon diode control. It shall be mounted on the top or side of the generator and enclosed in a drip proof enclosure. A built in voltage adjusting rheostat shall provide 10 % voltage adjustment.

### 9.3. Performance

The generator shall be capable of continuously delivering the full rated load specified in Clause 9.1 and of providing a 10 % overload for the period and in the manner specified for the engine in Clause 7.5.

### 9.4. Wave Form

The shape for the voltage and current wave shall be within the limits laid down by B.S. 5000.

### 9.5. Voltage Regulation and Response

The alternator shall be self-regulated and shall incorporate an automatic voltage regulator.

The voltage regulation shall not exceed  $\pm 2\frac{1}{2}\%$ , from no load to full load, including cold to hot variations at any power factor between 0,8 lagging and unity and inclusive of speed variations within the limits stated in Clause 7.6.

Upon application of full load at a power factor of 0,8 lagging the alternator voltage shall recover to within  $2\frac{1}{2}\%$  of the steady state value within approximately 300 milliseconds.

Upon application of any load specified in transient, maximum voltage dip shall not exceed 20% of the nominal voltage when measured at the alternator terminals.

#### 9.6 Windings

The generator stator windings shall be star connected with the star point brought out and connected to the neutral terminal in the terminal box on the generator to provide a 400/230 volt supply.

#### 9.7. Terminal Box

The terminal box shall be fitted to suit the cable route and it shall be large enough to allow for glanding and connecting the cables specified in Clause 13.1.

#### 9.8. Radio and T.V. Interference

The generating set shall be suitably suppressed within the limits of B.S. 800 against radio and television interference.

### 10. DIESEL GENERATOR LV PANEL & CONTROL PANEL

#### 10.1. Type and Construction

The control panel shall be designed for the control of the diesel generating set with instrumentation and protective devices to meet both manual and automatic mode requirements.

It shall be of folded **2.0 mm thick cold rolled sheet steel construction**, suitable for front entry through hinged doors. Internal chassis plates, circuit breaker pans and gland plates shall be provided. Special attention shall be given to vermin proofing and dust sealing.

Prior to painting, all steelwork must be thoroughly degreased and re-rusted and then primed with a zinc chromate primer. All internal steel chassis plates, gland plates and switchgear brackets shall be painted with white powder epoxy paint and all exterior steel surfaces shall be finished with red powder epoxy paint

The control panel shall be built into three separate sections, with the controls, change-over and on load bypass switch each having its own section.

#### 10.2 Bus-Bars, Wiring, Switchgear, etc.

All bus-bars and wiring shall be adequately rated and suitably supported, and control wiring shall be neatly laced and numbered with durable plastic ferrules, for easy tracing. Suitable terminals are to be provided for incoming and outgoing cables. Suitable sized holes shall be punched in the gland plates for the required number of cable terminations for both incoming and outgoing cables. The cables shall be secured to the gland plate by means of cable glands as Pratley, C.C.G. or other approved. The gland plate shall be suitably braced to prevent distortion after the cables are glanded thereto.

Circuit breakers are to be of moulded case construction and the 4 pole motorized change-over switch and "On Load" bypass switch shall be a reputable make, with full local representation.

All instrumentation shall be of 1.5% accuracy and their performance shall comply with B.S.89. The instruments shall be flush mounted and the dial dimensions shall be 96mm x 96mm.

Tenderers must give assurance with their tender that replacements for the equipment, switchgear and instruments used in the construction of the panel are readily available from stock held in the Republic of South Africa.

## 11. CONTROL PANEL

11.1 The change-over panel is to be situated in close proximity to the generator set. Preferably within the generator plant room or meter room.

11.2 The supply and installation of all cables and supports between the generator set and AMF control panel forms part of this contract.

### 11.3 Changeover Board and Bypass Switch

11.3.1 1 x T.P. Generator MCB. The MCB shall be rated to suit the generator offered and shall have both adjustable thermal and instantaneous overload elements.

#### 11.3.2 If over 150kVA

1 x Set of Four Pole automatic changeover isolators with motor operated mechanisms (Minimum rating of 630amps) and with appropriate auxiliary and control contacts with electrical and mechanical interlocking arrangements to the approval of the Department. The units are to be Socomec, ABB or other approved prior to the close of the Tender.

#### 11.3.4 If over 150kVA

1 x On load hand operated by pass switch (Minimum rating of 630amps) of the isolator type with three operating positions labelled "NORMAL", "OFF" and "BYPASS" to enable the changeover equipment and control circuitry to be by passed for maintenance purposes. The units are to be Socomec, ABB or other approved prior to the close of the Tender.

11.3.6 3 x Open ring CT's suitably scaled.

11.3.7 1 x Open ring VT

11.3.8 Load, neutral and earth bus-bars.

#### 11.3.9 Control Section

- a) Automatic constant voltage battery charger.
- b) Electronic governor control (if required and not an electronic engine).
- c) Control C/B for instruments.
- d) Control relays for change over contacts.
- e) 12 / 24 Volt fuel relays.
- f) Terminal strips.



#### 11.3.10 Door Mounted Components

**NOTE: While the controller incorporates some of this equipment, the specified items as detailed below are STILL REQUIRED and shall be mounted on the door.**

- a) As per the Deep Sea DSE 7320 Controller fitted with DSE Webnet DSE890 complete with separate GPS and GSM antennae 1 x Deep Sea DSE 7320 Generator Controller
- b) 3 x Flush mounted M.D.I. 96 x 96mm dial ammeters suitably scaled
- c) 1 x Flush mounted 96 x 96 mm dial voltmeter, 0 - 500VAC.
- d) 1 x Flush mounted voltmeter selector switch with off, phase to phase and phase to neutral positions.
- e) 1 x Flush mounted running hour meter.
- f) 1 x Emergency stop push button - "Latching type".
- g) 1 x Engine alternator charge indication.

#### 11.4 Control Equipment Requirement

Control systems may not consist of the electromagnetic relay type. Only the Deep Sea DSE 7320 fitted with Deep Sea Webnet DSE890 Gateway complete with separate GPS and GSM antennae or equivalent (Subject to approval by DoH prior to the closure of the Tender) solid state programmable systems will be accepted.

The solid state controller and associated systems wiring shall be to the control system manufacturer's guidelines and shall be adequately protected against transient over voltages arising from lightning effects, switching surges, power system surges or mains and alternator borne noise/interference. Full details of the suppression systems are to be provided at tender. Wiring to and from the solid state programmable controller is to be screened as necessary to prevent electrostatic and magnetic interference from adjacent wiring/systems.

## SPECIFICATION FOR CONTROLLER

### FRONT PANEL INDICATORS AND DISPLAYED MESSAGES

The controller status including Warning and Shutdown/ Critical alarms shall be indicated by a combination of LCD and messages on the LCD display.

CONDITION	LCD	DISPLAY MESSAGE	WARNING	SHUTDOWN
HIGH ENGINE TEMPERATURE		X		X
LOW OIL PRESSURE		X		X
OVER SPEED		X		X
UNDER SPEED		X		X
BULK TANK FUEL LEVEL (LITRES & PERCENTAGE)	X			
BASE TANK FUEL LEVEL (LITRES & PERCENTAGE)	X			
BULK TANK LOW FUEL AT 30% OF CAPACITY	X	X	X	
BULK NO FUEL AT 10% OF CAPACITY	X	X		X
LOW BULK TANK		X	X	
LOW WATER		X		X
START FAILS AFTER 3 CRANKS AT 10 SECOND INTERVALS.	X	X		X
EMERGENCY STOP	X	X		X
SHUTDOWN / CRITICAL	X	X		X
MAINS PHASE ROTATION FAULT		X		X
HIGH MAINS VOLTS		X		X
LOW MAINS VOLTS		X		X
MAINS ON	X	X		
MAINS ON LOAD	X	X		
ALTERNATOR ON	X	X		
ALTERNATOR ON LOAD	X	X		
ALTERNATOR PHASE ROTATION		X		X
HIGH ALTERNATOR VOLTS		X		X
LOW ALTERNATOR VOLTS		X		X
BATTERY VOLTS FAULT		X	X	
ALTERNATOR CHARGE FAULT		X	X	
AUTO	X			
TEST	X			
MANUAL	X			
MANUAL START	X			
MANUAL STOP	X			
MANUAL OR TEST (NOT IN AUTO)	X			
ALARMS	X			
EVENT LOG	X			
TIME DELAYS IN SECONDS				
MAIN FAILURE DELAY	10			
START-UP TIME	5			
MAINS RETURN DELAY	60			
COOL DOWN DELAY BEFORE SHUT DOWN.	120			

## FRONT PANEL SWITCHES

As per the Deep Sea 7320 controller

## PLANT OPERATION

The mode selector touch pad functions shall be as follows

OFF/RESET	Control system off and alarm condition reset.
AUTO	Automatic starting and stopping of the set dependent on the mains supply.
MANUAL	Starting and stopping activated manually. In this mode the load will not be transferred in the event of a mains failure.
TEST	The set will start automatically in this position. The load will be taken by the alternator in the event of a mains failure and will run off load.

## LOGGING OF EVENTS

As per the Deep Sea DSE 7320 Controller fitted with DSE Webnet DSE890 Gateway complete with separate GPS and GSM antennae.

## USER PROGRAMMABLE

As per the Deep Sea DSE 7320 Controller fitted with DSE Webnet DSE890 Gateway complete with separate GPS and GSM antennae.

## **12. ELECTRICAL**

### **12.1 Cables**

Cables between the generator set and control panel shall be supplied and installed in accordance with the requirements of the S.A.N.S. Wiring Code (S.A.N.S. 10142 – 1:2017 as amended).

### **12.2. Terminations**

The cables are to be made off with suitable cable glands as C.C.G, Pratley or other approved. The cable glands at the control panel shall be secured to the gland plate in the base section of the panel and at the generator end to the terminal box.

The cable conductors shall be terminated with suitably rated pressure crimped cable lugs.

### **12.3. Earthing**

The neutral point of the generator shall be solidly connected, by means of an appropriate size of insulated earth conductor, to the earth bar in the alternator and in the panel. All plant, ancillary equipment and steel work in the stand-by plant room shall be suitably bonded together with an appropriate size of bare copper tape which shall also be connected to the earthbar.

An Earth Mat should be installed (if not already in place) of sufficiently low impedance to match the generator rating.

#### 12.4. Phase Rotation

The Contractor shall ensure that the mains and generator phase rotations are identical. The existing phase rotation shall be determined prior to the changeover shutdown to ensure that the new set is connected with the same phase rotation.

#### 13. PAINTING

The engine and generator shall be painted **uniformly** with best quality enamel paint in a **colour approved by the Department**.

The control panel shall be painted with best quality powder coated signal red paint.

#### 14. TESTING

##### 14.1. Testing At Contractor's Premises

An acceptance test shall be carried out at the Contractor's works to establish that the diesel generating plant and its ancillary equipment meets with the requirements of the specification. The Contractor shall give the consultant at least seven days' notice prior to testing the plant. In the event of the plant failing the test and having to be re-tested, at some future date, all expenses (including travelling) incurred by the consultant in attending the second test will be to the Contractor's account. All fuel used for the test will be for the tenderers account. All test equipment including load banks must be present and readily available on the day of the FATs and will be for the bidders account

- a) Simulate a mains failure to automatically start the plant from cold to test its ability to attain full rated speed and voltage and assume the full load in the specified time of ten seconds.
  - b) Test run the plant at full load for a period of one hour.
  - c) Immediately after the above specified run, without stopping the plant, run it for a further hour at 110 % load.
  - d) Test the plant with regards to voltage dip, voltage and frequency recovery, with a sudden application of various loads.
  - e) Test the plant for its ability to assume full rated load immediately on failure of the normal supply.
  - f) Test and demonstrate (by simulation only where actual Conditions could damage the plant and its ancillary equipment) the correct operation of the engine safety controls and alarms together with other alarms as specified.
  - g) Any other tests the client may consider necessary to establish that the diesel generator and its ancillary equipment as a whole is functioning correctly and in accordance with the specification.
  - h) The aforementioned tests must be completed together with the pre-commissioning checksheets as per the attached Annexure – "DEPARTMENT OF HEALTH - GENERATOR PRE-DELIVERY SHEET REV 3.2 OCT 2020". – (ANNEXURE 7)
- ***The testing at Contractors facilities will include all accommodation, transportation and subsistence in the event of the manufacturer's premises falling outside of the eThekweni District and shall be at the cost of the Contractor for the appointed DOH project manager.***

**NB** The Contractor shall provide necessary instruments and equipment for carrying out the tests. The test equipment shall be capable of producing 100 % load for one hour and 110 % load for a further hour continuously without interruption. The test load shall be adjustable and balanced over three phases. (Load bank to ready and available on day of Factory Acceptance Test)

The instrumentation shall be capable of recording and producing printed data pertaining to transient voltage dips, recovery time, applied load, etc, as specified in Clause 9.5.

#### 14.2. Tests On Site

On completion of the installation of the plant, the following test shall be carried out.

- a) Automatic starting and stopping with load change over. The load in this instance will be provided by the client.
- b) Test by simulation only of the operation of the engine protection and alarm devices.
- c) Any other tests which the Project Leader may require on site.

### 15. NOTICES & LABELS

#### 15.1. Warning Notice

The Contractor shall provide and install in a conspicuous position in the plant room a clearly legible and indelible notice 450 x 450mm made from non-deteriorating material, preferably plastic with red letters on a white background worded to read as follows:

**"DANGER**

**THIS ENGINE WILL START WITHOUT NOTICE. TURN THE CONTROLLER OFF AND PRESS THE EMERGENCY STOP BUTTON IN BEFORE WORKING ON THE PLANT."**

- 15.2 All labels shall be RED engraved letters on WHITE Ivorene glued with super glue or pop riveted to cover plates where applicable. Letter size shall be a minimum of 3mm.

### 16. OPERATING AND MAINTENANCE MANUALS, ETC.

The Contractor shall supply three complete comprehensive sets of operating and maintenance manuals, complete with schematic control diagrams and complete spare parts list for both engine and generator.

The above manuals are to be handed to the authorized representative on completion of the installation.

In addition a complete schematic diagram of the power and control circuitry is to be mounted in a glass fronted wooden or non-ferrous metal frame and fixed to the canopy door adjacent to the generator control panel.

The Contractor is to provide a schedule containing particulars and part numbers of all major components e.g. relays, timers etc. of the control circuitry to facilitate the ordering of spares.

**NOTE:** Under no circumstances will **Practical Completion** be taken of the plant and equipment unless these requirements have been completed.

## 17. DRAWINGS

Within one month of the receipt of order the successful Tenderer shall submit prints of each of the following drawings for approval:-

- a) General arrangement of the stand-by plant switchboard front panel.
- b) Schematic of the complete electrical systems, including starter motor, battery and automatic battery charger.
- c) Dimensioned layout of all plant in **generator plant-room**.
- d) Single Line Diagram of the Essential/Non-Essential circuit for the **Nurses Residence**

## 18. SPARE PARTS

Tenderers must **provide an assurance** with their Tender that spare parts for the plant offered by them as a whole are readily available within the Republic of South Africa and to state where these **spare parts** are available.

## 19. GUARANTEE AND MAINTENANCE

### 19.1. General

The Contractor shall guarantee and maintain the Contract Works for a period of twelve months (12) after **Works Completion** of the plant. During the maintenance period the Contract Works shall be maintained as specified in Clause 21 by the Contractor and any defective material, equipment or workmanship (excepting proven, willful or accidental damage, or fair wear and tear) shall be made good with all possible speed at the Contractor's expense and to the satisfaction of the client.

### 19.2. Making Good

When called upon by the client the Contractor shall make good on site and shall bear all expense incidental thereto including making good of work by others, arising out of removal or reinstallation of equipment. All work arising from the implementation of the guarantee or maintenance of equipment shall be carried out at times which will not result in any undue inconvenience to users of the equipment or occupants of premises.

If any defects are not remedied within a reasonable time the client may proceed to do the work at the Contractor's risk and expense, but without prejudice to any other rights which the client may have against the Contractor.

### 19.3. Latent Defects and Failure to Comply with Specification

The client reserves the right to demand the replacement or making good by the Contractor at his own expense of any part of the Contract which is shown to have any latent defects or not to have complied with the Specification, notwithstanding that such work has been taken over or that the guarantee period has expired.

#### 19.4. Qualification by Tenderer

Should any specified materials or equipment in the Tenderer's opinion be of inferior quality, or be unsuitably employed, rated or loaded, the Tenderer shall prior to the submission of his tender advise the consultant accordingly. His failure to do so shall mean that he guarantees the work including all materials or equipment as specified.

#### 20. MAINTENANCE

At six monthly intervals (2) **OR at every 250 hours** during the guarantee period of twelve months, starting from the date of Works Completion, the Contractor shall adjust and maintain the standby plant and its ancillary equipment in proper working order. As a minimum requirement the Contractor shall:

- a) Check and top-up if necessary, the fluid levels in the radiator, engine sump, fuel oil tank and batteries.
- b) Test run the standby plant and ancillary equipment for a period of 15 minutes.
- c) Wipe down the standby plant and its ancillary equipment and report on any evidence of any fluid leaks or other defects.
- d) Fill in the standby plant logbook.

***The minor and major services must be done in accordance with "Annexure 6A & 6B - KZN DOH Generator Preventative Maintenance Service Programme - Annual Bi-Annual Service".***

The contractor is to allow for **6 major services during the 52 weeks warranty period including bi-annual fuel remediation and tank cleaning.**

The cost of such inspections, maintenance, adjustments, repairs, etc., shall be included in the tender price, but the cost of renewing any part which may become worn through fair wear and tear, or damaged beyond the control of the Contractor (provided this is not due to unsuitable design) shall be excluded.

If during the guarantee and maintenance period the standby plant is not in working order for any reason for which the Contractor can be held responsible, then the Contractor will be notified and immediate steps shall be taken by him to remedy the defects. Should the standby plant defects be so frequent as to become objectionable or should the equipment otherwise prove unsatisfactory during the guarantee period of twelve months, the Contractor shall, if called upon by the client, at his own expense replace the whole or such parts thereof as the client may deem necessary with equipment to be specified by the client. Approval - tacit or otherwise - of the equipment installed shall be considered as provisional only and shall not invalidate the client's right as indicated above.

PROVINCE OF KWAZULU-NATAL  
DEPARTMENT OF HEALTH

BID No. ZNB ZNB -/2023-H

ST. MARY'S HOSPITAL  
INSTALLATION OF NEW 250KVA STANDBY GENERATOR AND BULK DIESEL TANK

PART THREE

PARTICULAR SPECIFICATION

**3.1** GENERAL

This particular specification must be read with, and shall form part of, Part Two of this document (Technical Specification).

In so far as the conditions contained herein are at variance with any obtained in the Technical Specifications, the contract shall be interpreted in terms of this Part Three (Particular Specification).

**3.2** SCOPE OF WORKS

3.2.1 The contract comprises the design, manufacture, assembly, delivery to site, off-loading at site, installation, testing, commissioning and handing over in first class working order one standby generator sets:

3.2.1.1 250kVA indoor type standby diesel generating sets and all ancillary equipment necessary to comply with the requirements of this specification.

3.2.2 The generator set shall comprise unless otherwise stated, of a diesel engine coupled to an alternator mounted on a common base, a 72-hour fuel tank, a set of starting batteries, automatic charging unit, interconnecting cables, a control panel housing the generator M.C.C.B. and all necessary switchgear, including the change-over equipment and "on load" bypass switch.

3.2.3 The contractor shall also provide for the following:

- Manufacture, supply and deliver a single 250 kVA, 400V, 50Hz, diesel standby generator set
- Supply and deliver all the needed protection equipment, electrical panels, cables and terminations needed for the complete installation.
- Supply, deliver, install and commission LV Panel (3CR12) – including change-over & bypass switches, breakers, bus-bars and associated wiring
- Decommission, rig out, containerise as per DOH specifications and deliver to Wentworth Hospital Strategic Stores:
  - Existing 120kVA diesel generator.
  - Existing LV Panel and peripheral/ancillary equipment, day-tank
  - Exhaust, radiator louvres
- Manufacture, supply, deliver and install the engine exhaust for generator.



- Base tank to be installed beneath the generator and in conjunction with bulk tank, have sufficient capacity to allow for 72 hour standby power. (i.e. Generator must be able to run for 72 hrs at 100% load.)
- Self Bunded Bulk tank to feed generator day tank - All pipework and electronic cables to be necessary for the capacity upgrade to be installed.
- Supply and install the standard controller with WebNet reporting module, which allows remote monitoring of the plant and diesel system.
- Install new warning enclosure linked to all generator alarms, complete with siren and strobe.
- Fuel System to comprise of a water/fuel separator complete with new housing and filter.
- Refurbish the **Substation/Meter Room AND Generator Plant room**. This includes paintwork and finish of walls, floor and ceiling:
  - a) Including: doors, windows, vents, cable tunnels, lighting, LV panels and make good wall-mounted drawings.
  - b) **Flooring**: Cleaning, making good of the surface and painting. Sand down, patch inconsistencies with rock set and apply two coats of epoxy floor paint (grey).
  - c) Cable tunnels to be cleaned and covers to be replaced/added if necessary.
  - d) **Walls**: Cleaning, making good of the surface and painting; this is to allow for any building/civil works that must take place. The doors and frame should be replaced if necessary to accommodate the larger sized generator into the plant room. All brickwork and plaster to be reinstated and must returned to its original state as per the existing building material. Sand down, patch inconsistencies with rock set and apply two coats of epoxy floor paint (grey)
  - e) **Ceiling**: Cleaning, making good of the surface, sand down, patch inconsistencies with rock set and apply two coats of white enamel paint.
  - f) Paint colour to be discussed during site handover. Paint specification should be Class 4 – “Typical area”.
  - g) Lighting lux levels must adhere to OHS Act (No.85 of 1993) and SANS 10400, SANS 10114-1 lighting requirements. Contractor to install additional lighting if necessary.
  - h) Wall-mounted drawings – refer to Part 17 & 18 within Part 2 of this document.
  - i) Renew water proofing and gutters.
  - j) Remove redundant cable ladders/trays
- Repaint/Respray panel doors within meter room; red to indicate Essential Supply
- Install and commission the fire protection for the generator set.
  - **NB: Contractor to engage with local fire chief (inspection authority) before installation prior to issuing for fire compliance certificate for the generator plant room.**
  - **Supply, deliver and install fire detectors (Contractor may utilise existing Fire Detection and Alarm Panel)**
  - **Supply, deliver and install fire extinguisher equipment (mounted)**
  - **Supply, deliver and install diesel spill kit**
- Install sound attenuation system whereby the sound level does not exceed 70dB(A) 1m away from the genset.

- An Earth Mat should be installed (if not already in place) of sufficiently low impedance to match the generator rating.
- Submission of Electrical Engineers Design:
  - Submission of Engineers Design Report for KZN DOH approval
  - Submission of Single Line Diagram for KZN DOH approval
- Obtain Fire Compliance of the Installation which includes generator and bulk fuel storage unit.
- Obtain Electrical Certification of Compliance for the electrical installation
- Training to be provided to selected staff at the ST. MARY'S HOSPITAL
- Maintain the installations for 1 year after Practical Completion. (TWO services to the generator and diesel tank installations which includes fuel remediation and tank cleaning.)
- As built drawings: standby plant arrangement, schematics of plant room, complete electrical system.
- Heat Extraction and Plant room lighting to form part of the Essential supply from the generator.

PROVINCE OF KWAZULU-NATAL  
DEPARTMENT OF HEALTH

BID No. ZNB 5245/2023-H

ST. MARY'S HOSPITAL – INSTALLATION OF NEW PRIME POWER 250KVA GENERATOR AND BULK TANK

PART FOUR

SCHEDULE OF EQUIPMENT

4.1 GENERAL

THE BIDDER MUST COMPLETE THE FOLLOWING SCHEDULE OF INFORMATION AND ARE TO SUBMIT WITH THEIR TENDER COMPREHENSIVE LITERATURE ON THE EQUIPMENT OFFERED.

**FAILURE TO COMPLETE THIS SCHEDULE IN ITS ENTIRITY SHALL LEAD TO DISQUALIFICATION OF THE BID.**

4.2 DIESEL ENGINE AND ALTERNATOR INFORMATION - DIESEL ENGINE No.1

4.2.1 DIESEL ENGINE 250 kVA 400/230-volt

- a) Make and Model .....
- b) Type (two or four stroke).....
- c) Performance Parameters
  - i) Rated output at sea level: Prime Power: .....kVA / kW.  
Standby Power.....kVA / kW.
  - ii) Rated output at .....metres above sea level (Altitude of hospital/Institution)  
Prime Power .....kVA / kW.  
Standby Power.....kVA / kW.
  - iii) Ambient air temperatures at .....metres above sea level (Altitude of hospital/Institution)  
Minimum °C.....  
Maximum °C.....
- d) Governed speed .....RPM
- e) Number of cylinder .....
- f) Diameter of cylinders .....mm
- g) Stroke of piston .....mm
- h) Piston speed .....m/minute

- i) Type of air cleaner .....
- j) Type of lubricating oil filter .....
- k) Make and type of injection system .....
- l) Type and number of fuel filters .....
- m) Manufacture and type of turbo-charger .....
- n) Manufacturer and type of governor .....
- o) Max cyclic variations .....
- p) Speed variation for sudden release or application of load:
  - i) Temporary .....
  - ii) Permanent .....
- q) 100% Rated full load may be applied seconds after initiation of starting sequence .....
- r) Specific fuel consumption at full load. Litres/ HR (submit curves) .....
- s) Air quantity required for engine cooling .....cu.m/min.
- t) Cross sectional area of radiator air discharge outlet required .....

**STARTING BATTERY**

- a) Manufacturer .....
- b) Type .....
- c) Capacity.....
- d) Voltage.....

**ALTERNATOR**

- a) Make .....
- b) Type .....
- c) Type of bearings .....
- d) Method of lubrication .....
- e) Rated load at 0.8 power factor at 400 / 230 volt 50Hz 3 Phase
  - i) Continuous rating .....Kva.....Amps.....
- f) Efficiency of alternator at full load .....
- g) Output voltage within governed speed range at:
  - i) No load .....Volts
  - ii) 50% load .....Volts
  - iii) 100% load .....Volts
  - iv) 110% load .....Volts
- h) Method of voltage regulation .....

**CONTROL CUBICLE**

- a) Manufacturer .....
- b) Dimensions of control cubicle: Length.....mm  
Width.....mm  
Height.....mm
- c) Type of control equipment .....
- d) Type, make and rating of 4 pole by pass switch .....
- e) Type, make and rating of 4 pole motorised change-over switch .....
- f) Rupturing capacity at rated voltage of main circuit .....KA.
- g) Method of tripping employed in main circuit breaker .....
- h) Range of load setting of main circuit breaker .....
- i) Electrical and mechanical interlock provided: YES..... NO..... TYPE .....

**VOLTMETER**

- a) Make and type .....
- b) Dial dimensions .....
- c) B.S.S. accuracy .....

**MAXIMUM DEMAND AMMETERS**

- a) Make and type .....
- b) Dial dimensions .....
- c) Time lag .....
- d) B.S.S. accuracy .....

**FREQUENCY METER**

- a) Make and type .....
- b) Dial dimensions .....
- c) B.S.S. accuracy .....

**SELF BUNDED FUEL TANKS**

Base tank size (Not to exceed 1000 litres in volume): .....

Bulk tank size . N/A.

Bulk tank manufacturer and model number: N/A.

**EXHAUST**

Exhaust material .....

Exhaust material, silencer and outlet pipe .....

**MASS OF PLANT** ..... kg

**OVERALL DIMENSIONS OF PLANT**

Length .....

Height .....

Width .....

**TYPE AND RATING OF EQUIPMENT TO BE USED FOR LOAD TESTS**

.....

**COMPANY NAME AND ADDRESS OF BULK TANK INSTALLATION**

.....

.....

**IS THE TENDERER A DIESEL GENERATOR SET MANUFACTURER WITH LOCAL MANUFACTURING AND BACKUP FACILITIES** .....YES / NO.....

**IS THE TENDER 100% TO SPECIFICATION** .....YES / NO.....

If the answer is NO, provide reasons for the deviation from the specification.

.....  
.....  
.....  
.....  
.....

**DATE**..... **SIGNATURE OF TENDERER**.....

**COMPANY STAMP**





**KWAZULU-NATAL PROVINCE**

**HEALTH  
REPUBLIC OF SOUTH AFRICA**

## Occupational Health and Safety Specification

ST MARY'S HOSPITAL NURSING HOME: GENERATOR REPLACEMENT



## **KWAZULU-NATAL PROVINCE**

**HEALTH  
REPUBLIC OF SOUTH AFRICA**

### **1. Introduction**

The Department of Health Kwa Zulu Natal enters into contracts with Contractors for the replacement of a generator at St Mary's Hospital Nurses residence. This document describes the requirements of compliance to which the Principal Contractor is to adhere in relation to the scope of works. This document defines the minimum management requirement that is to be implemented by the Principal Contractor for the management of Health and Safety on the Health care facility.

The aim of this document is to present the health and safety aspects that need to be controlled and managed on this contract. The client reserves the right to make changes as and when the Client deems fit to address issues of Occupational Health & Safety (OHS) Compliance. The Client will not entertain any claim of any nature whatsoever which arises as a result of costs incurred or delays being experienced due to the Contractor not complying with the requirements of this document or any other applicable legislative requirements imposed on the contractor.

The Principal Contractor will be required to submit a Health and Safety File for approval prior to commencement of work. Arrangements for such approval shall be made with the OHS Department. The Principal Contractor shall submit proof that its appointed contractors Safety file has been approved.



## **2. Definitions & Abbreviations**

- 2.1 “Client”** means KZN Department of Health
- 2.2 “CR”** refers to the Construction Regulations 2014
- 2.3 “OHS”** means Occupational Health and Safety
- 2.4 “DoL”** refers to the Department of Labour
- 2.5 “DOH”** refers to the Department of Health
- 2.6 “HCS”** refers to the Hazardous Chemical Substances Regulations
- 2.7 “GSR”** refers to the General Safety Regulations
- 2.8 “FR”** refers to Facilities Regulations
- 2.9 “PPE”** means Personal Protective Equipment
- 2.10 “MSDS”** means Material Safety Data Sheets
- 2.11 “EMR”** refers to Electrical Machinery Regulations
- 2.12 “ERW”** refers to Environmental Regulations for Workplaces
- 2.13 Principal Contractor** means an employer appointed by a Client to perform Construction Work
- 2.14 Competent Person** means a person who –

(a) Has in respect of the work or task to be performed the required knowledge, training and experience and where applicable, qualifications, specific to that work or task. Provided that where appropriate qualifications and training are registered in terms of the provisions of the National Qualifications Framework Act, 2000 (Act No. 67 of 2000), those qualifications and training must be regarded as the required qualifications and training, and

(b) Is familiar with the Act and with the applicable regulations made under the Act

**2.15 OHS Plan** means a site, activity or project specific documented plan in accordance with the Client's Health & Safety Specification

**2.16 Health & safety File** means a file or other record containing information in writing required by Construction Regulations 2014.

**2.17 Hazard Identification and Risk Assessment and Risk Control (HIRA)** means a documented plan, which identifies hazards, assesses the risks and detailing the control measures and safe working procedures, which are to be used to mitigate and control the occurrence of hazards and risks during construction or operation phases.

**2.18 The Act** means, unless the context indicates otherwise, the Occupational Health and Safety Act, 85 of 1993 and Construction Regulations 2014 promulgated there under, (OHSA).

**2.19 Hazard** means a source of or exposure to danger

**2.20 Risk** means the probability or likelihood that a hazard can result in injury or damage.

**2.21 Occupational Health Practitioner** refers to either Doctors or Nurses with the following requirements:

#### **Doctors**

(a) Registered and in good standing with the Health Professions Council of South Africa (HPCSA)

(b) has a tertiary qualification in Occupational Health or Medicine which is registered as an additional qualification with HPCSA or

(c) be registered as a specialist in Occupational Medicine with HPCSA

## **Nurses**

- (a) registered and in good standing with the South African Nursing Council (SANC) and
- (b) have a tertiary qualification in Occupational Health Nursing that is recognised and registered with SANC

**2.22 dead** means at or about zero potential and isolated from any live system;

**2.23 earthed** means connected to the general mass of earth in such a manner as will ensure at all times an immediate safe discharge of electrical energy;

**2.24 "live" or "alive"** means electrically charged

**2.25 portable electric tool** means any electrically operated implement, with the exception of ordinary household electrical appliances, which is designed for use with-

(a) a flexible cord at the supply end and which is intended for use by hand and which is to be carried by hand at the place of work; or

(b) a flexible cable at the supply end and which is intended for use by hand and which is to be moved by hand at the place of work;

**2.26 electrical installations** means any machinery, in or on any premises, used for the transmission of electricity from a point of control to a point of consumption anywhere on the premises, including any article forming part of such an electrical installation irrespective of whether or not it is part of the electrical circuit, but excluding

(a) any machinery of the supplier related to the supply of electricity on the premises;

(b) any machinery which transmits electrical energy in communication, control circuits, television or radio circuits

(c) an electrical installation on a vehicle, vessel, train or aircraft; and

(d) control circuits of 50 V or less between different parts of machinery or system components, forming a unit, that are separately installed and derived from an independent source or an isolating transformer.

**2.27 installation work means:-**

- (a) the installation, extension, modification or repair of an electrical installation;
- (b) the connection of machinery at the supply terminals of such machinery; or
- (e) the inspection, testing and verification of electrical installations for the purpose of issuing a certificate of compliance;

**2.28 point of supply** means the point at which electricity is supplied to any premises by a supplier;

**2.29 hand-powered lifting device** means lifting device consisting of one or more sheave components reeved with chains; steel rope or fibre ropes; used solely for the raising and lowering of a load or for moving it horizontally and includes chain blocks; lever hoists; hand chain hoists; steel-wire rope pullers and winches; but does not include hand-powered hydraulic lifting devices

**2.30 Lifting machine** means a power driven machine that is designed and constructed for the purpose of raising or lowering a load or moving it in suspension; but does not include an elevator; escalator or hand-powered lifting device

**2.31 lifting tackle** means chain slings; wire ropes slings; woven webbing slings; master links; hooks; shackles and swivels; eye bolts; lifting or spreader beams; tongs; ladles; coil lifters; plate lifting clamps and drum lifting clamps used to attach a load to a lifting machine.

**3.1 Leadership and Commitment**

The Contractor acknowledges the KZN Department of Health's strong commitment to Health and Safety and the Contractor affirms that it has a written Health and Safety Policy, and is actively supported and endorsed by the Contractor's management. The Contractor represents that its written policy is widely disseminated and understood among its employees, and that its policy includes a description of the Contractor's

organization, procedures and methods of communication to and from personnel. The Contractor must provide copies of its policy and policy statement to Department of Health (DOH).

### **3.2 Legal Requirements and Regulations for Health and Safety**

The Contractor warrants that it is familiar with the contents and implications of the applicable Legislation; codes of practice, guidelines and standards applicable to the services to be provided. The Act and the Regulations, where applicable, require development and implementation of Work Method Statements for a range of high-risk activities, which, where applicable, the Contractor must develop and implement. The Contractor must ensure that its personnel and its subcontractor's personnel have been informed of all such laws, Acts, regulations, codes of practice, guidelines and standards.

### **3.3 Contractors' General Requirements for Health and Safety**

The Contractor is solely responsible for carrying out the work under the Contract having the highest regard for the health and safety of its employees, the KZN Department of Health's employees and persons at or in the vicinity of the Site, the Works, temporary work, materials, the property of third parties and any purpose relating to the Contractor carrying out its obligations under this Contract.

The Contractor must initiate and maintain safety precautions and programs to conform to all applicable Health and Safety laws or other requirements, including requirements of any applicable government instrumentality and DOH institutions site requirements.

The Contractor must, at its own cost, erect and maintain safeguards for the protection of workers and the public. The Contractor must manage all reasonably foreseeable hazards created by performance of the work.

**The Contractor must:**

- Provide all things and take all measures necessary for maintaining proper personal hygiene, ensuring safety of persons and property and protecting the environment at or near the Site
- Avoid unnecessary interference with the passage of people and property at or near the Site
- Prevent nuisance and excessive noises and unreasonable disturbances in performing the Services
- Be responsible for the adequacy, stability and safety of all of its site operations.
- Costs for the above are borne by the Contractor
- The Contractor must comply and is responsible for ensuring that all of its Sub-contractors comply with the relevant legislation(s) and statutory regulations for health and safety, the KZN Department of Health's Health & Safety requirements included in the Contract and other document pertaining to health & safety contained in the Program Health & Safety Management System and include standards, policies, procedures, guidelines and safe work instructions
- The contractor must appoint a Competent Safety Officer who will ensure that OHS Act and its regulations are implemented.
- The contractor must appointment a full time Safety Officer to ensure compliance on site.

**3.4 Contractor's Health and Safety Management Plan**

- The Contractor must prepare, implement and administer the Contractor's Health and Safety Management Plan.
- The Plan must be in writing and must be forwarded to the OHS Department prior to mobilisation to the site.
- The Health and Safety Management Plan must comply with this specification including Site Rules & Requirements, and applicable law relating to workplace health, safety and environmental standards.
- Any proposed amendments or revisions to the Contractor's Safety Management Plan must be submitted to DOH for acceptance.

- The Health and Safety Management Plan must provide a systematic method of managing hazards according to the risk priority and must include all mobilisation and site set-up activities.
- The Plan must be presented and accepted by DOH BEFORE permission will be granted to the Contractor to mobilise to site
- The Plan will be audited for completeness by the KZN Department of Health.
- The contractor shall comply with the requirements of CR 7

The Plan must be presented and accepted by DOH BEFORE permission will be granted to the Contractor to mobilise to site

### **3.5 Minimum requirements for a safety plan:**

- The plan shall demonstrate management's commitment to safety and include, but not be limited to, the following minimum auditable elements:
  - The Contractors' Safety Policy.
  - How safety responsibilities are assigned to different roles within the organisation. Identification of role of Safety Coordinator, and on-site managers
  - Selection, placement and training procedures, including induction and ongoing training in 'Basic Safe Work' and Occupational Health & Safety training for newly hired or promoted supervisors.
  - Occupational Health & Safety communications and meetings, including daily safe task instructions and project safety meetings.
  - Assessment of sub-contractors and Service Providers, including requirements for Health & Safety Plans.
  - Safety awareness.

- Nomination of personnel to carry out safety inspections.
  - Contractor senior management involvement
  - Rules and regulations including safety procedures the Contractor has in place for recurring work activities
  - Personal protective equipment rules.
  - Control of dangerous and hazardous substances
  - System of hazard identification and risk control, such as Risk assessments, Daily Safe Task Instructions and communication.
  - Verification procedures including
  - Daily site safety inspections and audits
  - Inspection of plant, tools and equipment prior to introduction to site and at least monthly thereafter
  - Accident/incident reporting, recording, investigation and analysis, which ensure that corrective action, are taken and this action is communicated to report initiators
  - Evacuation and emergency planning
  - Rehabilitation procedures that encourage an early return to work
  - Record keeping, including details of what is kept and for how long
- 4. Hazard Identification, Risk Assessment and Risk Control**



- The development of a work scope and activity risk profile identifying and considering, safety, health and environmental hazards and exposures.
- Controls to manage risks identified within the risk profile will be formalised and implemented
- The hazard identification and risk assessment process for specific operations and activities and for new activities identified after the development of the project/work scope and activity risk profile.
- The process to be used to review the effectiveness of risk controls
- Workplace hazard inspections shall be effected
- The implementation of a safety observation and coaching process conducted as a minimum by persons in leadership roles
- Method by which daily activities will be assessed for hazards and controls defined before work commences

## **5. Risk Assessment**

- The principal contractor must, before the commencement of any work and during such work, have risk assessments performed by a competent person appointed in written.  
The risk assessment should include-
  - (a) the identification of risks and hazards to which persons may be exposed to

- (b) an analysis and evaluation of the risks and hazards identified based on a documented method
- (c) a documented plan and applicable safe work procedures to mitigate reduce or control the risks that have been identified
- (d) a monitoring plan and
- (e) a review plan
- Furthermore, the contractor shall conduct job/task specific risk assessment. Communication of the risk assessments shall be kept in the OHS file.
- Risk assessment must be performed by a trained risk assessor who has been appointed in writing.
- The principal contractor shall comply with the requirements of CR 9

#### **5.1 Task Specific Risk Assessment**

- Prior to the commencement of each work activity, a Task Specific Risk Assessment (HIRA) is completed; documented and submitted to KZN Department of Health for approval prior to the task commencing.
- The purpose of this exercise is to identify all potential hazards associated with the Work and the work environment, assess the risk these hazards present and then to provide risk control action that deals with those hazards, as well as providing to the workforce involved in the particular work activity, details of any hazards and the proposed controls.

**The Task Specific Risk Assessment must:**

- Describe the operation to be performed in the sequence of the basic job steps.
  - Identify the hazards or potential hazards at each step.
  - Identify the possible consequences for each hazard at each step.
  - Assess and rate each hazard
  - Recommend measures that will be applied to minimise risk
  - Identify the site rules and work instructions applicable to the task
  - Describe how the hazard is controlled such that the residual risk is as low as reasonably practicable and is acceptable to the work crew.
  - Be reviewed prior to each shift.
  - Be acknowledged by way of signature of all personnel involved in the work activity
- 6. Safety Method Statements**
- The Contractor must submit Safety Method Statements to the KZN Department of Health's OHS Department for approval prior to the task commencing.
  - The Task Items listed in the Safety Method Statement must tie up with the task items being assessed in the Task Specific Risk Assessment document.
  - The Safety Method Statement must detail in a step by step and methodical manner how the task is to be done from beginning to the end and must indicate what tools/equipment will be used at each stage and/or how the work area is to be accessed.

**7. Hazardous Materials**

- The Contractor must set out its policy for the use, transportation, handling and storage of fuel and hazardous materials taking into account the legislative requirements.
- The Contractor must ensure that all hazardous materials and waste products are disposed of in accordance with applicable laws and regulations.

#### **8. Incident Management**

- The principal contractor must appoint in writing a competent incident investigator.
- Incident management plan must be developed and implemented by the principal contractor
- All incidents must be investigated and recorded
- Reportable incidents must be reported to the Department of Labour
- Incidents must be reported to DOH within 24 hours of occurrence
- An incident register must be kept on site.
- Incident investigation report inclusive of corrective measures must be submitted to DOH

#### **9. Emergency Preparedness and Procedures**

- The principal contractor must develop an emergency procedure
- The emergency procedure must have; but not limited to:

A detailed response procedure; list of key personnel; details of emergency services;

Steps to be taken in the event of each and every specific type of emergency

- The emergency procedure must be communicated to all employees
- Emergency numbers must be known to all employees and key numbers posted on work areas.

#### **10. First Aid Equipment**

- The principal contractor must appoint in writing a competent first.
- The appointed first aider must be in possession of First Aid Level 2 certificate.
- The contractor must provide his own first aid box
- First aid incidents are to be recorded on a first aid register

#### **11. Unsafe Acts and Conditions**

- The Contractor must implement a system to recognise, correct, and report unsafe acts and conditions associated with all site activities.

#### **12. Occupational Health & Infection control**

- The contract may expose employees to biological agents; contractors must ensure that an adequate risk assessment is prepared and identifies the biological agents and controls thereof.

- Appropriate PPE must be used at all times

### **13. Ergonomic risks**

- The contractor must identify all ergonomic risks
- The contractor must comply with Ergonomics Regulations; 2019

### **14. Extreme weather conditions**

- If weather conditions pose a threat to Health & Safety of employees, be it extreme heat, cold, lightening or any weather condition, the Principal must apply appropriate safety measures.

- For hot environments; cool portable water shall be provided.

### **15. Medical Certificates of Fitness**

- Prior to commencement of works; the principal contractor must submit valid medical certificates of fitness for all employees
- DOH will only accept Medical certificates of fitness obtained from an authorised Occupational health Practitioner
- A procedure to cater for employees with limitations must be developed and implemented by the contractor.
- Employees without valid medical certificates will not be allowed on site.

### **16. Vehicles; Plant and Equipment**

- The contractor must implement and comply with OH&S Act - Electrical Machinery Reg. 9, Driven Machinery Reg. 1 – 20, Electrical Machinery Regulations and Electrical Installation Regulations.

- The Contractor must supply, at his cost, all items of plant and equipment necessary to perform the work and must maintain all items in good order and condition.
- Plant and equipment brought into site must be subjected to inspections
- A list of all plant and equipment must be kept on site
- The contractor must ensure that vehicles and mobile plants comply with the requirements of CR 23
- Vehicles and mobile plants must be inspected daily before use and records thereof must be kept
- Competent personnel must be appointed to use and manage mobile plants.

#### **17. Personnel Protective Equipment/Clothing (PPE)**

- The contractor must provide suitable and adequate PPE to all his/her employees
- PPE must be issued to all workers free of charge and a record of issuing must be kept
- Training must be provided to all employees to ensure they know how to use and maintain their PPE
- The contractor must comply with the requirements of General Safety Regulations

#### **18. Working in Existing Operations**

- Work must be carried out such that no interference is caused.
- Any work which requires section of the Plant to be taken out of operation with resultant interruption to production and/or other activities must be carried out in the absolute minimum of time and be on the basis of the Contractor working around the clock (within legal parameters) for the duration of such work.
- The times when work of this nature can be carried out must be arranged with DOH

#### **19. Lock-out Procedures**

- In operating areas lock out procedures must be done in conjunction with the hospital's representative and communicated to affected parties timeously.
- There must be a separate set of procedures that cover the requirements for lockout, commissioning, start-up and hand over of the completed works.

#### **20. Housekeeping and general safeguarding on site**

- The contractor must comply with the requirements of Environmental Regulations for Workplaces (ERW) and CR 27
- The site must be kept neat and clean at all times
- Accumulated waste must be removed regularly as per the contractors waste management plan.
- The contractor must appoint in writing a competent stacking storage supervisor
- The contractor must comply with the requirements of GSR and CR 28

#### **21. Fire precautions on site**

- The contractor must comply with the requirements of ERW and CR 29
- The contractor must provide compliant fire-fighting equipment
- The contractor must appoint a competent person to deal with fire outbreaks on site.

#### **22. Employee Facilities on site**

- The contractor must provide adequate facilities on site i.e. toilets; eating areas; changing areas and showers etc.
- Employee facilities must be kept clean at all times



- The contractor must comply with the requirements of CR 30

### **23. Portable electric tools**

- The contractor must appoint a competent person who will be responsible for the inspection of portable electrical tools
- Electrical tool list must be kept in the file
- Tagging systems may be used to separate inspected and safe equipment and faulty equipment
- Electrical tools must be kept in a safe state and removed once noted as faulty
- The contractor must comply with the requirements of EMR 10

### **24. Management and Supervision of construction work**

- The principal contractor must appoint in writing a full time competent person as construction Manager with the duty of managing all construction works on a single site; including the duty to ensure OHS compliance.
- The principal contractor may appoint in writing one or more assistant construction managers where deemed necessary
- The appointed construction manager may not manage any other construction sites other than the site in respect of which he/she has been appointed
- The principal contractor must employ a full time competent Health and Safety Officer for this project
- A construction manager must appoint construction supervisors responsible for construction activities and ensuring health and safety compliance on site.
- The contractor must comply with the requirements of CR 8

### **25. Minimum contents of a health & safety file**

- The Principal contractor must open and keep a safety file on site
- The safety file must include all documentation required in terms of the OHS Act and the regulations

- The safety file must be made available to the DOL inspector and the client (KZN DOH representative)
- The principal contractor must comply with the requirements of CR 7

#### **26. Management of Covid-19**

- The contractor must appoint in writing a covid-19 compliance officer
- The contractor must develop a covid-19 management policy & procedure
- The contractor must provide handwashing facilities; where not possible; a sanitising agent to the employees; free of charge
- The contractor must comply with the requirements of Disaster Management Act and regulations

#### **27. Smoking**

- The Contractor must not permit smoking at the Site except within designated smoking areas.

#### **28. Intoxicating Liquor or Drugs**

- The contractor must implement and comply with OH&S Act – General Administrative Regulation 10
- Any person found on the site or attempting to enter site, in possession of or consuming intoxicating liquor or illegal drugs or considered unfit for work from the apparent influence of intoxicating liquor or illegal drugs or prescription drugs, must be removed from the site.

#### **29. Training and Competency**

- Prior to the commencement of the work, the Contractor must provide current documentation to the satisfaction of DOH verifying that the Contractor's personnel are competent and have the appropriate qualifications, job skills and training as required by this Contract and applicable laws.

- The Contractor must ensure that all his employees and his Sub-Contractors' employees working on the site are adequately trained in the type of work to be performed, are trained in relevant procedures and have the appropriate qualifications, certificates and are under competent supervision.
- Training records are to be maintained on site.

### **30. Induction in Health and Safety**

- The Contractor must ensure that no employee of the Contractor or its subcontractors, including transport and delivery Contractors entering the site delivering materials and/or equipment, must proceed to enter the Site or any operations area until they have received all training required under applicable laws and regulations, including, but not limited to, work activity inductions and the KZN Department of Health's Site-specific induction.
- The Contractor must also prepare and present to all its employees its own Contractor Induction, explaining the Contractor's Safety Management Plan, the Contractor's Rules, the obligations imposed by the Occupational Health and Safety Act and Regulations.
- The contractor must comply with: OH&S Act - Section 8

### **31. Fundamental health and safety requirements**

Before any work commences, proof of and the following non-negotiable deliverables are required:

- Incident investigation training by Construction Manager and or Safety Officer
- Letter of good standing with the Workman's Compensation Commissioner
- Legal liability training of all Supervisors and Construction Managers
- Public Liability Insurance

- Competency training certificates of people to execute the job
- Method statements for work to be conducted
- Risk Assessments for every Job/Task
- Signed legal appointments as required by legislation
- Contractors' Safety Officer CV and competency certificates
- Health and Safety Management Plan
- Health and Safety file
- All equipment to be on a current register, backed up by relevant test certificates
- A Medical fitness certificate for each employee with Annexure 3 completed per employee
- Proof of induction (Contractor induction training)

### **32. Close out report**

- The Health & Safety file for the Principal contractor and all contractors requires closure and handover to the client at the completion of the project. Documentation required includes all records from the start of the project.
- Daily or monthly plant inspection records are not required unless they are related to an incident.
- All records to be in electronic format and submitted to DOH for approval before final submission.

**The list of documents to be submitted includes but not limited to:**

- Client specification
- Principal contractor's OHS plan

- Covid-19 management plan
- Organogram/s
- Legal appointments
- Letters of good standing for the project
- Incident records
- Non-conformance records
- Audits
- Method statements
- Risk assessments
- Safe work procedures
- Medical certificates of fitness
- And any other document that may be requested by DOH

**33. OMISSIONS FROM HEALTH SAFETY AND REQUIREMENTS SPECIFICATION**

By drawing up this OHS specification, DOH has endeavoured to address the most critical aspects relating to OHS issues in order to assist the contractor in adequately providing for the health and safety of employees on site. Should DOH not have addressed all SHE/Q aspects pertaining to the work that is tendered for, the contractor needs to include it in the SHE plan and inform DOH of such issues when submitting.

**Contractor's Acceptance & Acknowledgement of the Health & Safety Specification:**

I, \_\_\_\_\_ (print name in full), the undersigned responsible person  
(Contractors 16.1/16.2 Appointee) for:

\_\_\_\_\_ (Company Name) declare that I have read, understood and accept the responsibilities and requirements of this Health & Safety Specification for the project: Replacement of a generator at St Mary's Hospital Nurses Residence will ensure that this Health & Safety Specification is communicated to the relevant parties so that the requirements hereto can be complied with.

\_\_\_\_\_  
**Contractor's Responsible Person**  
(16.1/ 16.2 Appointee)

\_\_\_\_\_  
**Date**



**health**

**Department:**

**Health**

**PROVINCE OF KWAZULU-NATAL**

Baseline Risk Assessment: ST MARY'S HOSPITAL NURSES RESIDENCE: Generator Replacement. Please note this is a baseline risk assessment not a detailed risk assessment of all anticipated activities on site and not in order of activities of the project. The Principal contractor will be required to compile a detailed risk assessment for the project.

**Notes:**

- Please take note that the generator room is located at the nurses residence; communication with the residence must be maintained to ensure that there is no interaction during the activities.
- It must be noted that the plinth for the diesel tank will be allocated close to the parking area; the institution must ensure that there are no vehicles close by to prevent damages.
- It is expected that a crane will be used to remove and place the generator set; contractor to meet all DMIR requirements.

Main Activity	Sub activities	Hazards	Risks	Category			Control Measures	Responsible person
				Safety	Health	Environmental		
Site establishment	Vegetation clearing (Manual)	Snakes Insects Poisonous vegetation Extreme weather conditions	Snake bites Insect bites Skin rashes. Death Heat & cold	Injuries	Skin infections Dust inhalation	Land pollution	Proper Risk assessment Method statements Adequate supervision Training	Contractor
				Injuries	Skin infections Dust inhalation	Land pollution		







		Nearby property	Property damage				Statement	
		Bending and repetitive motions	Awkward postures		Body aches		Medical certification Portable water availability PPE	
		Dust	Dust inhalation		Respiratory illnesses/ irritation Skin irritation			
	Pipe installation	Hand tools	Injuries	Hand and body injuries			HIRA SOP Supervision	Contractor
		Awkward postures	Bending		Back aches			
		Awkward postures	Bending		Back aches		HIRA Supervision Proper PPE	Contractor





Plinth construction {diesel tank}	Removal of current paving	Powered hand tools	Vibration	Hand injuries / White hands	Brick waste	HIRA	Contractor
		Dust	Dust inhalation	Respiratory illnesses/ irritation Skin irritation		Supervision Waste removal schedule Skip/waste receptacle availability PPE Medical fitness Portable water availability Dust suppression methods	
	Manual digging	Hand tools	Injuries	Hand and body injuries	Excavated material		
	Bending and repetitive motions		Awkward postures	Body aches			









