

Additions and Alterations to Ntsonkotha SSS in Lady Frere  
Schedule 3 : Provisional Sums and Contingency Sums

Early Warning Detection &  
Alarm (Dining Hall & Laundry)

7

Item	Description	Unit	Qty	Rates		Nett Amount
				Supply	Install	
<b>3</b>	<b>Provisional Sums and Contingency Sums</b>					
<b>3,1</b>	<b>Provisional Sums</b> These provisional sums may be utilised in full or in part. No expenditure will be allowed without the authority of the Consulting Mechanical Engineers, in writing. These sums may be deleted in full or in part.					
<b>3.1.1</b>	<b>Existing Fire Detection System</b> Allow a provisional sum for the connection to the existing fire detection system, including all necessary precautions during connection process					
3.1.1.1	Existing Fire Detection System	sum	0,00			Rate Only
<b>3,2</b>	<b>Contingency</b> These contingency sums may be utilised in full or in part. No expenditure will be allowed without the authority of the Consulting Mechanical Engineers, in writing. These sums may be deleted in full or in part.					
<b>3.2.1</b>	<b>Contingency</b>					
3.2.1.1	Allow a contingency sum for unforeseen circumstances	sum	1,00	3 000,00		
<b>Total for Schedule carried forward to Summary</b>					R	

Summary Page

Early Warning Detection & Alarm (Dining Hall & Laundry)

Item	Description	Summary
2	Early Warning Detection and Alarm System	
3	Provisional Sums and Contingency Sums	
Sub-total (carried forward to Summary)		

Additions and Alterations to Ntsonkotha SSS in Lady Frere  
Schedule 4 : Girls Dormitory

Early Warning Detection &  
Alarm (Girls Dormitory)

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Item	Description	Unit	Qty	Rates		Nett Amount
				Supply	Install	
<b>4</b>	<b>Early Warning Detection and Alarm System</b>					
<b>4.1</b>	<b>Control Panel</b>					
4.1.1	Analogue addressable 2 loop (TC5200) control panel capable of supporting a maximum of 252 addressable sensors, have a white backlit 240 x 64 mm graphical liquid crystal display (LCD), complete with 28 Amp battery backup and battery charging unit, installer friendly "auto learn", "loop detection" with on board scope facility for commissioning and fault finding, and all fully compliant with BS5839 and EN54.	no.	1,00			
4.1.2	Passive Repeater Panel	no.	0,00			Rate Only
4.1.3	TCP-503 Network card	no.	1,00			
4.1.4	SMS unit to be installed within the above panel	no.	0,00			Rate Only
<b>4.2</b>	<b>Line Isolators</b>					
4.2.1	Line Isolators	no.	10,00			
<b>4.3</b>	<b>Detection Devices</b>					
	Ceiling-mounted, smoke sensitive and heat sensitive, (XP95) addressable type detection devices, complete with plug-in type mounting base and indication light emitting diode (LED) with address card					
4.3.1	Analogue, optical, smoke, detection device	no.	133,00			
4.3.2	Analogue, thermal, detection device	no.	2,00			
4.3.3	Analogue, optical and thermal combination, detection device	no.	0,00			Rate Only
4.3.4	UV/IR beam detector (OSID), smoke, detection device complete with power supplies, batteries and interface units	no.	0,00			Rate Only
<b>4.4</b>	<b>Fire-rated Cable</b>					
4.4.1	Fire-rated PH120 type 1 mm <sup>2</sup> cable (installed into galvanised conduit which shall be supplied and installed by appointed Mechanical Sub-contractor, complete with galvanised draw-wire)	m	1 206,00			
<b>4.5</b>	<b>Remote LED Devices</b>					
4.5.1	Remote LED devices to suit above detection	no.	45,00			
<b>4.6</b>	<b>Sounders (Sirens)</b>					
4.6.1	Ceiling-mount addressable sounder (siren) and strobe light mounted on a shallow base with build in isolator	no.	16,00			
<b>Total for Schedule carried forward</b>						<b>R</b>

## Schedule 4 : Girls Dormitory

Item	Description	Unit	Qty	Rates		Nett Amount
				Supply	Install	
<b>4</b>	<b>Early Warning Detection and Alarm System (continued)</b>			<b>Amount Brought Forward</b>		
<b>4,7</b>	<b>Strobe Warning Lights</b>					
4.7.1	Ceiling mounted strobe warning light with shallow base, red lens, supervision facilities for short and open circuits, capable of isolating, flash energy of 0.5 joule and IP65 rating, suitable for 24 Volt operation	no	14,00			
<b>4,8</b>	<b>Break-glass Units (Call Units)</b>					
	Surface-mounted, break-glass unit, complete with a resettable MCP front, suitable clip-on type transparent lift-flap and seal and normally-open type contacts rated at 5 A with resettable MCP front which shall require firm pressure / impact to be broken and shall be fitted with transparent plastic film, to prevent injury to person activating call, labelled "FIRE Break Glass Press Here" with a directional arrow on the face, fitted with a test probe, to enable on-site testing without breaking MCP front complete with built in isolator					
4.8.1	Break-glass unit, as above	no.	11,00			
<b>4,9</b>	<b>Fire Suppression System</b>					
4.9.1	Electrically-fused, thermally-activated, self-contained, aerosol-generating fire suppression system for fitment into areas, compete with detection devices, interface units, gas control unit, gas status unit etc.	sum	0,00			Rate Only
<b>4,10</b>	<b>Addressable Interface / Relay Unit</b>					
4.10.1	Addressable I/O Unit with build in isolator	no.	0,00			Rate Only
	Addressable Mains I/O Unit with build in isolator	no.	0,00			Rate Only
4.10.2	Addressable Switch Monitor Unit with build in isolator	no.	0,00			Rate Only
<b>4,11</b>	<b>Magnetic Double Door Release Unit</b>					
4.11.1	Sequential Magnetic Double Door Release Unit complete release push button and door closers	no.	0,00			Rate Only
4.11.2	Power supplies for magnetic door release units	no.	0,00			Rate Only
<b>Total for Schedule carried forward to Summary</b>						<b>R</b>



## Schedule 4 : Girls Dormitory

Item	Description	Unit	Qty	Rates		Nett Amount
				Supply	Install	
4	Early Warning Detection and Alarm System (continued)			Amount Brought Forward		
4,12	PVC SANS Approved Conduit and Accessories					
	Supply, delivery to site, installation of conduit on surface, in ceiling void, chased into or cast into concrete works and / or brickwork, including bushes, locknuts, couplings, galvanized saddles,					
41.12.1	25 mm diameter conduit	m	1 046,00			
41.12.2	50 mm diameter conduit box for 25 mm conduit	no.	221,00			
41.12.3	75 mm x 75 mm x 50 mm conduit box	no.	11,00			
41.12.4	2.5 m x 25 mm diameter sprague, fitted with 50 mm conduit box on one end and 50 mm round lid on other end, with bushes and locknuts	no.	0,00			Rate Only
4.12.4	Extra over for painting conduit (colour to be specified) (accessories inclusive in measurement)	m	8,00			
Total for Schedule carried forward to Summary					R	

## Schedule 5 : Provisional Sums and Contingency Sums

Item	Description	Unit	Qty	Rates		Nett Amount
				Supply	Install	
<b>5</b>	<b>Provisional Sums and Contingency Sums</b>					
<b>5,1</b>	<b>Provisional Sums</b> These provisional sums may be utilised in full or in part. No expenditure will be allowed without the authority of the Consulting Mechanical Engineers, in writing. These sums may be deleted in full or in part.					
<b>5.1.1</b>	<b>Existing Fire Detection System</b> Allow a provisional sum for the connection to the existing fire detection system, including all necessary precautions during connection process					
5.1.1.1	Existing Fire Detection System	sum	0,00			Rate Only
<b>5,2</b>	<b>Contingency</b> These contingency sums may be utilised in full or in part. No expenditure will be allowed without the authority of the Consulting Mechanical Engineers, in writing. These sums may be deleted in full or in part.					
<b>5.2.1</b>	<b>Contingency</b>					
5.1.1.2	Allow a contingency sum for unforeseen circumstances	sum	1,00	3 500,00		
<b>Total for Schedule carried forward to Summary</b>						R

## Summary Page

Early Warning Detection &amp; Alarm (Girls Dormitory)

Item	Description	Summary
4	Early Warning Detection and Alarm System	
5	Provisional Sums and Contingency Sums	
Sub-total (carried forward to Summary)		

**Additions and Alterations to Ntsonkotha SSS in Lady Frere**  
**Schedule 6 : Girls Dormitory**

Early Warning Detection &  
Alarm (Boys Dormitory)

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Item	Description	Unit	Qty	Rates		Nett Amount
				Supply	Install	
<b>6</b>	<b>Early Warning Detection and Alarm System</b>					
<b>6,1</b>	<b>Control Panel</b>					
6.1.1	Analogue addressable 2 loop (TC5200) control panel capable of supporting a maximum of 252 addressable sensors, have a white backlit 240 x 64 mm graphical liquid crystal display (LCD), complete with 28 Amp battery backup and battery charging unit, installer friendly "auto learn", "loop detection" with on board scope facility for commissioning and fault finding, and all fully compliant with BS5839 and EN54.	no.	1,00			Rate Only
6.1.2	Passive Repeater Panel	no.	0,00			
6.1.3	TCP-503 Network card	no.	1,00			
6.1.4	SMS unit to be installed within the above panel	no.	0,00			
<b>6,2</b>	<b>Line Isolators</b>					
6.2.1	Line Isolators	no.	10,00			
<b>6,3</b>	<b>Detection Devices</b>					
	Ceiling-mounted, smoke sensitive and heat sensitive, (XP95) addressable type detection devices, complete with plug-in type mounting base and indication light emitting diode (LED) with address card					
6.3.1	Analogue, optical, smoke, detection device	no.	133,00			Rate Only
6.3.2	Analogue, thermal, detection device	no.	2,00			
6.3.3	Analogue, optical and thermal combination, detection device	no.	0,00			
6.3.4	UV/IR beam detector (OSID), smoke, detection device complete with power supplies, batteries and interface units	no.	0,00			
<b>6,4</b>	<b>Fire-rated Cable</b>					
6.4.1	Fire-rated PH120 type 1 mm <sup>2</sup> cable (installed into galvanised conduit which shall be supplied and installed by appointed Mechanical Sub-contractor, complete with galvanised draw-wire)	m	1 206,00			
<b>6,5</b>	<b>Remote LED Devices</b>					
6.5.1	Remote LED devices to suit above detection	no.	45,00			
<b>6,6</b>	<b>Sounders (Sirens)</b>					
6.6.1	Ceiling-mount addressable sounder (siren) and strobe light mounted on a shallow base with build in isolator	no.	16,00			
<b>Total for Schedule carried forward</b>					<b>R</b>	

## Schedule 6 : Girls Dormitory

Item	Description	Unit	Qty	Rates		Nett Amount
				Supply	Install	
6	<b>Early Warning Detection and Alarm System (continued)</b>			Amount Brought Forward		
6,7	<b>Strobe Warning Lights</b>					
6.7.1	Ceiling mounted strobe warning light with shallow base, red lens, supervision facilities for short and open circuits, capable of isolating, flash energy of 0.5 joule and IP65 rating, suitable for 24 Volt operation	no	14,00			
6,8	<b>Break-glass Units (Call Units)</b>					
	Surface-mounted, break-glass unit, complete with a resettable MCP front, suitable clip-on type transparent lift-flap and seal and normally-open type contacts rated at 5 A with resettable MCP front which shall require firm pressure / impact to be broken and shall be fitted with transparent plastic film, to prevent injury to person activating call, labelled "FIRE Break Glass Press Here" with a directional arrow on the face, fitted with a test probe, to enable on-site testing without breaking MCP front complete with built in isolator					
6.8.1	Break-glass unit, as above	no.	11,00			
6,9	<b>Fire Suppression System</b>					
6.9.1	Electrically-fused, thermally-activated, self-contained, aerosol-generating fire suppression system for fitment into areas, compete with detection devices, interface units, gas control unit, gas status unit etc.	sum	0,00			Rate Only
6,10	<b>Addressable Interface / Relay Unit</b>					
6.10.1	Addressable I/O Unit with build in isolator	no.	0,00			Rate Only
	Addressable Mains I/O Unit with build in isolator	no.	0,00			Rate Only
6.10.2	Addressable Switch Monitor Unit with build in isolator	no.	0,00			Rate Only
6,11	<b>Magnetic Double Door Release Unit</b>					
6.11.1	Sequential Magnetic Double Door Release Unit complete release push button and door closers	no.	0,00			Rate Only
6.11.2	Power supplies for magnetic door release units	no.	0,00			Rate Only
<b>Total for Schedule carried forward to Summary</b>						<b>R</b>

## Schedule 6 : Girls Dormitory

Item	Description	Unit	Qty	Rates		Nett Amount
				Supply	Install	
6	Early Warning Detection and Alarm System (continued)			Amount Brought Forward		
6,12	PVC SANS Approved Conduit and Accessories					
	Supply, delivery to site, installation of conduit on surface, in ceiling void, chased into or cast into concrete works and / or brickwork, including bushes, locknuts, couplings, galvanized saddles,					
6.12.1	25 mm diameter conduit	m	1 046,00			
6.12.2	50 mm diameter conduit box for 25 mm conduit	no.	221,00			
6.12.3	75 mm x 75 mm x 50 mm conduit box	no.	11,00			
6.12.4	2.5 m x 25 mm diameter sprague, fitted with 50 mm conduit box on one end and 50 mm round lid on other end, with bushes and locknuts	no.	0,00			Rate Only
6.12.4	Extra over for painting conduit (colour to be specified) (accessories inclusive in measurement)	m	8,00			
Total for Schedule carried forward to Summary					R	

## Schedule 7 : Provisional Sums and Contingency Sums

Item	Description	Unit	Qty	Rates		Nett Amount
				Supply	Install	
<b>7</b>	<b>Provisional Sums and Contingency Sums</b>					
<b>7.1</b>	<b>Provisional Sums</b> These provisional sums may be utilised in full or in part. No expenditure will be allowed without the authority of the Consulting Mechanical Engineers, in writing. These sums may be deleted in full or in part.					
<b>7.1.1</b>	<b>Existing Fire Detection System</b> Allow a provisional sum for the connection to the existing fire detection system, including all necessary precautions during connection process					
7.1.1.1	Existing Fire Detection System	sum	0,00			Rate Only
<b>7.1</b>	<b>Contingency</b> These contingency sums may be utilised in full or in part. No expenditure will be allowed without the authority of the Consulting Mechanical Engineers, in writing. These sums may be deleted in full or in part.					
<b>7.1.1</b>	<b>Contingency</b>					
7.1.1.2	Allow a contingency sum for unforeseen circumstances	sum	1,00	3 500,00		
<b>Total for Schedule carried forward to Summary</b>					<b>R</b>	

## Summary Page

Early Warning Detection &amp; Alarm (Boys Dormitory)

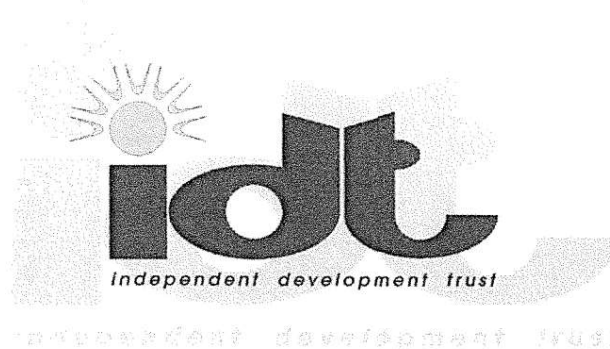
Item	Description	Summary
6	Early Warning Detection and Alarm System	
7	Provisional Sums and Contingency Sums	
Sub-total (carried forward to Summary)		



Summary of Preliminary Cost Estimates : Early Warning Detection and Alarm Installation

Wednesday, 15 September 2021

Description of Services	Sub-totals
<b>Early Warning Detection and Alarm System</b>	
Sub-total carried forward from Preliminary & General Items	
Sub-total carried forward from Dining Hall & Laundry	
Sub-total carried forward from Girls Dormitory	
Sub-total carried forward from Boys Dormitory	
<b>Sub-total (carried forward to Part C of Tender Prices)</b>	



**NTSONKOTHA SENIOR SECONDARY SCHOOL  
IN LADY FRERE  
BY INDEPENDENT DEVELOPMENT TRUST  
PROJECT SPECIFICATION  
AND  
SCHEDULE OF QUANTITIES  
FOR THE  
MECHANICAL ENGINEERING SERVICES  
(HOT WATER GENERATION INSTALLATION)**

**Volume 2 : Part C (Mechanical Installation)**

**September 2021**

**Issued by :**  
Independent Development Trust

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**NAME OF TENDERER : .....**

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**DRAWING SCHEDULE**

The following drawings are issued with this Tender Document :

There are no drawings attached to this Document

## **PART 1**

### **THE SCHEDULES**

#### **CONTENTS**

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**PART 1A****PARTICULARS RELATING TO TENDERER**

**Project Name : Ntsonkotha Senior Secondary School in Lady Frere  
Mechanical Engineering Services (Hot Water Generation Installation)**

1. The registered and trading names, physical and postal address, and contact numbers for the tendering entity.

Registered Name : .....

Trading Name : .....

Physical Address : .....

Postal Address : .....

Telephone No. : .....

Facsimile No. : .....

2. The full first and surnames of their partners and/ or directors and their domiciles and addresses.

Full Name (1) : .....

Address (1) : .....

Full Name (2) : .....

Address (2) : .....

Full Name (3) : .....

Address (3) : .....

3. The names and addresses of the local agents, firms, or representatives who are interested in any manner whatsoever in the tender.

Full Name (1) : .....

Address (1) : .....

Full Name (2) : .....

Address (2) : .....

4. Bank Details Bank Name : .....

Branch & Code : .....

Account Number : .....

Contact Person : .....

Telephone No. : .....

---

Name

---

Signature

---

Date

**PART 1B****VARIATIONS TO SUB-CONTRACT**

**Project Name : Ntsonkotha Senior Secondary School in Lady Frere**  
**Mechanical Engineering Services (Hot Water Generation Installation)**

These rates are to be used in the event work is not readily measurable in terms of the attached Schedule of Quantities or Schedule of Rates
---

I / We agree that any variations to the agreement (not priced elsewhere in this Tender Document) will be priced strictly in accordance with the rates submitted below. The rates (exclusive of VAT) shall be calculated as specified below :

- Cost shall mean the nett cost of equipment or materials supplied to site with all discounts offered
  - The labour rates shall include all personnel insurance costs, holidays with pay and travelling time payments, incentive bonuses and overtime premiums, except for overtime payment when overtime is authorised in writing by the Consulting Mechanical Engineers
  - Percentage and labour rates shall include profits, overheads, financing, insurance, guarantee (with free maintenance) costs, engineering and management
1. for the supply of equipment over and above that originally required by the specifications and drawings Cost Plus \_\_\_\_\_ %
  2. equipment deleted will be at the price entered in the price schedule or at the supplier's selling price, unless a fixed price for deletion of an item is specified elsewhere in the Tender Document
  3. for substituted equipment, the percentage reflected in item (1) above will only apply to the difference in the supplier's price arising from the substitution
  4. for the supply of all labour, charges will be levied at the selling rate (for normal time) of :
 

Foreman	_____ per hour
Commissioning Engineer	_____ per hour
Tradesman	_____ per hour
Journeyman	_____ per hour
Labourer	_____ per hour
Other specialists / hour	Cost Plus _____ %
  5. If pricing by team work is the standard practise of the Contractor, the team shall comprise :
 

_____	persons / team members at	_____ selling price per hour
-------	---------------------------	------------------------------
  6. Overtime rates
 

	Night (after 19h00)	_____ times normal time
	Saturday	_____ times normal time
	Sunday and Public Holidays	_____ times normal time
	Other (specify)	_____ times normal time
  7. Transport charges
 

	Car	_____ Rand per km
	LDV (under 2 tonnes)	_____ Rand per km
	Truck ( between 2 and 5 tonnes)	_____ Rand per km
	Other (specify)	_____ Rand per km

---

 Name

---

 Signature

---

 Date

## PART 1C

## PRICE ADJUSTMENT SCHEDULE

**Project Name : Ntsonkotha Senior Secondary School in Lady Frere  
Mechanical Engineering Services (Hot Water Generation Installation)**

Does your Tender Price include forward cover for foreign exchange variations ?

YES		NO	
-----	--	----	--

The tenderer shall detail all adjustments to which the prices and rates listed in this Tender Document are to be subjected to.

The tenderer shall enter NIL hereunder if prices are not subject to adjustment.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is no text or other markings on the paper.

Name \_\_\_\_\_

Signature \_\_\_\_\_

Date \_\_\_\_\_



## STATEMENT OF COMPLIANCE OR QUALIFICATION BY TENDERER

Does this Tender comply in every respect with the Conditions of Tender, Conditions of Contract, Schedules, Project Specifications, Schedule of Quantities and Drawings ?

YES		NO	
-----	--	----	--

**Qualifications :**

This image shows a full page of a document template. It consists of a series of evenly spaced, horizontal black lines on a white background, typical of lined paper used for writing or drawing. The lines extend across the entire width of the page and are separated by uniform gaps. There is no text, handwriting, or other markings present on the page.

Date \_\_\_\_\_

**PART 1E****SCHEDULE OF SUB-CONTRACTORS PROPOSED BY TENDERER**

**Project Name : Ntsonkotha Senior Secondary School in Lady Frere**  
**Mechanical Engineering Services (Hot Water Generation Installation)**

The Tenderer shall state hereunder the names and particulars of all Sub-contractors he proposes to employ on the Works. The Tenderer shall also define the duties and relevant experience of each Sub-contractor listed.

Name of Sub-contractor	Contact Numbers	Proposed Duties	Experience

---

 Name

---

 Signature

---

 Date

**PART 1F****SIMILAR INSTALLATIONS CARRIED OUT BY TENDERER**

**Project Name : Ntsonkotha Senior Secondary School in Lady Frere**  
**Mechanical Engineering Services (Hot Water Generation Installation)**

The Tenderer shall list below all similar works carried out by him including Client details and value of the Works.  
 Failure to comply may invalidate the Tender.

<b>Name of Contract</b>	<b>Year</b>	<b>Client</b>	<b>Consulting Mechanical Engineers</b>	<b>Value ( R )</b>

---

 Name

---

 Signature

---

 Date

**PART 1G****SCHEDULE OF WORK IN HAND**

**Project Name : Ntsonkotha Senior Secondary School in Lady Frere**  
**Mechanical Engineering Services (Hot Water Generation Installation)**

The Tenderer shall detail below all Work currently in progress.

<b>Client</b>	<b>Project Details</b>	<b>Project Value ( R )</b>	<b>Percentage Complete ( % )</b>	<b>Commencement and Completion Dates</b>

---

 Name

---

 Signature

---

 Date

## PART 1H

## SCHEDULE OF MATERIALS

**Project Name : Ntsonkotha Senior Secondary School in Lady Frere  
Mechanical Engineering Services (Hot Water Generation Installation)**

The Tenderer shall detail below all materials proposed in order to complete the Works specified. (Failure to complete this schedule may invalidate the tender submission).

### Description

**Manufacturer**

**NB: Only one manufacturer's name to be inserted for each item.**

- 1 Dining Hall and Laundry (Section 1- Phase 1)**

- ### 1.1 Serving Hot Water Storage Tank (Thermocube Tank)

Type

Quantity

## Manufacture

Model Number

Capacity (Litres)

Heat Exchangers (Number and Type)

Dimensions (Length x Breadth x Height)

### Material Finish

Number of Phases / Voltage

Start Current / Running Current

Power Input (kW)

Country of Origin

- ## 1.2 Serving

Type

### Quantity of Compressors

## Manufacture

Model Number

Dimensions (Length x Breadth x Height)

### Material Finish

Airflow (l/s)

Heating Capacity (Output)

Refrigerant Type

Number of Phases / Voltage

Start Current / Running Current

Static Pressure (Pa)

Country of Origin

- ### 1.3 Serving

Type

Quantity

## Manufacture

Model Number

Flow Rate (l/s)

Running Pressure (Pa)

Number of Phases / Voltage

Start Current / Running Current

Static Pressure (Pa)

Name \_\_\_\_\_

Signature

Date \_\_\_\_\_

Filters / Strainers  
Country of Origin

## 2 Girls Dormitory (Section 2- Phase 1)

### 2.1 Serving

Type  
Quantity  
Manufacture  
Model Number  
Capacity (Litres)  
Heat Exchangers (Number and Type)  
Dimensions (Length x Breadth x Height)  
Material Finish  
Number of Phases / Voltage  
Start Current / Running Current  
Power Input (kW)  
Country of Origin

### Hot Water Storage Tank (Thermocube Tank)

Two (2)

### 2.2 Serving

Type  
Quantity of Compressors  
Manufacture  
Model Number  
Dimensions (Length x Breadth x Height)  
Material Finish  
Airflow (l/s)  
Heating Capacity (Output)  
Refrigerant Type  
Number of Phases / Voltage  
Start Current / Running Current  
Static Pressure (Pa)  
Country of Origin

### Heat Pumps

Four (4)

### 2.3 Serving

Type  
Quantity  
Manufacture  
Model Number  
Flow Rate (l/s)  
Running Pressure (Pa)  
Number of Phases / Voltage  
Start Current / Running Current  
Static Pressure (Pa)  
Filters / Strainers  
Country of Origin

### Hot Water Circulating Pump (Between Heat Pumps and Thermocube Tank)

Four (4)

### 2.4 Serving

Type  
Quantity  
Manufacture  
Model Number

### Hot Water Circulating Pump (For Hot Water Ring)

Two (2)

Name

Signature

Date

Flow Rate (l/s)  
 Running Pressure (Pa)  
 Number of Phases / Voltage  
 Start Current / Running Current  
 Static Pressure (Pa)  
 Filters / Strainers  
 Country of Origin

### 3 Boys Dormitory (Section 3- Phase 2)

#### 3.1 Serving

Type  
 Quantity  
 Manufacture  
 Model Number  
 Capacity (Litres)  
 Heat Exchangers (Number and Type)  
 Dimensions (Length x Breadth x Height)  
 Material Finish  
 Number of Phases / Voltage  
 Start Current / Running Current  
 Power Input (kW)  
 Country of Origin

#### Hot Water Storage Tank (Thermocube Tank)

Two (2)

#### 3.2 Serving

Type  
 Quantity of Compressors  
 Manufacture  
 Model Number  
 Dimensions (Length x Breadth x Height)  
 Material Finish  
 Airflow (l/s)  
 Heating Capacity (Output)  
 Refrigerant Type  
 Number of Phases / Voltage  
 Start Current / Running Current  
 Static Pressure (Pa)  
 Country of Origin

#### Heat Pumps

Four (4)

#### 3.3 Serving

Type  
 Quantity  
 Manufacture  
 Model Number  
 Flow Rate (l/s)  
 Running Pressure (Pa)  
 Number of Phases / Voltage  
 Start Current / Running Current  
 Static Pressure (Pa)  
 Filters / Strainers  
 Country of Origin

#### Hot Water Circulating Pump (Between Heat Pumps and Thermocube Tank)

Four (4)

Name

Signature

Date

**3.4 Serving**

Type

Quantity

Manufacture

Model Number

Flow Rate (l/s)

Running Pressure (Pa)

Number of Phases / Voltage

Start Current / Running Current

Static Pressure (Pa)

Filters / Strainers

Country of Origin

**Hot Water Circulating Pump (For Hot Water Ring)**

Two (2)

**4 General****4.4 Serving**

Type

Material (Class)

Insulation (Type, Material, Thickness)

SABS / BS Number

Model Number

Airflow (l/s)

Power Requirements

Country of Origin

**Interconnecting Piping****4.8 Pipe Fittings**

Manufacturer

Control Valves

SABS / BS Number

Country of Origin

Name

Signature

Date



**PART 11****SCHEDULE OF STAFF AVAILABLE**

**Project Name : Ntsonkotha Senior Secondary School in Lady Frere**  
**Mechanical Engineering Services (Hot Water Generation Installation)**

The Tenderer shall provide a list of all staff (from senior personnel to labourers) that will be made available to perform any duties for and on behalf of the Tenderer on this project. The Tenderer may attach a company organigram for information purposes.

<b>Name</b>	<b>Position / Designation</b>	<b>Years of Relevant Experience</b>	<b>Qualification</b>	<b>Registration Number*</b>

\* These numbers shall be the those appearing on the certificates as required in terms of the Occupational Health and Safety Act No 85 of 1993

---

 Name

---

 Signature

---

 Date

**PART 1J****AGREEMENT RELATING TO OCCUPATIONAL HEALTH & SAFETY ACT**

**Project Name : Ntsonkotha Senior Secondary School in Lady Frere**  
**Mechanical Engineering Services (Hot Water Generation Installation)**

Agreement between the Principal Contractor and the Mandatory (hereinafter referred to as the Heat Pump Sub-contractor) as envisaged in Section 37 (2) of the Occupational Health and Safety Act No 85 of 1993 as amended.

**Background Information :**

1. The Occupational Health and Safety Act comprises Sections 1 to 50 and all unrepealed Regulations promulgated in terms of the former Machinery and Occupational Safety Act No 6 of 1983 as amended as well as any other Regulations which may be promulgated from time to time in terms of the new Act.
2. The Mandatory as defined in the Act may be an Agent, a Contractor or a Sub-contractor. This shall not derogate from the Heat Pump Sub-contractor's status as being the responsible employer on this particular sub-contract.
3. Section 37 of the Occupational Health and Safety Act has the potential of punishing Clients (Principals) for the unlawful acts or omissions of Contractors (and Sub-contractors) save where a written agreement has been concluded between the parties containing arrangements and procedures to ensure compliance with the said Act by the Heat Pump Sub-contractor. This Agreement constitutes such a written agreement.
4. This document forms an integral part of the Sub-contract Agreement.
5. To be able to perform in terms of the Sub-contract Agreement, Sub-contractors must be familiar with the relevant provisions of the Act.
6. The liability of the Heat Pump Sub-contractor under this agreement will commence on the day the site is handed over to the Heat Pump Sub-contractor and terminate when the site is handed back to the Client.
7. If intended, the Heat Pump Sub-contractor is advised to conclude a similar agreement with any appointed Sub-contractors.

I .....

representing ..... (the Heat Pump Sub-contractor)

hereby acknowledge that the Heat Pump Sub-contractor is an employer in his own right with duties as prescribed in the Occupational Health and Safety Act No 85 of 1993 as amended. The Heat Pump Sub-contractor undertakes to ensure that all work will be performed, and machinery and plant used, in accordance with the provisions of the said Act. The Heat Pump Sub-contractor furthermore agrees to comply with the requirements of the Client as contained in the Sub-contract and Principal Contract documents and to liaise with the Client should he, for whatever reason, be unable to perform his duties in terms of this agreement.

Signed at ..... (place) on ..... (date / month / year)

Signature on behalf of the Heat Pump Sub-contractor (the Mandatory) .....

Signature on behalf of Independent Development Trust (the Client) .....

## PART 1K

### CERTIFICATES REQUIRED

**Project Name : Ntsonkotha Senior Secondary School in Lady Frere  
Mechanical Engineering Services (Hot Water Generation Installation)**

The Tenderer shall submit proof of the following, namely :

#### Compulsory Documentation

1. Notice of Registered Office and Postal Address of Company, in terms of the Companies Act, 1973, including the Company Registration Document accompanied by Share Certificates, where applicable i.e. Cipro Certificate
2. Copies of the Identity Documents, for each of the respective Directors / Members / Partners / Shareholders/ Trustees, etc.
3. Tax Clearance Certificate, as issued by the South African Revenue Services
4. Accredited Valid Original or Certified B-BBEE Certificate
5. Declaration of Insurances : Workmen's Compensation Assurance  
: Unemployment Insurance Fund  
: Contractor's All Risks Insurance
6. Original Bank Stamped Letter or Cancelled Cheque as Proof of Bank Account
7. Licence of the Accredited Person registered as an Installation Electrician who will be responsible for the Works and the on-site supervision thereof (*where applicable*)
8. Licence of the Accredited Person registered as a Master Installation Electrician who will be responsible for the relevant portion of the Works and the on-site supervision thereof (*where applicable*)
9. Proof of registration of Company, and where applicable, the relevant persons, with the Private Security Industry Regulatory Authority (PSIRA) (*where applicable*)
10. Proof of registration of all persons who will be involved in this project with the South African Qualification & Certification Committee (SAQCC) for the Fire Industry (*where applicable*)
11. Proof of registration of Company with the Fire Detection Installers Association (FDIA) (*where applicable*)
12. Proof of registration as a "Gas Installer", in terms of the Government Gazette, number 32395, dated 15 July 2009, as amended (*where applicable*)
13. Proof of registration of Company with the Automatic Sprinkler Inspection Bureau (Pty) Ltd (ASIB) (*where applicable*)

#### Supplementary Documentation

14. Company Profile (Abridged Version)
15. Proof of Location of Office
16. Electrical Sub-contractors Association (ECA) Registration Certificate (for the associated electrical Works)
17. Proof of Central Supplier Database Registration

Name	Signature	Date
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**PART 1L****FORM OF RESOLUTION**

**Project Name : Ntsonkotha Senior Secondary School in Lady Frere  
Mechanical Engineering Services (Hot Water Generation Installation)**

This form is to be completed in full by the Tenderer. Failure to do so may invalidate the Tender.

At a meeting held by the Directors / Members / Partners / Trustees of

\_\_\_\_\_ (Tenderer's Name)

at \_\_\_\_\_ (Place)

on the \_\_\_\_\_ (Day / Month / Year)

it was resolved

that \_\_\_\_\_

in his / her capacity as their \_\_\_\_\_

is hereby authorised and empowered to sign the Tender and / or Contract Documents for the project known as the

**“Ntsonkotha Senior Secondary School in Lady Frere  
Mechanical Engineering Services (Hot Water Generation System)”**

for and on behalf of the Tenderer.

Signed : \_\_\_\_\_ Signed : \_\_\_\_\_

Capacity : \_\_\_\_\_ Capacity : \_\_\_\_\_

**PART 1M****SITE INSPECTION CERTIFICATE**

**Project Name : Ntsonkotha Senior Secondary School in Lady Frere**  
**Mechanical Engineering Services (Hot Water Generation Installation)**

This form is to be completed in full by the Tenderer. Failure to do so may invalidate the Tender.

This is to certify that I / we \_\_\_\_\_  
 the representative (s) of \_\_\_\_\_ (Tenderer's Name)  
 \_\_\_\_\_ (address)  
 \_\_\_\_\_ telephone number  
 \_\_\_\_\_ facsimile number

certify that I / we have examined the site, drawings and tender documents and have made myself / ourselves fully conversant with all conditions and circumstances likely to influence the rates tendered.

Name of Tenderer's Representative \_\_\_\_\_

Signature of Tenderer's Representative \_\_\_\_\_

Name of Consulting Mechanical Engineers' Representative \_\_\_\_\_

Signature of Consulting Mechanical Engineers' Representative \_\_\_\_\_

## **PART 2**

### **PROJECT SPECIFICATION**

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## PART 2

### PROJECT SPECIFICATION

*Any requirement or statement made in this Project Specification section of the specification shall override the requirements of Part 3 : Standard Specifications and the Drawings.*

#### 2.1 GENERAL

This specification covers all Works necessary for the mechanical engineering services (air-conditioning and ventilation) installation of the project known as the “Ntsonkotha Senior Secondary School in Lady Frere”.

The project generally comprises the following Works, namely :

- ❑ the construction of a Laundry and Kitchen Facility (Section 1)
- ❑ the construction of a Girls Hostel Building (Section 2)
- ❑ the construction of a Boys Hostel Building (Section 3)
- ❑ The above building Works generally includes brick / dry walls, concrete slabs and floors, sheet vinyl / carpet / porcelain tile flooring, painted / tiled surfaces, suspended exposed “T” / flush plastered ceilings, etc.

This sequencing of the Works and the “unofficial” sectional completion requirements will be negotiated by the Client, Professional Team, Principal Contractor and the successful Tenderer.

The proposed sequencing of the project shall be as follows:

- ❑ Phase 1 of the Construction - the construction of a Laundry and Kitchen Facility (Section 1) and the construction of a Girls Hostel Building (Section 2)
- ❑ Phase 2 of the Construction - the construction of a Boys Hostel Building (Section 3)

The Tenderer’s attention is specifically drawn to the fact that at Practical Completion the completion of specific sections must be such that the Client can actually move into the premises and commence conventional operational School / Hostel-related activities.

Thus, programming for the Works must allow for the systematic clearance of all outstanding work and defects (save only latent defects) prior to the “Sectional” and “Practical” Completion circumstances required. The Works to be cleared are to include all electrical and mechanical installations including commissioning procedure and certificates of compliance etc., in addition to the building works.

Any works to the exterior of the building which do not impact on the conventional operational School / Hostel-related activities could be exempted from this requirement regarding “Sectional” and “Practical” Completion.

#### 2.2 SCOPE OF WORK

##### 2.2.1 Principle Items of Work

The principle items of Work covered by this Sub-contract comprises the supply, delivery, installation, testing, commissioning and twelve (12) months guarantee (with free maintenance during the guarantee period) of the complete Works involved in the air conditioning and ventilation services, as further detailed below, namely :

- ❑ Preliminary & General Items
- ❑ Supply and installation of a hot water storage tank (Thermocube) including pipe-work, controls, drains, etc. to the relevant buildings
- ❑ Supply and installation of a hot water generation systems (Heat Pumps) including pipe-work, controls, circulating pumps, valves, drains, etc. to the relevant buildings
- ❑ Supply and installation of water piping, to relevant standards, for the installation of the hot water generation system including fittings, bends, valves, insulation, etc. for a complete hot water system
- ❑ Provisional Sums as detailed in the Schedule of Quantities
- ❑ Provision of Record Drawings and Operating and Maintenance manuals

- ❑ Provision of Certificates of Compliance for complete installation covered in this specification
- ❑ All other materials, equipment, labour and services necessary for the complete, safe and efficient operation of the Works in full accordance with the specifications as detailed in the "Project Specification"
- ❑ Maintenance during the twelve (12) months defects liability period i.e. if, during the defects liability period, the mechanical installation is not in working order for any reason for which the Contractor is responsible, or if the installation develops any defects, the Heat Pump Sub-contractor shall immediately upon being notified thereof take steps to remedy the defects

### **2.2.2 Works to be Carried out by Others**

The Principal Contractor, who is yet to be appointed, shall be appointed for the building Works, as briefly explained in Clause 2.1.

The successful Heat Pump Sub-contractor shall be appointed as a Selected Sub-contractor to the appointed Principal Contractor. The successful Heat Pump Sub-contractor may not sub-contract any portion of the Works to other parties.

The Heat Pump Sub-contractor will be responsible for ensuring that the Selected Sub-contract is completed in accordance with Principal Contract, with the necessary co-ordination between the parties.

The Principal Contractor shall, under separate contracts, employ various other parties for the supply, installation, testing and commissioning of various specialist equipment installations i.e. but not limited to, the following :

- ❑ Supply and installation of access control (including intercom and door security) installation, which shall be carried out by the Access Control Sub-contractor, appointed as a Selected Sub-contractor to the Principal Contractor
- ❑ Supply and installation of air-conditioning and ventilation services installation, which shall be carried out by the Air-conditioning and Ventilation Sub-contractor, appointed as a Selected Sub-contractor to the Principal Contractor
- ❑ Supply and installation of closed-circuit television installation, which shall be carried out by the Closed Circuit Television Sub-contractor, appointed as a Selected Sub-contractor to the Principal Contractor
- ❑ Supply and installation of early warning detection and alarm installation, which shall be carried out by the Early Warning Detection and Alarm Sub-contractor, appointed as a Selected Sub-contractor to the Principal Contractor
- ❑ Supply and installation of the electrical installation, which shall be carried out by an Electrical Sub-contractor, appointed as a Selected Sub-contractor to the Principal Contractor
- ❑ Supply and installation of elevators, escalators and goods hoists, (where applicable) which shall be carried out by the relevant Specialist Sub-contractors, appointed as Domestic, Nominated or Selected Sub-contractors to the Principal Contractor (conduits, wireways, power supplies, etc. by Electrical Sub-contractor)
- ❑ Supply and installation of fire protection services installation, which shall be carried out a Fire Protection Sub-contractor, appointed as a Selected Sub-contractor to the Principal Contractor
- ❑ Supply and installation of generator installation, which shall be carried out a Generator Sub-contractor, appointed as a Selected Sub-contractor to the Principal Contractor
- ❑ Supply and installation of hot and cold-water services installation, which shall be carried out by the Plumbing Sub-contractor, appointed as a Domestic Sub-contractor to the Principal Contractor
- ❑ Supply and installation of information and communications technology (comprising telephone and data) installation, which shall be carried out by the Information and Communications Technology Sub-contractor, appointed as a Selected Sub-contractor to the Principal Contractor
- ❑ Supply and installation of public address installation, which shall be carried out by the Public Address Sub-contractor, appointed as a Selected Sub-contractor to the Principal Contractor
- ❑ Supply and installation of smoke extraction services installation (where applicable), which shall be carried out by the Smoke Extraction Sub-contractor, appointed as a Selected Sub-contractor to the Principal Contractor
- ❑ Supply and installation of television (and television aerial distribution) installation, which shall be carried out by the Television Sub-contractor, appointed as a Selected Sub-contractor to the Principal Contractor
- ❑ Supply and installation of specialist equipment, furniture, fittings and appliances, appointed either as Domestic, Nominated or Selected Sub-contractors to the Principal Contractor



The Heat Pump Sub-contractor shall work in close liaison with the appointed Contracting Parties.

## 2.3 INSPECTION OF SITE

The Consulting Mechanical Engineers will not hold a compulsory site inspection meeting.

The prospective Tenderers are advised to thoroughly acquaint themselves with the nature and extent of Work to be done and to make allowance for items obviously intended and necessary for the proper completion of the Works, although not specified.

By submitting a Tender it is accepted that the Tenderer is fully aware of all site conditions as well as the access to it, and has allowed for this in their Tender Price. Claims due to lack of knowledge will not be entertained.

## 2.4 COMPLIANCE WITH REGULATIONS, STANDARDS AND CODES

The entire installation shall be in full conformity with the current versions of the following :

- ☐ South African National Standard : SANS 10400 - 2010 - Code of Practice for "The Application of the National Building Regulations" i.e. those included in the "National Building Regulations and Building Standards Act, 1977 (Act 103 of 1977)", as published in the Government Gazette, number 31084, dated 30 May 2008, which became effective as of 01 October 2008
- ☐ South African National Standard : SANS 10142-1: 2003 - The Wiring of Premises : Part 1 - Low-voltage Installations
- ☐ Occupational Health and Safety Act, 1993 (Act 85 of 1993)
- ☐ The National Water Act 1998 (Act no. 36 of 1998),
- ☐ The Water Services Act 1997 (Act 108 of 1997),
- ☐ The General Authorizations (Water Act),
- ☐ The Environmental Conservation Act 1998 (Act no. 73 of 1989),
- ☐ The National Environmental Management Act 1998 (Act no. 107 of 1998),
- ☐ The Relevant SANS publications (such as for example SANS 252 parts 1 and 2, SANS 0400, etc., and
- ☐ Any other relevant by-laws of the Local Authorities

Further, the Heat Pump Sub-contractor shall adhere to all the relevant regulations, standards and codes specified in Part 3 of this Tender Document.

All apparatus, components, parts, fittings and materials supplied and / or installed, whether specifically specified herein or not, shall conform in respect of quality, manufacture, tests and performance with the requirements of the appropriate current South African (SABS) or British Standard Specifications (BS) and Addenda thereto, except where otherwise required by this specification or permitted by approval of the Consulting Mechanical Engineers, in writing.

All materials and workmanship, which may, in the opinion of the Consulting Mechanical Engineers, be inferior to that specified for the Work, will be condemned. All condemned material and workmanship must be replaced or rectified as the case may be, to the satisfaction of the Consulting Mechanical Engineers.

Any fitting or item of equipment not specifically mentioned but obviously necessary for the successful completion of the installation is to be included so as to form a complete working installation.

## 2.5 SUPERVISION

The Work shall at all times, for the duration of the contract, be carried out under the supervision of a competent representative of the Heat Pump Sub-contractor, who should also be an Accredited Person registered as a HVAC Installer in terms of the Occupational Health and Safety Act No. 85 of 1993, as amended.

Furthermore, the associated electrical Works shall at all times, for the duration of the contract, be carried out under the supervision of a competent representative of the Heat Pump Sub-contractor, who should also be an Accredited Person registered as an Installation Electrician in terms of the Occupational Health and Safety Act No. 85 of 1993, as amended.

The representative of the Heat Pump Sub-contractor shall be able and authorised to receive and carry out instructions on behalf of the Heat Pump Sub-contractor.

## 2.6 PROGRAMME

The Principal Contractor shall prepare a Contract Construction Programme and all Sub-contractors shall be required to complete their respective Sub-contract Works in accordance with the programme.

The Heat Pump Sub-contractor shall submit a programme for the Sub-contract Works, in accordance with the Principal Contractor's Contract Programme, within 7 days of receipt of the Principal Contractor's Contract Programme.

Tenderers shall note the following :

- |                          |                          |   |                    |
|--------------------------|--------------------------|---|--------------------|
| <input type="checkbox"/> | Handover of Site         | : | To be confirmed    |
| <input type="checkbox"/> | Commencement of Contract | : | To be confirmed    |
| <input type="checkbox"/> | Contract Period          | : | Thirty (30) Months |
| <input type="checkbox"/> | Contract Completion      | : | To be confirmed    |

The cost of overtime, additional labour and plant necessary for the completion of the Works in accordance with the Principal Contractor's Contract Programme shall be included in the Tender Price.

## 2.7 SAMPLES AND ALTERNATIVES

The preferred manufacturer / makers of equipment and / or material are as described in either the Project Specification, the Standard Technical Specifications or as listed in the Schedule of Quantities.

The Client reserves the right to specify the equipment and / or materials utilised in the Works. No alternatives to equipment and / or materials are to be used unless written approval is obtained from the Client, or his Representative and / or the Consulting Mechanical Engineers.

## 2.8 DEFINITIONS

- |                          |                        |   |  |
|--------------------------|------------------------|---|--|
| <input type="checkbox"/> | Supply                 | : | To purchase, procure and deliver complete with all related specified accessories |
| <input type="checkbox"/> | Erect                  | : | To place or mount and fix in position  |
| <input type="checkbox"/> | Install                | : | To erect, connect up and commission, complete with related accessories           |
| <input type="checkbox"/> | Indicated shown, Noted | : | As indicated or shown on drawings  |
| <input type="checkbox"/> | Approved, Alternative  | : | Approved in writing by the Consulting Mechanical Engineers                       |
| <input type="checkbox"/> | Similar, Equal         | : | Equal or better in efficiency of performance and compatibility                   |

## 2.9 CONFLICT BETWEEN SPECIFICATIONS, SCHEDULE OF QUANTITIES AND DRAWINGS

Should there be conflict between the Project Specifications, Schedule of Quantities, Drawings and / or Standard Technical Specifications, the sections shall be considered in the following order of priority :

- ☐ Project Specifications
- ☐ Schedule of Quantities
- ☐ Drawings
- ☐ Standard Technical Specifications

Should the Heat Pump Sub-contractor note an inconsistency between the Project Specifications, Schedule of Quantities, Drawings and / or Standard Technical Specifications, he shall notify the Consulting Mechanical Engineers immediately and obtain clarification or instructions prior to ordering or installing equipment.

## 2.10 DEVIATIONS FROM TENDER DOCUMENTS

No deviations or alterations from that of the specification, schedules or drawings shall be made without first obtaining the written approval of the Department.

## **2.11 DRAWINGS**

Refer to the Drawing Schedule for the list of drawings relating to this Tender Document.

At no time is the Heat Pump Sub-contractor to scale drawings or to make any assumptions regarding measurements / dimensions. If in doubt, the Heat Pump Sub-contractor is to obtain clarification from the Consulting Mechanical Engineers.

## **2.12 MOVING OF EQUIPMENT**

The Heat Pump Sub-contractor shall investigate each space through which equipment must be moved. Where necessary, equipment shall be transported in sections of size suitable for moving through spaces available.

## **2.13 MISCELLANEOUS**

### **2.13.1 Labels**

Labels shall be installed as required in terms of the relevant codes of practice and as further specified in this Tender Document.

All labels shall be in English with capital letters, in black and on a white background, and a minimum of 4 mm in height. All labels shall be of ivorine or plastic construction and riveted / screwed in place.

### **2.13.2 Safety Signage**

The Heat Pump Sub-contractor shall supply and install all danger, sub-station and safety notices and signs in terms of the relevant regulations.

All safety signage installed shall be in accordance with SABS 1186.

## **2.14 INSTALLATION DRAWINGS**

Drawings shall be submitted in triplicate as soon as possible after the signing of the Sub-contract Agreement, but in ample time to allow the Consulting Mechanical Engineers to examine and approve before equipment manufacture is started, or material delivered to site.

Should the Consulting Mechanical Engineers require that any drawing be amended, the Heat Pump Sub-contractor shall make the necessary alterations and re-submit the drawing within two weeks.

The Heat Pump Sub-contractor shall provide the Principal Contractor and the Consulting Mechanical Engineers with complete layout, installation and shop drawings, together with any necessary descriptions and specifications. Sufficient details shall be given to permit a full appraisal of all parts of the installation and their relation to the building structure.

Drawings shall give full details of all foundations, ducts, chases, pits and openings and shall set out all lines and levels for the work.

Delays caused by the submission of drawings or by an error, omission or inadequacy in these drawings, shall not be considered a reason for an extension of the Sub-contract time.

## **2.15 PAYMENT VALUATIONS**

The Heat Pump Sub-contractor shall be entitled to submit monthly payment claims to the Principal Contractor. The payment claims are to be submitted to the Consulting Mechanical Engineers for approval and recommendation, prior to submission to the Principal Contractor.

The payment claim shall be in the form of a copy of the Schedule of Quantities, indicating the tendered, claimed (supplied, installed and materials on / off site) and anticipated completion quantities, rates and values.

## **2.16 VARIATION ORDERS**

Variations orders shall be ordered and processed either by the issue of a revised drawing or by issue of a site instruction, by a duly authorised person.

The Heat Pump Sub-contractor shall ensure that the above procedures have been followed prior to carrying out any work. Failure to comply may invalidate any claim for work done.

Unless otherwise agreed with the Consulting Mechanical Engineers, all claims for variation orders shall be approved prior to proceeding with the relevant Works. The Heat Pump Sub-contractor shall submit variation order claims to the Consulting Mechanical Engineers for approval with the preceding monthly payment claim.

However, the Heat Pump Sub-contractor shall only include the value of approved variation orders in any payment claim or invoice, once approved in writing by the Consulting Mechanical Engineers. Variation order claims, which have not been approved, but are included in the monthly payment claim, will be deducted from the payment claim in question.

## **2.17 ACCEPTANCE, TESTING AND COMMISSIONING**

The Heat Pump Sub-contractor shall carry out all tests required in terms of the relevant Acts, SABS Codes of Practice and Local Authority requirements. The Heat Pump Sub-contractor shall provide all the equipment and apparatus required for the purpose of carrying out all necessary tests.

The Heat Pump Sub-contractor is responsible for carrying out all necessary tests and obtaining all necessary certificates for the installation and operation of the plant.

If any part of the Works fails the test, the Heat Pump Sub-contractor shall be responsible for rectifying, at his own cost, the defective Works and the re-testing thereof to ensure compliance. If in consequence, the Consulting Mechanical Engineers are obliged to attend the further acceptance tests the additional costs incurred by the Engineers shall be payable by the Heat Pump Sub-contractor.

The Works shall be deemed to be practically complete only when the Consulting Mechanical Engineers has approved all tests and inspections, and a Completion Advice Notice or other relevant completion notice is issued.

## **2.18 COMPULSORY FORMS AND CERTIFICATES**

The Heat Pump Sub-contractor shall submit the necessary commencement, compliance and completion forms for the installation as required in terms of the Occupational Health and Safety Act No. 85 of 1993, as amended, the relevant SABS Specifications and the requirements of the relevant Supply Authorities.

## **2.19 OPERATING INSTRUCTIONS, MAINTENANCE MANUALS AND RECORD DRAWINGS**

The Heat Pump Sub-contractor shall supply, after approval by the Consulting Mechanical Engineers, three (3) bound sets of operating instructions, maintenance manuals and record drawings for the complete Hot Water Generation Installation.

### **2.19.1 Operating Instructions and Maintenance Manual**

Failure to submit these manuals will result in the delay of the final inspection and acceptance of the Works by the Employer.

The manuals shall be prepared within the Contract, and shall be particular to the project. All charges that may be required by manufacturers' suppliers for the provision of information and literature shall be included in the contract price.

The manual shall be arranged with an index and referencing system and a matching flysheet giving the names and address of principals involved on the project.

The covers shall be hardbound with a four-post loose-leaf system. The Contract details shall be embossed on the front cover. Numbered card dividers shall be inserted between the sections.

The format of the manual shall be in accordance with the following sections, after a preface and index. Any other data considered by the Employer to be pertinent shall also be included.

#### Section 1

This shall comprise the introduction, abbreviations, and any warnings that may be required by the Machinery and Occupational Safety Act, Local Authorities, and other bodies.

#### Section 2

A full description of each system, together with the main plant components and locations, plus the mode of operation of automatic control systems associated with such system shall be reflected in this section.

#### Section 3

This shall comprise the complete plant technical data of each item of control equipment (e.g. manufacturer's name and address, type of unit, serial number. This information shall be derived from a site inspection of identification plates together with information obtained from manufacturers.

#### Section 4

This section shall describe in detail the operating procedures necessary for starting up, running, and shutting down each individual system. This shall include the control panel starter and selection facilities together with any alarm and safety interlocks as identified on the control panel.

#### Section 5

This shall comprise the maintenance operations on a daily, weekly, monthly etc. basis for each item of plant. The preparation of this section shall be carried out by obtaining from the manufacturer his advice and recommendations for lubrication, adjustment and routine maintenance.

#### Section 6

This section shall comprise the emergency procedures to be adopted by personnel engaged on the operation and maintenance of the mechanical and Mechanical services with regard to fire, first aid, general failures, and call-out procedures during working hours and out of working hours.

#### Section 7

A recommended action on plant malfunction shall be detailed in this section. This is to assist both the user and maintenance engineer in the event of a fault developing in a system by indicating the nature of the fault and the recommended action.

#### Section 8

This shall comprise a list of recommended spares. The preparation of this section shall be carried out by obtaining the manufacturer's recommendations and also incorporate the Client's requirements regarding spares.

#### Section 9

A schedule of the record drawings or 'as-built' drawings for the new control systems shall be inserted in numerical order in this section. The drawings shall be bound into the manual.

#### Section 10

This section shall comprise test certificates and commissioning reports. It shall include reset schedules and temperature and pressure set points clearly for each item of control equipment.

#### Section 11

This shall comprise the manufacturers' literature, arranged in alphabetical order to match the list of manufacturers. The names of the manufacturers (or their local representatives), addresses, and telephone numbers shall also be given.

### 2.19.2 Record Drawings

A complete set of floor plans, in hard copy format, will be issued to the Heat Pump Sub-contractor, for preparation of Record Drawings.

The Heat Pump Sub-contractor shall prepare Record Drawings of the complete Mechanical Engineering Services (Hot Water Generation Installation) and return same to Consulting Mechanical Engineers.

### 2.20 DEFECTS LIABILITY PERIOD

The defects liability period shall be twelve months, which shall commence with the issue of the Works Completion Certificate (or Completion Advice Notice) in respect of the fully commissioned Works, by the Consulting Mechanical Engineers.

With effect from the date of the Works Completion Certificate (or Completion Advice Notice), and for the duration of the defects liability period, the Heat Pump Sub-contractor shall be responsible for all routine inspections, services and maintenance-related tasks that are specified for each component of the installation by the relevant Manufacturer / Supplier.

Furthermore, the Heat Pump Sub-contractor shall be responsible for the carrying out of the following inspections, services and maintenance-related tasks, namely :

Three month interval :

- ☐ check system functions for normal operations
- ☐ check water filters and change if dirty
- ☐ check tank and clean if dirty
- ☐ check temperature settings and operating settings
- ☐ check all pumps and service / clean if required
- ☐ check that electrical loads drawn are within normal parameters
- ☐ using manual control check the operation of the refrigeration circuit
- ☐ ensure that there are no signs of ice formation on the evaporator coil
- ☐ inspect all fuses and thermal overload devices
- ☐ ensure that there are no obstructions in the path of the air supply to and from the unit
- ☐ check the condensate pipe for blockages
- ☐ check the operation of the compressor and consumption of current is normal
- ☐ inspect the fan motor(s) and bearings and condenser coil, cleaning dirt from between fins if necessary

Six month interval :

- ☐ all items listed above
- ☐ check fan speed
- ☐ ensure display panel lights and/or controls are functioning correctly

Nine month interval :

- ☐ all items listed in the Three-month interval above

Twelve month interval :

- ☐ all items listed above
- ☐ inspect fans, check that direction of rotation is correct and that bearings are not running hot
- ☐ check mains voltage
- ☐ check the surface temperature of the compressor housing
- ☐ check insulation on suction tubing

The Heat Pump Sub-contractor shall ensure that the inspections, services and maintenance-related tasks are undertaken at intervals not greater than three months.

The Heat Pump Sub-contractor shall ensure that each inspection, service and / or maintenance-related task is undertaken in the presence of a representative of either the Consulting Mechanical Engineers or the Client.



The Heat Pump Sub-contractor shall ensure that the necessary documentation is completed and submitted to the Consulting Mechanical Engineers confirming the completion of the relevant tasks after each inspection, service and / or maintenance-related task milestone.

The Heat Pump Sub-contractor shall also timeously attend to any defects, which may occur through the normal operation of the Works.

If, during the defects liability period, the installation is not in working order for any reason for which the Heat Pump Sub-contractor is responsible, or if the respective installation develops a defect, the Heat Pump Sub-contractor shall, immediately upon being notified thereof, take steps to remedy the defects and make any necessary adjustments.

Should such stoppages, however be so frequent as to become troublesome, or should the installation otherwise prove unsatisfactory during the said period the Heat Pump Sub-contractor shall, if called upon by the Consulting Mechanical Engineers, at his own expense replace the whole of the installation, or such parts thereof, as the Consulting Mechanical Engineers may deem necessary with equipment specified by the Consulting Mechanical Engineers.

Upon completion of the defects liability period, the Consulting Mechanical Engineers shall undertake the final inspection, service and / or maintenance-related task, as explained above and ensure that the necessary documentation is completed and submitted to the Consulting Mechanical Engineers on behalf of the Client.

## **2.21 DETAILED SCHEDULE OF WORK**

All parts of this installation shall require all equipment to be extensively cleaned for a hygienic system of operation.

### **2.21.1 Laundry Kitchen Installation**

#### ***2.21.1.1 Hot Water Storage Tank***

The above tank shall be a 1000 litre (T.C.-010-2) Thermocube Tank complete with 2 off heat exchangers fabricated from 316L stainless steel spiral corrugated tubing with 0.3 mm wall thickness for heat transfer, 316L stainless steel manifolds to distribute the mains water equally through the heat exchangers, polyurethane panels 36 kg/m<sup>3</sup> polyurethane foamed between two Chromadek sheets (designed to slot into each other for ease of assembly) and liner moulded from an EPDM elastomeric membrane.

The above shall be assembled on site complete with pressure and temperature gauges on hot water leaving and hot water return lines, hot water circulating pumps to circulate the water within the building and necessary fittings, valves and insulation for an energy efficient system.

#### ***2.21.1.2 Heat Pumps***

The above units shall be a 7 kW (output) SIRAC high efficiency LSQ03RG High Temperature (70°C) air to water heat pump, complete with an epoxy coated galvanized steel casing, wired remote micro-processor control system that provides diagnostic control of the unit and a backlit temperature display, an electronic expansion valve (to maintain precise refrigerant metering and is controlled by the microprocessor), including all necessary refrigeration safety controls, a remote on/off switch. The unit shall have a purpose manufactured stainless steel/copper tube in tube heat exchanger for efficiency and reduce tube fouling.

The above shall be assembled on site and shall sit on painted raised galvanized channel iron bases with stainless steel drip trays complete with hot water circulating pumps to circulate the water between the heat pumps and storage tank including necessary piping, fittings, valves and insulation for an energy efficient system.

### **2.21.2 Girls and Boys Dormitories**

#### ***2.21.2.1 Hot Water Storage Tank***

The above tank shall be a 3500 litre (T.C.-035-4) Thermocube Tank complete with 4 off heat exchangers fabricated from 316L stainless steel spiral corrugated tubing with 0.3 mm wall thickness for heat transfer, 316L stainless steel

manifolds to distribute the mains water equally through the heat exchangers, polyurethane panels 36 kg/m<sup>3</sup> polyurethane foamed between two Chromadek sheets (designed to slot into each other for ease of assembly) and liner moulded from an EPDM elastomeric membrane.

The above shall be assembled on site complete with pressure and temperature gauges on hot water leaving and hot water return lines, hot water circulating pumps to circulate the water within the building and necessary fittings, valves and insulation for an energy efficient system.

#### **2.21.1.2 Heat Pumps**

The above units shall be a 23 kW (output) SIRAC high efficiency LSQ06R (55 °C) air to water heat pump, complete with an epoxy coated galvanized steel casing, wired remote micro-processor control system that provides diagnostic control of the unit and a backlit temperature display, an electronic expansion valve (to maintain precise refrigerant metering and is controlled by the microprocessor), including all necessary refrigeration safety controls, a remote on/off switch. The unit shall have a purpose manufactured stainless steel/copper tube in tube heat exchanger for efficiency and reduce tube fouling.

The above shall be assembled on site and shall sit on painted raised galvanized channel iron bases with stainless steel drip trays complete with hot water circulating pumps to circulate the water between the heat pumps and storage tank including necessary piping, fittings, valves and insulation for an energy efficient system.

#### **2.21.3 Controls**

All wired controls for air-conditioning unit are to be run in conduit and draw-boxes chased into the wall.

All controllers are to be wired type. The controllers shall be mounted adjacent the hot water generation system or as confirmed with the Consulting Mechanical Engineer.

No joints shall be allowed in control wiring.

#### **2.21.4 Drains**

Provision shall be made for drainage from heat pump and storage units to the nearest drain point provided.

Any drains run internally shall be chased into the wall and cast into the slabs or alternatives must be agreed with the Consulting Mechanical Engineer before the walls are plastered.

#### **2.21.5 Outdoor Units**

Outdoor units shall be wall mounted on approved galvanized steel brackets with rubber pads, properly braced and fixed.

#### **2.21.6 Electrical Services**

An Electrical Sub-contractor, appointed as a Selected Sub-contractor to the Principal Contractor, will undertake the electrical services installation.

The Electrical Sub-contractor shall be responsible for the installation of all conduits, drawboxes, drawwires, distribution boards and / or power supplies, required for the air-conditioning and ventilation services as indicated on the construction drawings.

The sizes of all conduits are indicated on the drawings. 2 mm<sup>2</sup> polyester draw tape shall be installed in all conduits.

The Heat Pump Sub-contractor shall be responsible for the electrical works from the isolator (provided by the Electrical Sub-contractor) to and from the respective air-conditioning and ventilation systems, i.e.:

- ☐ From the provided isolator to the heat pump / storage equipment respectively
- ☐ From the provided isolator to the respective MCC Panel and electrical works between the MCC Panel and respective equipment



The Electrical Sub-contractor shall generally assist the Heat Pump Sub-contractor.

## **2.22 STAFF TRAINING**

The Heat Pump Sub-contractor shall provide comprehensive training of male and female operational staff and nominated maintenance personnel, to the approval of the Consulting Mechanical Engineers.

Training shall be comprehensive, covering all aspects of systems installed as part of these Works.

The Heat Pump Sub-contractor shall provide a detailed training programme and a copy of the training documentation to the Consulting Mechanical Engineer, for comment and review, no less than 12 weeks prior to the commencement of training.

No training will commence on site prior to the written approval of the Consulting Mechanical Engineers. Should the Consulting Mechanical Engineers not approve the training programme and documentation, the training programme and documentation will be referred back to the Heat Pump Sub-contractor for re-evaluation and re-submission to the Consulting Mechanical Engineers.

The number of staff to be trained is to the full discretion of the Client. However, the Heat Pump Sub-contractor shall allow for 2 groups, each of up to 4 personnel. Each group shall receive a minimum of two 2-hour training sessions. One of these sessions shall be held prior to the commissioning of the mechanical engineering services installation, and the other of these sessions, upon expiry of the defects liability period.

Training shall be adequate to ensure that the groups trained are :

- ☐ competent in the operation of systems
- ☐ adequately trained to carry out on-going training
- ☐ fully aware of the location of all equipment installed as part of this Sub-contract within their area of responsibility

The names of personnel attending the training shall be recorded and submitted to the Consulting Mechanical Engineers at the conclusion of training.

Maintenance staff shall demonstrate a complete understanding of the location and connectivity of the various elements of the electrical engineering services installation.

All training aids and course notes necessary to conduct effective operational and maintenance training shall be supplied by the Heat Pump Sub-contractor.

The training venue will be made available on site by the Client.

## **PART 3**

### **STANDARD TECHNICAL SPECIFICATIONS**

#### **CONTENTS**

<b>ITEM</b>	<b>DESCRIPTION</b>	<b>PAGE</b>
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<b>A 1</b>	Regulations, Codes and Specifications	A 1.1
<b>A 2</b>	General	A 2.1
<b>A 3</b>	Painting and Colour Coding	A 3.1 - A 3.5
<b>A 4</b>	Operating and Maintenance Manuals	A 4.1 - A 4.2

*(The afore-mentioned documentation has not been included in the Enquiry Document, but may be obtained from the offices of the Consulting Mechanical Engineers.)*

## **PART 4**

### **SCHEDULE OF QUANTITIES**

#### **CONTENTS**

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## **PART 4**

### **SCHEDULES OF QUANTITIES**

#### **GENERAL NOTES**

##### **1 Specifications**

The Schedule of Quantities form part of the Tender Document and must be read in conjunction with the other parts forming the Tender Document in order to gain the full meanings of the descriptions of the work to be done and materials and equipment to be used.

##### **2 Alterations**

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

##### **3 Issue of Schedule of Quantities in Electronic Format**

The Consulting Mechanical Engineers will make the Schedule of Quantities available to Tenderers in electronic (Microsoft Excel Workbook) format, upon request.

If utilised for tender submission, the Tenderer will be responsible for ensuring the correctness of all calculations. The Consulting Mechanical Engineers cannot be held responsible for any arithmetic inaccuracies in the electronic Schedule of Quantities.

##### **4 Pages**

Before submitting his Tender, the tenderer must check to ensure all pages have been included and are distinct. Should any obvious errors be found the Consulting Mechanical Engineers is to be notified immediately to have them corrected as no liability whatsoever will be admitted by the Consulting Mechanical Engineers in respect of errors in the Tender due to the foregoing.

##### **5 Responsibility**

The responsibility for the accuracy of the quantities written into the Schedule of Quantities remains with the person who prepared the Schedule of Quantities. The Tenderer shall be relieved of the responsibility of measuring quantities at the Tender stage, and the Tender Price submitted shall be in respect of the quantities set out in the Schedule of Quantities.

The Tenderer will be required to make his assessment of items such as brackets, fixings, etc., from details stated in the Schedule of Quantities and shall make allowances therefore within the rates tendered.

Tenderers shall make due allowance in their rates for any item of incidental or contingent work, labour and materials not contained in the Schedule of Quantities, but deemed necessary for the successful completion of the Works.

##### **6 Unit Rates**

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

The description of each item shall, unless otherwise stated herein, be held to include making, conveying and delivering, unloading, storing, unpacking, hoisting, setting, fitting and fixing in position, cutting and waste, patterns, models and templates plant, temporary works, return of water establishment charges, profit and all other obligations arising out of the Conditions of Contract.

## **7 Variations**

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

The rules governing the extent and costing of the variations shall be those provided for in the Conditions of Contract and Variations to Sub-contract.

Variations to the planning before the work has been executed shall be priced as above. Alterations to work already executed cannot necessarily be priced as above and must be reviewed on its merits.

The appropriate portions of the Preliminary & General Costs are to be adjusted proportionately to the nett additions or omissions of the variations to the contract

## **8 Preliminary and General**

Tenderers shall price the Preliminary & General under any or all of these groups, viz.:

- a) A fixed amount
- b) An amount varied in proportion to the final contract value as compared to the Tender Price
- c) An amount varied in proportion to the final contract period as compared to the originally specified contract period

The allocation of prices to the three categories listed above must be realistic and the Mechanical Sub-contractor may be required to justify the allocation of the prices. Should no Preliminary & General Costs be entered against the variable items b) or c) above, no adjustment thereof shall be considered.

## **9 Provisional Sums**

All Provisional Sums shall be expended only as directed by the Consulting Mechanical Engineers and any balance remaining shall be deducted from the amount of the Sub-contract sum. No work for which Provisional Sums are provided shall be commenced without written instructions from the Engineer.

All Provisional Sums may be utilised in full or in part. These Provisional Sums may be deleted in full or in part if not required.

## **10 Contingency Sums**

All Contingency Sums shall be expended only as directed by the Consulting Mechanical Engineers. No work for which Contingency Sums are provided shall be commenced without written instructions from the Engineer.

All Contingency Sums may be utilised in full or in part. These Contingency Sums may be deleted in full or in part if not required.

## **11 Dayworks**

The rates included for daywork shall not form part of the Tender Price, but Tenderers shall note that this item must be regarded as provisional and will only be payable to the Heat Pump Sub-contractor if and when a written order to this effect has been issued.

**12 Value Added Tax**

This Schedule of Quantities shall be priced nett, excluding VAT. VAT shall be added at the summary at the end of the Schedule of Quantities. The final price entered into the Tender Form shall be inclusive of VAT.

**13 Adjustment**

The Employer reserves the right to adjust arithmetical errors in the extension of rates and totals in the Tender, and the Tenderer will be informed of the effect of any corrections on his Tender Sum prior to the award of the Contract. In no case will tendered rates be adjusted when correcting such errors.

In the event of there being tendered rates or prices which are declared by the Employer to be unacceptable to him, because they are either excessively low or high or not in proper balance with other rates, the Tenderer may be required to produce evidence and advance arguments in support of the tendered rates or prices objected to. If after submission of such evidence and any further evidence requested, the Employer is still not satisfied with the tendered rates or prices objected to, he may request the Tenderer to amend these rates and prices along the lines indicated by him.

The Tenderer may or may not thereupon alter and amend the rates and prices objected to and such other related prices as are agreed to by the Employer. Should the Tenderer fail to amend his Tender in a manner acceptable to the Employer, or at all, it may prejudice his Tender.

In the case of Tenders with Schedule of Quantities, the total corrected Tender Price in the Tender Form shall constitute the Sub-contract Sum. Tenderers are advised to check their extensions and additions. In the case of a Lump Sum Tender, the original uncorrected Tender Price shall be considered. The Consulting Mechanical Engineers shall negotiate adjustments to the rates tendered in order to correct the arithmetical extension or addition, whilst the Tender Price as submitted, remains unaltered.

In either case, the Tenderer shall be notified of any arithmetical error in his Tender, and shall be given the opportunity to withdraw the Tender at this stage.

**14 Quantification**

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

**15 Ordering**

The quantities in this Schedule of Quantities shall not be used for ordering materials. The onus is on the successful Tenderer to order the correct quantities of materials as per the drawings.

**16 Payment**

The measurement and payment of Work done shall be made in accordance with the unit price rates, and rates of pay listed in the Schedule of Quantities. No payment will be made for any item of associated work not specifically detailed in the Schedule of Quantities.

## Schedule 1 : Preliminary &amp; General Items

Item	Description	Unit	Qty	Preliminary & General Items		
				Rates		Nett Amount
				Supply	Install	
<b>1</b>	<b>Preliminary &amp; General Items</b>					
<b>1.1</b>	<b>Contractual Items</b>					
1.1.1	Provision of a Sub-contract Construction Guarantee, in terms of the Nominated / Selected Sub-contract Agreement	sum	1,00			
1.1.2	Provision of an Advanced Payment Guarantee, in the amount as is required for the procurement of any materials and / or equipment, so as to facilitate the successful and timeous completion of the sub-contract Works	sum	1,00			
1.1.3	Provision of the Insurances e.g. Contract Works Insurance, Special Insurances, Supplementary Insurance, Public Liability Insurance, etc., as is deemed necessary for the sub-contract Works	sum	1,00			
1.1.4	Allowance for the Compliance with the Construction Regulations, w.r.t. the Occupational Health and Safety Specification prepared by the Employer and / or their designated Agent, and the Principal Contractor and / or their designated Agent, and as further detailed in the Occupational Health & Safety Act, Act 85 of 1993	sum	1,00			
1.1.5	Allowance for the Compliance with the Construction Regulations, w.r.t. the Construction Environment Management Plan prepared by the Employer and / or their designated Agent, and the Principal Contractor and / or their designated Agent, and as further detailed in the Occupational Health & Safety Act, Act 85 of 1993	sum	1,00			
1.1.6	Allow for the warranty of the Sub-contract Works for the duration of the stipulated defects liability	sum	1,00			
1.1.7	Allow for the servicing and routine maintenance of the Sub-contract Works for the duration of the stipulated defects liability period	sum	1,00			
1.1.8	Allow for the provision of all applicable Test Certificates and / or Compliance Certificates	sum	1,00			
1.1.9	Other contractual items not detailed above	sum	1,00			
<b>1.2</b>	<b>Fixed Cost Items</b>					
1.2.1	Establishment of Offices on Site	sum	1,00			
1.2.2	Establishment of Storage Facilities on Site	sum	1,00			
1.2.3	Establishment of Ablution Facilities on Site	sum	1,00			
1.2.4	Maintenance of Offices, Storage Facilities & Ablutions	sum	1,00			
1.2.5	Removal of all facilities upon Completion of the Sub-contract Works	sum	1,00			
1.2.6	Other fixed cost items not detailed above	sum	1,00			
<b>Total for Schedule carried forward</b>					<b>R</b>	

## Schedule 1 : Preliminary &amp; General Items

Schedule 1 : Preliminary & General Items				Preliminary & General Items		
Item	Description	Unit	Qty	Rates		Nett Amount
				Supply	Install	
1	Preliminary & General Items (continued)			Amount Brought Forward		
1.3	Time Related Items					
1.3.1	Project Supervision	mths	30,00			
1.3.2	Project Administration	mths	30,00			
1.3.3	Other Overheads (travel, accommodation)	mths	30,00			
1.3.4	Other time related items not detailed above	mths	30,00			
	<i>Note : The Work shall at all times, for the duration of the sub-contract, be carried out under the supervision of a competent representative of the AC&amp;V Sub-contractor in terms of the Occupational Health and Safety Act No. 85 of 1993, as amended.</i>					
1.4	General Items					
1.4.1	Provision of a Programme for the Sub-contract Works, considered and prepared in accordance with the approved Principal Contractor's Construction Programme	sum	1,00			
1.4.2	Completion of necessary commencement, compliance and completion forms for the installation as required in terms of the Occupational Health and Safety Act No. 85 of 1993, as amended, the relevant SABS Specifications and the requirements of the relevant Supply Authorities	sum	1,00			
1.4.3	Inspect site, prior to submission of tender	sum	1,00			
1.4.4	Providing a "Master Installation Electrician" for overseeing the electrical installations within the hazardous locations (if and where applicable)	sum	0,00			
1.4.5	Provision of all necessary forms of access i.e. scaffolding, cherry pickers, etc., in complete and strict accordance with the relevant Construction Regulations (refer to Clause 1.1.6), so as to facilitate the successful and timeous completion of the sub-contract Works	sum	1,00			
1.4.6	Carrying out of all testing of the complete sub-contract Works and the commissioning thereof, so as to facilitate the handover of the complete sub-contract Works to the Employer complete with all applicable Test Certificates and / or Compliance Certificates (refer to clause 1.1.8)	sum	1,00			
1.4.7	Training of Client's representative (s) at "practical completion"	sum	1,00			
1.4.8	Training of Client's representative (s) at "end of defects liability period"	sum	1,00			
1.4.9	Provision of Record Drawings	sum	1,00			
1.4.10	Provision of Operating and Maintenance manuals	sum	1,00			
Total for Schedule carried forward to Summary					R	



Summary Page

Item	Description	Summary
1	Preliminary & General Items	
Sub-total (carried forward to Summary)		

Additions and Alterations to Ntsonkotha SSS in Lady Frere  
Schedule 2 : Preliminary & General Items

Hot Water Generation (Dining  
Hall & Laundry)

4

Item	Description	Unit	Qty	Rates		Nett Amount
				Supply	Install	
2	<b>Hot Water Generation</b> <i>The schedule shall be read with the project specifications of the tender document. The price submitted in this schedule will deem all installations to be priced for completed and operational installations</i>					
2.1	<b>Laundry Hot Water Generation</b>					
2.1.1	Supply and installation of a 7 kW (output) SIRAC high efficiency LSQ03RG High Temperature (70°C) air to water heat pump, complete with an epoxy coated galvanized steel casing, wired remote micro-processor control system that provides diagnostic control of the unit and a backlit temperature display, an electronic expansion valve (to maintain precise refrigerant metering and is controlled by the microprocessor), including all necessary refrigeration safety controls, a remote on/off switch. The unit shall have a purpose manufactured stainless steel/copper tube in tube heat exchanger for efficiency and reduce tube fouling	no	2,00			
2.1.2	Supply and installation of a 1000 litre (TT-010-2) Thermocube Tank complete with 2 off heat exchangers fabricated from 316L stainless steel spiral corrugated tubing with 0.3 mm wall thickness for heat transfer, 316L stainless steel manifolds to distribute the mains water equally through the heat exchangers, polyurethane panels 36 kg/m <sup>3</sup> polyurethane foamed between two Chromadek sheets (designed to slot into each other for ease of assembly) and liner moulded from an EPDM elastomeric membrane	sum	1,00			
2.1.3	Supply and installation of a 3 speed hot water circulating pump (UPSO 15-65 CIL2 Grundfos Pump) capable of a maximum flow of 3.84 m <sup>3</sup> at 0.61 m head to circulate water between the heat pumps and Thermocube	no	2,00			
2.1.4	Supply and installation of a 3 speed hot water circulating pump (UPSO 15-65 CIL2 Grundfos Pump) capable of a maximum flow of 3.84 m <sup>3</sup> at 0.61 m head, to be connected to the return water line to circulate water in the building	no	2,00			
2.1.5	Supply and installation of all fittings, strainers, filters, wiring, cable tray etc. for the complete installation of the hot water generation system	sum	1,00			
<b>Total for Schedule carried forward</b>					<b>R</b>	

## Schedule 2 : Preliminary &amp; General Items

Item	Description	Unit	Qty	Rates		Nett Amount
				Supply	Install	
2	<b>Hot Water Generation continued</b>			<b>Amount Brought Forward</b>		
2.1.6	Supply and installation of all copper piping (Class 2) between heat pumps and Thermocube, fittings, bends, "Ts", valves, gauges, hot water ring return pipe and hot water supply pipe connection points all insulated with approved preformed insulation sections of at least 50 kg/ m <sup>3</sup> density and 0.035 w/m°C thermal conductivity (Insulation shall be 25 mm thick preformed polystyrene sections, factory covered with stippled 5 ply aluminium foil, "Venture clad" or equal having a 10 year warranty, bonded to the external surface of the pipe. The insulation is to be secured in position using foil overlap and duct tape etc.) for the complete installation of the hot water generation system	sum	1,00			
<b>Total for Schedule carried forward to Summary</b>						<b>R</b>

Schedule 3 : Provisional Sums and Contingency Sums

Item	Description	Unit	Qty	Rates		Nett Amount
				Supply	Install	
<b>3</b>	<b>Provisional Sums and Contingency Sums</b>					
<b>3,1</b>	<b>Provisional Sums</b> These provisional sums may be utilised in full or in part. No expenditure will be allowed without the authority of the Consulting Mechanical Engineers, in writing. These sums may be deleted in full or in part.					
<b>3.1.1</b>	..... Allow a provisional sum for ..... .....	sum	0,00			Rate Only
<b>3,2</b>	<b>Contingency</b> These contingency sums may be utilised in full or in part. No expenditure will be allowed without the authority of the Consulting Mechanical Engineers, in writing. These sums may be deleted in full or in part.					
<b>3.2.1</b>	<b>Contingency</b>					
<b>3.2.1.1</b>	Allow a contingency sum for unforeseen circumstances	sum	1,00	5 000,00		
<b>Total for Schedule carried forward to Summary</b>						<b>R</b>

Summary Page

Hot Water Generation (Dining Hall & Laundry)

Item	Description	Summary
2	Hot Water Generation	
3	Provisional Sums and Contingency Sums	
Sub-total (carried forward to Summary)		

## Schedule 4 : Preliminary &amp; General Items

Item	Description	Unit	Qty	Rates		Nett Amount
				Supply	Install	
4	<b>Hot Water Generation</b> <i>The schedule shall be read with the project specifications of the tender document. The price submitted in this schedule will deem all installations to be priced for completed and operational installations</i>					
4.1	<b>Girls Dormatry Hot Water Generation</b>					
4.1.1	Supply and installation of a 23 kW (output) SIRAC high efficiency LSQ06R (55 °C) air to water heat pump, complete with an epoxy coated galvanized steel casing, wired remote micro-processor control system that provides diagnostic control of the unit and a backlit temperature display, an electronic expansion valve (to maintain precise refrigerant metering and is controlled by the microprocessor), Emerson Copeland type ZW Scroll Compressor, including all necessary refrigeration safety controls, a remote on/off switch. The unit shall have a purpose manufactured stainless steel/copper tube in tube heat exchanger for efficiency and reduce tube fouling	no	4,00			
4.1.2	Supply and installation of a 3500 litre (T.C.-035-4) Thermocube Tank complete with 4 off heat exchangers fabricated from 316L stainless steel spiral corrugated tubing with 0.3 mm wall thickness for heat transfer, 316L stainless steel manifolds to distribute the mains water equally through the heat exchangers, polyurethane panels 36 kg/m <sup>3</sup> polyurethane foamed between two Chromadek sheets (designed to slot into each other for ease of assembly) and liner moulded from an EPDM elastomeric membrane	sum	2,00			
4.1.3	Supply and installation of a hot water single impeller stainless steel centrifugal electric pump (CEAM 70/3 Lowara Pump) providing a flow of 0.84 l/s at 18 m head to circulate water between the heat pumps and Thermocube	no	4,00			
4.1.4	Supply and installation of a 3 speed hot water circulating pump (UPSO 15-65 CIL2 Grundfos Pump) capable of a maximum flow of 3.84 m <sup>3</sup> at 0.61 m head, to be connected to the return water line to circulate water in the building	no	2,00			
4.1.5	Supply and installation of all fittings, strainers, filters, wiring, cable tray etc. for the complete installation of the hot water generation system	sum	2,00			
<b>Total for Schedule carried forward</b>					R	

## Schedule 4 : Preliminary &amp; General Items

Item	Description	Unit	Qty	Rates		Nett Amount
				Supply	Install	
<b>4</b>	<b>Hot Water Generation</b>			<b>Amount Brought Forward</b>		
4.1.6	Supply and installation of all copper piping (Class 2) between heat pumps and Thermocube, fittings, bends, "Ts", valves, gauges, hot water ring return pipe and hot water supply pipe connection points all insulated with approved preformed insulation sections of at least 50 kg/ m <sup>3</sup> density and 0.035 w/m°C thermal conductivity (Insulation shall be 25 mm thick preformed polystyrene sections, factory covered with stippled 5 ply aluminium foil, "Venture clad" or equal having a 10 year warranty, bonded to the external surface of the pipe. The insulation is to be secured in position using foil overlap and duct tape etc.) for the complete installation of the hot water generation system	sum	2,00			
<b>Total for Schedule carried forward to Summary</b>						<b>R</b>

Schedule 5 : Provisional Sums and Contingency Sums

Item	Description	Unit	Qty	Rates		Nett Amount
				Supply	Install	
<b>5</b>	<b>Provisional Sums and Contingency Sums</b>					
<b>5,1</b>	<b>Provisional Sums</b> These provisional sums may be utilised in full or in part. No expenditure will be allowed without the authority of the Consulting Mechanical Engineers, in writing. These sums may be deleted in full or in part.					
<b>5.1.1</b>	..... Allow a provisional sum for ..... .....	sum	0,00			Rate Only
<b>5,2</b>	<b>Contingency</b> These contingency sums may be utilised in full or in part. No expenditure will be allowed without the authority of the Consulting Mechanical Engineers, in writing. These sums may be deleted in full or in part.					
<b>5.2.1</b>	<b>Contingency</b>					
<b>5.2.1.1</b>	Allow a contingency sum for unforeseen circumstances	sum	1,00	10 000,00		
<b>Total for Schedule carried forward to Summary</b>						<b>R</b>



Summary Page

		Hot Water Generation (Girls Dormitory)
Item	Description	Summary
4	Hot Water Generation	
5	Provisional Sums and Contingency Sums	
Sub-total (carried forward to Summary)		

Additions and Alterations to Ntsonkotha SSS in Lady Frere  
Schedule 6 : Preliminary & General Items

Hot Water Generation (Boys  
Dormitory)

12

Item	Description	Unit	Qty	Rates		Nett Amount
				Supply	Install	
6	<b>Hot Water Generation</b> <i>The schedule shall be read with the project specifications of the tender document. The price submitted in this schedule will deem all installations to be priced for completed and operational installations</i>					
6.1	<b>Boys Dormatry Hot Water Generation</b>					
6.1.1	Supply and installation of a 23 kW (output) SIRAC high efficiency LSQ06R (55 °C) air to water heat pump, complete with an epoxy coated galvanized steel casing, wired remote micro-processor control system that provides diagnostic control of the unit and a backlit temperature display, an electronic expansion valve (to maintain precise refrigerant metering and is controlled by the microprocessor), Emerson Copeland type ZW Scroll Compressor, including all necessary refrigeration safety controls, a remote on/off switch. The unit shall have a purpose manufactured stainless steel/copper tube in tube heat exchanger for efficiency and reduce tube fouling	no	4,00			
6.1.2	Supply and installation of a 3500 litre (T.C.-035-4) Thermocube Tank complete with 4 off heat exchangers fabricated from 316L stainless steel spiral corrugated tubing with 0.3 mm wall thickness for heat transfer, 316L stainless steel manifolds to distribute the mains water equally through the heat exchangers, polyurethane panels 36 kg/m <sup>3</sup> polyurethane foamed between two Chromadek sheets (designed to slot into each other for ease of assembly) and liner moulded from an EPDM elastomeric membrane	sum	2,00			
6.1.3	Supply and installation of a hot water single impeller stainless steel centrifugal electric pump (CEAM 70/3 Lowara Pump) providing a flow of 0.84 l/s at 18 m head to circulate water between the heat pumps and Thermocube	no	4,00			
6.1.4	Supply and installation of a 3 speed hot water circulating pump (UPSO 15-65 CIL2 Grundfos Pump) capable of a maximum flow of 3.84 m <sup>3</sup> at 0.61 m head, to be connected to the return water line to circulate water in the building	no	2,00			
6.1.5	Supply and installation of all fittings, strainers, filters, wiring, cable tray etc. for the complete installation of the hot water generation system	sum	2,00			
<b>Total for Schedule carried forward</b>					<b>R</b>	

## Schedule 6 : Preliminary &amp; General Items

Item	Description	Unit	Qty	Rates		Nett Amount
				Supply	Install	
<b>6</b>	<b>Hot Water Generation</b>			<b>Amount Brought Forward</b>		
6.1.6	Supply and installation of all copper piping (Class 2) between heat pumps and Thermocube, fittings, bends, "Ts", valves, gauges, hot water ring return pipe and hot water supply pipe connection points all insulated with approved preformed insulation sections of at least 50 kg/ m <sup>3</sup> density and 0.035 w/m°C thermal conductivity (Insulation shall be 25 mm thick preformed polystyrene sections, factory covered with stippled 5 ply aluminium foil, "Venture clad" or equal having a 10 year warranty, bonded to the external surface of the pipe. The insulation is to be secured in position using foil overlap and duct tape etc.) for the complete installation of the hot water generation system	sum	2,00			
<b>Total for Schedule carried forward to Summary</b>						<b>R</b>

**Additions and Alterations to Ntsonkotha SSS in Lady Frere**  
**Schedule 7 : Provisional Sums and Contingency Sums**

Hot Water Generation (Boys  
Dormitory)

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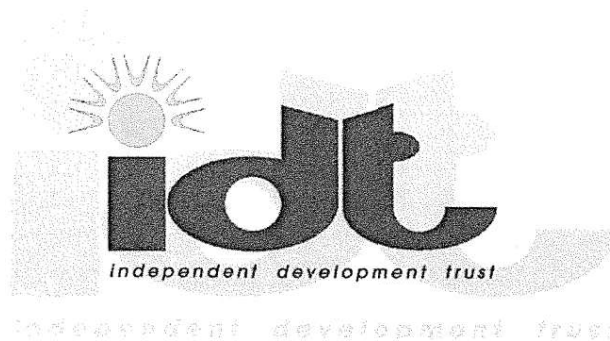
Item	Description	Unit	Qty	Rates		Nett Amount
				Supply	Install	
<b>7</b>	<b>Provisional Sums and Contingency Sums</b>					
<b>7,1</b>	<b>Provisional Sums</b> These provisional sums may be utilised in full or in part. No expenditure will be allowed without the authority of the Consulting Mechanical Engineers, in writing. These sums may be deleted in full or in part.					
<b>7.1.1</b>	..... Allow a provisional sum for ..... .....	sum	0,00			Rate Only
<b>7,2</b>	<b>Contingency</b> These contingency sums may be utilised in full or in part. No expenditure will be allowed without the authority of the Consulting Mechanical Engineers, in writing. These sums may be deleted in full or in part.					
<b>7.2.1</b>	<b>Contingency</b>					
<b>7.2.1.1</b>	Allow a contingency sum for unforeseen circumstances	sum	1,00	10 000,00		
<b>Total for Schedule carried forward to Summary</b>						<b>R</b>

Summary Page

		Hot Water Generation (Boys Dormitory)
Item	Description	Summary
6	Hot Water Generation	
7	Provisional Sums and Contingency Sums	
Sub-total (carried forward to Summary)		

Description of Services	Sub-totals
-------------------------	------------

Air-conditioning and Ventilation Installation	
Sub-total carried forward from Preliminary & General Items	
Sub-total carried forward from Dining Hall & Laundry	
Sub-total carried forward from Girls Dormitory	
Sub-total carried forward from Boys Dormitory	
<b>Sub-total (carried forward to Part C of Tender Prices)</b>	



**NTSONKOTHA SENIOR SECONDARY SCHOOL  
IN LADY FRERE  
BY INDEPENDENT DEVELOPMENT TRUST  
PROJECT SPECIFICATION  
AND  
SCHEDULE OF QUANTITIES  
FOR THE  
MECHANICAL ENGINEERING SERVICES  
(LAUNDRY EQUIPMENT INSTALLATION)**

**Volume 2 : Part C (Mechanical Installation)**

**September 2021**

**Issued by :**  
Independent Development Trust

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mxn@mxnep.com

Contact Person : Mr. M Nyikana

**NAME OF TENDERER : .....**

Our File : Public/Engineering/Projects/2016/2016-272/Tender  
Our Reference : Tender Document (Laundry Equipment)

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**DRAWING SCHEDULE**

The following drawings are issued with this Tender Document :

There are no drawings attached to this Document

## **PART 1**

### **THE SCHEDULES**

#### **CONTENTS**

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**PART 1A****PARTICULARS RELATING TO TENDERER**

**Project Name : Ntsonkotha Senior Secondary School in Lady Frere  
Mechanical Engineering Services (Laundry Equipment Installation)**

1. The registered and trading names, physical and postal address, and contact numbers for the tendering entity.

Registered Name : .....

Trading Name : .....

Physical Address : .....

Postal Address : .....

Telephone No. : .....

Facsimile No. : .....

2. The full first and surnames of their partners and/ or directors and their domiciles and addresses.

Full Name (1) : .....

Address (1) : .....

Full Name (2) : .....

Address (2) : .....

Full Name (3) : .....

Address (3) : .....

3. The names and addresses of the local agents, firms, or representatives who are interested in any manner whatsoever in the tender.

Full Name (1) : .....

Address (1) : .....

Full Name (2) : .....

Address (2) : .....

4. Bank Details Bank Name : .....

Branch & Code : .....

Account Number : .....

Contact Person : .....

Telephone No. : .....

\_\_\_\_\_  
Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**PART 1B****VARIATIONS TO SUB-CONTRACT**

**Project Name : Ntsonkotha Senior Secondary School in Lady Frere**  
**Mechanical Engineering Services (Laundry Equipment Installation)**

These rates are to be used in the event work is not readily measurable in terms of the attached Schedule of Quantities or Schedule of Rates
---

I / We agree that any variations to the agreement (not priced elsewhere in this Tender Document) will be priced strictly in accordance with the rates submitted below. The rates (exclusive of VAT) shall be calculated as specified below :

- Cost shall mean the nett cost of equipment or materials supplied to site with all discounts offered
  - The labour rates shall include all personnel insurance costs, holidays with pay and travelling time payments, incentive bonuses and overtime premiums, except for overtime payment when overtime is authorised in writing by the Consulting Mechanical Engineers
  - Percentage and labour rates shall include profits, overheads, financing, insurance, guarantee (with free maintenance) costs, engineering and management
1. for the supply of equipment over and above that originally required by the specifications and drawings Cost Plus \_\_\_\_\_ %
  2. equipment deleted will be at the price entered in the price schedule or at the supplier's selling price, unless a fixed price for deletion of an item is specified elsewhere in the Tender Document
  3. for substituted equipment, the percentage reflected in item (1) above will only apply to the difference in the supplier's price arising from the substitution
  4. for the supply of all labour, charges will be levied at the selling rate (for normal time) of :
 

Foreman	_____ per hour
Commissioning Engineer	_____ per hour
Tradesman	_____ per hour
Journeyman	_____ per hour
Labourer	_____ per hour
Other specialists / hour	Cost Plus _____ %
  5. If pricing by team work is the standard practise of the Contractor, the team shall comprise :
 

_____	persons / team members at	_____ selling price per hour
-------	---------------------------	------------------------------
  6. Overtime rates
 

	Night (after 19h00)	_____ times normal time
	Saturday	_____ times normal time
	Sunday and Public Holidays	_____ times normal time
	Other (specify)	_____ times normal time
  7. Transport charges
 

	Car	_____ Rand per km
	LDV (under 2 tonnes)	_____ Rand per km
	Truck ( between 2 and 5 tonnes)	_____ Rand per km
	Other (specify)	_____ Rand per km

---

 Name

---

 Signature

---

 Date

### PRICE ADJUSTMENT SCHEDULE

Does your Tender Price include forward cover for foreign exchange variations ?

YES		NO	
-----	--	----	--

The tenderer shall enter NIL hereunder if prices are not subject to adjustment.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is no text or other markings on the paper.

Date \_\_\_\_\_

## PART 1D

### STATEMENT OF COMPLIANCE OR QUALIFICATION BY TENDERER

**Project Name : Ntsonkotha Senior Secondary School in Lady Frere  
Mechanical Engineering Services (Laundry Equipment Installation)**

Does this Tender comply in every respect with the Conditions of Tender, Conditions of Contract, Schedules, Project Specifications, Schedule of Quantities and Drawings ?

YES		NO	
-----	--	----	--

If NO, detail qualifications hereunder. Failure to do so shall imply compliance.

**Qualifications :**

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Name \_\_\_\_\_

Signature

Date \_\_\_\_\_

**PART 1E****SCHEDULE OF SUB-CONTRACTORS PROPOSED BY TENDERER**

**Project Name : Ntsonkotha Senior Secondary School in Lady Frere**  
**Mechanical Engineering Services (Laundry Equipment Installation)**

The Tenderer shall state hereunder the names and particulars of all Sub-contractors he proposes to employ on the Works. The Tenderer shall also define the duties and relevant experience of each Sub-contractor listed.

<b>Name of Sub-contractor</b>	<b>Contact Numbers</b>	<b>Proposed Duties</b>	<b>Experience</b>

---

 Name

---

 Signature

---

 Date

**PART 1F****SIMILAR INSTALLATIONS CARRIED OUT BY TENDERER**

**Project Name : Ntsonkotha Senior Secondary School in Lady Frere**  
**Mechanical Engineering Services (Laundry Equipment Installation)**

The Tenderer shall list below all similar works carried out by him including Client details and value of the Works.  
 Failure to comply may invalidate the Tender.

<b>Name of Contract</b>	<b>Year</b>	<b>Client</b>	<b>Consulting Mechanical Engineers</b>	<b>Value ( R )</b>

---

 Name

---

 Signature

---

 Date



**PART 1G****SCHEDULE OF WORK IN HAND**

**Project Name : Ntsonkotha Senior Secondary School in Lady Frere  
Mechanical Engineering Services (Laundry Equipment Installation)**

The Tenderer shall detail below all Work currently in progress.

<b>Client</b>	<b>Project Details</b>	<b>Project Value ( R )</b>	<b>Percentage Complete ( % )</b>	<b>Commencement and Completion Dates</b>

---

 Name

---

 Signature

---

 Date

**PART 1H****SCHEDULE OF MATERIALS**

**Project Name :** Ntsonkotha Senior Secondary School in Lady Frere  
**Mechanical Engineering Services (Laundry Equipment Installation)**

The Tenderer shall detail below all materials proposed in order to complete the Works specified. (Failure to complete this schedule may invalidate the tender submission).

**Description** **Manufacturer**

**NB: Only one manufacturer's name to be inserted for each item.**

**1 Laundry Equipment****1.1 Serving****Industrial Washing Machine 1**

Type

Quantity

Two (2)

Manufacture

Model Number

Dimensions (Depth x Width x Height)

Load Capacity (kg)

Drum Depth (mm)

Drum Volume (dm<sup>3</sup>)

Net Weight (kg)

Crated Weight (kg)

Door Opening (mm)

Floor to Door Height (mm)

Power Requirements

Phase / Voltage

Power

Amperage

Electric Heating Capacity

Washing Speed (RPM)

Distribution Speed (RPM)

Spin Speed (RPM)

“G” Force

Drain Requirement (mm)

Cold Water Usage (Litres per cycle)

Hot Water Usage (Litres per cycle)

Country of Origin

Deviation from the Specification (State Briefly)

**1.2 Serving****Industrial Washing Machine 2**

Type

Quantity

One (1)

Manufacture

Model Number

Dimensions (Depth x Width x Height)

Load Capacity (kg)

Drum Depth (mm)

Drum Volume (dm<sup>3</sup>)

Net Weight (kg)

Name

Signature

Date

Flow Rate (l/s)  
 Crated Weight (kg)  
 Door Opening (mm)  
 Floor to Door Height (mm)  
 Power Requirements  
     Phase / Voltage  
     Power  
     Amperage  
     Electric Heating Capacity  
     Washing Speed (RPM)  
     Distribution Speed (RPM)  
     Spin Speed (RPM)  
 "G" Force  
 Drain Requirement (mm)  
 Cold Water Usage (Litres per cycle)  
 Hot Water Usage (Litres per cycle)  
 Country of Origin  
 Deviation from the Specification (State Briefly)

**1.3 Serving****Industrial Washing Machine 3**

Type  
 Quantity  
 Manufacture  
 Model Number  
 Dimensions (Depth x Width x Height)  
 Load Capacity (kg)  
 Drum Depth (mm)  
 Drum Volume (dm<sup>3</sup>)  
 Net Weight (kg)  
 Crated Weight (kg)  
 Door Opening (mm)  
 Floor to Door Height (mm)  
 Power Requirements  
     Phase / Voltage  
     Power  
     Amperage  
     Electric Heating Capacity  
     Washing Speed (RPM)  
     Distribution Speed (RPM)  
     Spin Speed (RPM)  
 "G" Force  
 Drain Requirement (mm)  
 Cold Water Usage (Litres per cycle)  
 Hot Water Usage (Litres per cycle)  
 Country of Origin  
 Deviation from the Specification (State Briefly)

Eight (8)

Name

Signature

Date

**1.4 Serving****Industrial Tumble Dryer 1**

Type

Quantity

Eight (8)

Manufacture

Model Number

Dimensions (Depth x Width x Height)

Load Capacity (kg)

Drum Depth (mm)

Drum Volume (dm<sup>3</sup>)

Net Weight (kg)

Crated Weight (kg)

Door Opening (mm)

Floor to Door Height (mm)

Power Requirements

Phase / Voltage

Power

Amperage

Electric Heating Capacity

Washing Speed (RPM)

Distribution Speed (RPM)

Spin Speed (RPM)

“G” Force

Drain Requirement (mm)

Cold Water Usage (Litres per cycle)

Hot Water Usage (Litres per cycle)

Country of Origin

Deviation from the Specification (State Briefly)

**1.5 Serving****Industrial Tumble Dryer 2**

Type

Quantity

Two (2)

Manufacture

Model Number

Dimensions (Depth x Width x Height)

Load Capacity (kg)

Drum Depth (mm)

Drum Volume (dm<sup>3</sup>)

Net Weight (kg)

Crated Weight (kg)

Door Opening (mm)

Floor to Door Height (mm)

Power Requirements

Phase / Voltage

Power

Amperage

Electric Heating Capacity

Washing Speed (RPM)

Distribution Speed (RPM)

Spin Speed (RPM)

“G” Force

Name

Signature

Date