

## SUMMARY OF BILLS

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<b>SUB TOTAL</b>			<b>R</b>
<b>VAT 15%</b>			<b>R</b>
<b>GRAND TOTAL [CARRIED FORWARD TO FORM OF OFFER]</b>			<b>R</b>

**BILL 1 BOQ 1: PRELIMINARY AND GENERAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>1</b>	<b>SANS 1200 A</b>	<b>SECTION A : PRELIMINARY AND GENERAL</b>				
<b>1.1</b>		FIXED CHARGE ITEMS				
	PSA 8.3	Contractual Requirements				
1.1.1	PSA 8.3.1	Contractor's fixed establishment cost	Sum	1		R
	PSA 8.3.5	Contractor's obligation with respect to Health and Safety				
1.1.2		a) Preparation of Project Specific Health and Safety Plan	Sum	1		R
1.1.3		b) Carrying out a Hazard Identification and Risk Assessment	Sum	1		R
1.1.4		c) Preparation and maintenance of H&S File	Sum	1		R
1.1.5		d) Preparation of Method Statements and Safe Work Procedures	Sum	1		R
1.1.6		e) Emergency Preparedness and Response plan (this item should include: First Aid, Fire and Explosions, Acts of Nature, Hazardous Chemical Substance and Flammable Substances spillage, Political unrest and violence and/or Terrorism)	Sum	1		R
1.1.7		f) Occupational health provisions (Medicals - pre- and post-employment; Physical and Psychological for work at elevated heights; (Medical surveillance for hazardous work; Baseline baseline & audiometric screening tests; HIV and AIDS Programme; etc.)	Sum	1		R
1.1.8		g) Compliance with the requirements of the latest COVID-19 Regulations, published in terms of the Disaster Management Act (Act 57 of 2002).	Sum	1		R
1.1.9		h) Inoculation of Contractor's personnel for working on Wastewater Treatment Works	Sum	1		R
1.1.10		i) Provision of Personal Protective Equipment and clothing, including but not limited to: Overalls, hard-hats, gloves, safety boots, gumboots, ear protection, dust masks, safety goggles, safety harnesses, reflective vests, etc.	Sum	1		R
1.1.11		j) Provision of Occupational Health and Safety equipment	Sum	1		R
1.1.12		k) Ensuring public health and safety	Sum	1		R
Total Carried Forward						R

## BILL 1 BOQ 1: PRELIMINARY AND GENERAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.1.13		l) Occupational health and safety signage, pictograms and notices	Sum	1		R
1.1.14		m) All other fixed costs associated with complying with the requirements	Sum	1		R
	PSA 8.3.6	Compliance with Environmental Management Specifications				
1.1.15		a) Fixed costs with respect to Environmental Management	Sum	1		R
1.1.16		b) Environmental awareness training	Sum	1		R
1.1.17	PSA 8.3.7	Producing and submitting Quality Control Programme	Sum	1		R
1.2	PSA 8.4	TIME RELATED ITEMS				
	8.4.1	Contractual Requirements				
1.2.1	PSA 8.4.2	Time related establishment	Sum	1		R
	PSA 8.4.2.2	Facilities for the contractor				
1.2.2		a) Dealing with water	Sum	1		R
1.2.3		b) Search for, record and protect all survey benchmarks	Sum	1		R
1.2.4		c) Maintain continuity of flow through works	Sum	1		R
1.2.5		d) Provide access for authorised personnel	Sum	1		R
1.2.6		e) Nightwatch and security	Sum	1		R
	PSA 8.4.6	Compliance with respect to Health and Safety				
1.2.7		a) Provision of Construction Manager and alternate	Sum	1		R
1.2.8		b) Provision of Assistant Construction Manager(s)	Sum	1		R
1.2.9		c) Provision of Health and Safety Officer	Sum	1		R
1.2.10		d) Provision of Construction supervisors and assistant construction supervisors	Sum	1		R
1.2.11		e) Maintenance of H&S file	Sum	1		R
1.2.12		f) Implementation and Management of the Health and Safety Plan	Sum	1		R
1.2.13		g) Enforcing of Hazard Identification and Risk Assessment	Sum	1		R
1.2.14		h) Implementation of Method Statements and Safe Work Procedures	Sum	1		R
Total Carried Forward						R

## BILL 1 BOQ 1: PRELIMINARY AND GENERAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.2.15		i) Ensuring sub-contractors' compliance with statutory requirements, including compliance with the latest COVID-19 Regulations and monitoring and auditing of sub-contractors	Sum	1		R
1.2.16		j) Occupational health and safety training, promotion and awareness	Sum	1		R
1.2.17		k) Ensuring public health and safety	Sum	1		R
1.2.18		l) All other time related costs associated with complying with the requirements of the OHS Act, Construction Regulations 2014, all other relevant regulations in terms of the OHS act and the Health and Safety Specifications, for the duration of the Contract.	Sum	1		R
1.2.19	PSA 8.4.7	Compliance with Environmental Management Specifications	Sum	1		R
1.2.20	PSA 8.4.8	Compliance with the Quality Control Programme	Sum	1		R
1.3	PSA 8.8	TEMPORARY WORKS				
1.3.1	PSA 8.8.2	Traffic Accommodation	Sum	1		R
1.4		PROVISION FOR POSSIBLE LOAD SHEDDING				
	PSA 8.9	Costs in the event of power cut (provisional)				
1.4.1		a) During working hours	hr	192		R
1.4.2		b) During non-working hours	hr	50		R
1.5	PA 8.1	MAINTAINING FLOW THROUGH THE WWTW				
1.5.1		a) Dealing with Flow for Construction of new Chamber A and B (as detailed in PA 5.4)	Sum	1		R
1.5.2		b) Dealing with Flow for Construction of Overflow Chamber (as detailed in PA 5.4)	Sum	1		R
1.5.3		c) Dealing with Flow in the Existing inlet works pipeline when constructing the New Tanker Discharge Manhole (as detailed in PA 5.4)	Sum	1		R
1.5.4		d) Dealing with Flow in the Existing maturation pond when constructing the New suction pipe going into the Second Class water Pump Station (as detailed in PA 5.6)	Sum	1		R
Total Carried Forward						R

**BILL 1 BOQ 1: PRELIMINARY AND GENERAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.5.5		e)Diverting Flow for Upgrades, inlet Works at Hammarsdale WWTW (as detailed in PA 5.5)	Sum	1		R
1.5.6		f)Dealing with Flow in the exisitng potable water pipeline for the construction of the new pipeline (as detailed in PA 5.6)	Sum	1		R
1.5.7		g) Dealing with Flow in the exisiting effluent pipe to dam for construction of a new pump station sump overflow manhole (as detailed in PA 5.6)	Sum	1		R
1.5.8		h) Dealing with Flow for connection of new rising main to existing rising main (as detailed in PA 5.5)	Sum	1		R
Total Carried Forward To Summary						R

**BILL 1 BOQ 1: PRELIMINARY AND GENERAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>2</b>	<b>SANS 1200AB</b>	<b>SECTION AB: ENGINEER'S OFFICE</b>				
2.1	PSAB 8.3	ENGINEERS FACILITIES ON SITE				
	PSAB 8.3.1	Fixed charge and value related items				
2.1.1		a) Employer's Agent's Office (incl. carports)	Sum	1		R
2.1.2		b) Cellular phone	No	2		R
2.1.3		c) Computer	No	1		R
2.1.4		d) Survey Equipment	Sum	1		R
2.1.5		e) Nameboards	No	2		R
	PSAB 8.3.2	Time related items				
2.1.6		a) Employer's Agent's Office (incl. carports)	Sum	1		R
2.1.7		b) Cellular phone	No	2		R
2.1.8		c) Computer	No	1		R
2.1.9		d) Survey Equipment	Sum	1		R
2.1.10		e) Nameboards	No	2		R
	PSAB 8.4	Survey and materials assistants				
2.1.11		a) Survey assistants	man.hr	40		R
2.1.12		b) Materials assistants	man.hr	40		R
2.2		PROVISIONAL COST SUM				
	PSAB 8.6	Cellular Phone Calls				
2.2.1		a) Cellular phone charges	min	12 000		R
	PSAB 8.7	Internet Connectivity				
2.2.2		a) Wireless Internet Connection	Months	24		R
Total Carried Forward To Summary						R

**BILL 1 BOQ 1: PRELIMINARY AND GENERAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE		AMOUNT R
<b>3</b>	<b>PSA 8.5</b>	<b>PROVISIONAL SUMS</b>					
	PSA 8.5.1	Testing of materials by Engineer					
3.1		a) Testing of Materials	PC Sum	1	R	15 000.00	R 15 000.00
3.2		b) Overheads, charges and profit on PSA 8.5.1 (a) above	%	15 000.00			R
	PSA 8.5.2	Relocation cost of electrical services by local authority					
3.3		a) Cost of relocating existing electrical services by local authority	PC Sum	1	R	10 000.00	R 10 000.00
3.4		b) Overheads, charges and profit on PSA 8.5.2 (a) above	%	10 000.00			R
	PSA 8.5.3	Survey by Engineer					
3.5		a) Survey work ordered by Engineer	PC Sum	1	R	30 000.00	R 30 000.00
3.6		b) Overheads, charges and profit on PSA 8.5.3 (a) above	%	30 000.00			R
		Community Liason Officer					
3.7		a) Employment of a Community Liason Officer when required for the project	PC Sum	1	R	408 000.00	R 408 000.00
3.8		b) Overheads, charges and profit on (a) above	%	408 000.00			R
		ISD Facilitator					
3.9		a) Employment of a ISD Facilitator when required for the project	PC Sum	1	R	1 500 000.00	R 1 500 000.00
3.10		b) Overheads, charges and profit on (a) above	%	1500 000.00			R
Total Carried Forward To Summary							R

## BILL 1 BOQ 1: PRELIMINARY AND GENERAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>4</b>	<b>PSA 8.7</b>	<b>DAYWORKS (REMEASUREABLE)</b>				
		Allowance for dayworks (provisional)				
		General dayworks				
		Labour (Provisional)				
4.1		a) Qualified artisan	hr	100		R
4.2		b) Skilled labourer	hr	100		R
4.3		c) Semi-skilled labourer	hr	300		R
4.4		d) Unskilled labourer	hr	300		R
4.5		e) Foreman	hr	150		R
4.6		f) Technician	hr	150		R
		Plant (Provisional)				
		a) Bulldozer				
4.7		..... kW (small)	hr	40		R
4.8		..... kW (large)	hr	40		R
4.9		b) Grader ..... kW	hr	40		R
4.1		c) Wheel loader .....m³ bucket	hr	40		R
4.11		d) Crawler excavator .....kW	hr	40		R
4.12		e) Tractor - loader- backhoe .....m³ bucket	hr	40		R
		f) Rollers and compactors				
4.13		Pneumatic self propelled ..... ton	hr	40		R
4.14		Smooth self propelled vibrating roller .....ton	hr	40		R
4.15		Plate compactor	hr	40		R
		g) Trucks				
4.16		Tipper truck (10 m³ min)	hr	40		R
4.17		Tipper truck (5 m³ min)	hr	40		R
4.18		Water truck (10kl min)	hr	40		R
4.19		Dumptruck .....m³	hr	40		R
4.20		h) Compressor (min 10m³/minute), incl hammer and hose	hr	40		R
		i) Water pumps				
Total Carried Forward						R



## BILL 1 BOQ 1: PRELIMINARY AND GENERAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
4.21		75mm dia	hr	40		R
4.22		150mm dia	hr	40		R
		j) Submersible Sewage Pumps				
4.23		75mm dia	hr	40		R
4.24		150mm dia	hr	40		R
		k) Sewage Handling Tankers				
4.25		10m³ capacity	hr	40		R
4.26		15m³ capacity	hr	40		R
		Materials:				
4.27		Cement	50kg bag	50		R
4.28		Building sand	m³	10		R
4.29		19mm crushed stone	m³	10		R
4.30		Bricks: ROK's	1000	3		R
4.31		a) Supply other material	Prov Sum	1	R 10 000.00	R 10 000.00
4.32		b) Contractors overheads, profits, etc on item A.72 above	%	10 000		R
Total Carried Forward To Summary						R

## BILL 1 BOQ 1: PRELIMINARY AND GENERAL

## SUMMARY OF SECTIONS

SECTION	DESCRIPTION			AMOUNT R
1	SECTION A : PRELIMINARY AND GENERAL			R
2	SECTION AB: ENGINEER'S OFFICE			R
3	PROVISIONAL SUMS			R
4	DAYWORKS (REMEASUREABLE)			R
Total Carried Forward To Summary Of Bills				R

**BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>1</b>	<b>SABS 1200 C</b>	<b>SECTION C : SITE CLEARANCE</b>				
	8.2.1	Clear and Grub				
1.1		a) Second Class Water Pump Station area	m <sup>2</sup>	54		R
1.2		b) New Inlet Works Area	m <sup>2</sup>	350		R
1.3		c) New Pump station Area	m <sup>2</sup>	195		R
1.4		d) New roadways and walkways at Inlet works	m <sup>2</sup>	1 535		R
1.5		e) New guardhouse	m <sup>2</sup>	15		R
	PSC 8.2.2	Remove and grub large trees of girth				
1.6		a) over 1 m and up to and including 2 m	No.	1		R
1.7		b) over 2 m and up to and including 3 m	No.	1		R
1.8	8.2.5	Protect / Reinstate fences	m	50		R
	PSC 8.2.7	Dismantle and Relocate Pipelines, Electricity Transmission Lines, Handrailing, Cables etc (where necessary)				
1.9		a) Electricity Transmission Lines where the New Inlet Works is located	m	20		R
1.10		b) 50mm diameter Class 9 PE potable water pipeline supply at the Inlet works	m	10		R
1.11		c) EWS Pipeline 450mm diameter pipeline	m	80		R
1.12		d) Second class water 63mm diameter pipe at the existing inlet works structure	m	10		R
1.13		e) Electrical cabling at the existing Inlet works area	m	15		R
1.14		f) Existing 600mm diameter stormwater pipeline	m	80		R
	PSC 8.2.8	Demolish and remove structures / buildings / materials / etc				
1.15		a) Existing reinforced concrete channels and floor slabs at the Existing Inlet works. Slab thickness up to 300mm	m <sup>2</sup>	27		R
1.16		b) Existing Inlet works screens structure (Reinforced concrete wall, roof, etc)	m <sup>2</sup>	45		R
1.17		c) Remove and dispose of existing paving at the existing inlet works	m <sup>2</sup>	10		R
1.18		d) Existing stormwater manhole at the Existing Inlet works	No	2		R
1.19		e) Existing 450mm diameter stormwater pipe concrete	m	65		R
Total Carried Forward						R

## BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.20	PSC 8.2.10	f) Existing concrete road at the existing tanker discharge area (To be resurfaced)	m³	10		R
		Remove topsoil to nominal depth of 150mm and stockpile				
1.21		a) Second Class Water Pump Station area	m²	54		R
1.22		b) New Inlet Works Area	m²	350		R
1.23		c) New Pump Station area	m²	195		R
1.24	PSC 8.2.11	d) New roadways and walkways at Inlet works	m²	1 535		R
1.25		e) New guardhouse	m²	15		R
		Dealing with hazardous material				
1.26		a) 110 to 160mm diameter AC pipes	m	5		R
1.27		b) 600mm diameter AC pipes	m	5		R
1.28	PSC 8.2.12	c) 900mm diameter AC pipes	m	32		R
		Break out concrete/brickwork, reinstate, make good edges and dispose of waste				
1.29		a) 900mm diameter raw sewer AC pipeline to make way for an Overflow manhole	m	3		R
1.30		b) Existing inlet works for new 900mm diameter HDPE pipeline	m³	1		R
1.31		c) 900mm diameter raw sewer AC pipeline to make way for a Tanker discharge manhole	m³	3		R
1.32	PSC 8.2.13	d) Existing Inlet works channel walls for new 600mm diameter HDPE Overflow bypass pipeline	m³	1		R
1.33		e) Existing Stormwater bypass manhole for new 600mm diameter HDPE overflow bypass pipeline	m³	1		R
		Dismantle and remove existing equipment				
1.34		a) Dismantle and remove existing equipment and dispose				
		i) Existing steel bar screens and associated fittings at the Existing Inlet works	Sum	1		R
1.35		ii) Existing steel grating over channel at the Existing inlet works	Sum	1		R
1.36		iii) Existing steel sluice valve including all associated fittings	Sum	1		R
1.37		iv) Existing handrailing at the Existing inlet works	Sum	1		R
Total Carried Forward						R

## BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.38		v) Existing structural steel frame in the existing Inlet works	Sum	1		R
		b) Dismantle and remove existing equipment and transport to Municipality Store				
1.39		i) Existing handrailing at the Existing inlet works. Length is equal to 40m	Sum	1		R
	PSC 8.2.15	Cleaning of existing raw sewage pipelines				
1.40		a) Establishment of pipeline cleaning crew onsite	Sum	1		R
		b) Pressure cleaning of pipeline				
1.41		i) Existing 900mm diameter A.C. raw sewer pipeline between Overflow manhole and Tanker discharge manhole	m	50		R
1.42		ii) Existing 600mm diameter A.C. final effluent pipeline	m	50		R
	PSC 8.2.16	Saw cut through existing surface for trench excavation				
1.43		a) Premix (20mm to 80m deep)	m	10		R
	PSC 8.2.17	Removal of existing kerbing, channelling and edging				
		a) Kerbing				
1.44		i) Existing Chlorine Building	m	3		R
1.45		ii) Existing Pump station No.6	m	5		R
		b) Channelling				
1.46		i) Existing Chlorine Building	m	3		R
1.47		ii) Existing Pump station No.6	m	5		R
	PSC 8.2.18	Remove and dispose of existing pavement				
1.48		i) Existing Existing Inlet works area including Pump station No.6 and chlorine building	m³	20		R
Total Carried Forward To Summary						R

## BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
2	<b>SABS 1200 D</b>	<b>SECTION D: EARTHWORKS</b>				
	PSD 8.3.3	Restricted Excavation				
2.1		AT INLET WORKS AND SECOND CLASS WATER PUMP STATION				
		a) Excavate in all materials and use for embankment or backfill or dispose, as ordered				
2.1.1		i) Stockpile and Maintain	m³	10		R
2.1.2		ii) Spoil to designated dump site (within freehaul distance) and spread	m³	1 550		R
2.1.3		iii) Cut to fill	m³	680		R
		b) Extra-over payment item 8.3.3 for:				
2.1.4		i) Hard rock excavation	m³	10		R
2.1.5		c) Extra-over for item PSD 8.3.3 for importation of approved sand fill from commercial sources	m³	10		R
2.1.6		d) Extra-over for item PSD 8.3.3 for 5% cement stabilised sand	m³	10		R
2.1.7		e) Extra-over for item PSD 8.3.3 for restricted backfilling against structures	m³	20		R
	8.3.4	Importing of Materials				
		a) Importation of materials from commercial sources or from borrow pits, place and compact				
		i) G9-quality material (compacted to 100% of Mod AASHTO density for fill to :				
2.1.8		- New degritters, sump and channels	m³	18		R
2.1.9		- New concrete paved areas at inlet works	m³	36		R
2.1.10		- New concrete road areas at inlet works	m³	60		R
2.1.11		- New concrete slab at the Second Class water pump station	m³	3		R
2.1.12		- New concrete road slab at the New Tanker Discharge area	m³	2		R
		Extra-over for importation of material from commercial sources				
2.1.13		i) G7-quality material (compacted to 95% of Mod AASHTO density for 100% for sand fill to Paved area	m³	120		R
2.1.14		ii) G8-quality material (compacted to 95% of Mod AASHTO density for fill to Paved area	m³	120		R
	PSD 8.3.8	Existing services				
Total Carried Forward						R

## BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
2.1.15	PSD 8.3.8.1	a) Establish service detection crew	Sum	1		R
2.1.16		b) The use or hire of specialist equipment for detection	hours	8		R
		c) Excavate by hand in soft material to expose services				
2.1.17		i) EWS pipe 450mm diameter	m³	10		R
2.1.18		ii) Existing second class water pipe ( <100mm diameter)	m³	10		R
2.1.19		iii) Existing electrical cables	m³	5		R
2.1.20		iv) Existing 50mm diameter water main	m³	5		R
2.1.21		v) Existing 900mm diameter AC pipeline	m³	10		R
2.1.22		vi) Existing 600mm diameter AC pipe	m³	10		R
		8.3.8.2 Dealing with services that are at risk because of the construction of earthworks				
	8.3.8.2	a) Cables				
2.1.23		i) Electrical cables	No.	10		R
		c) Temporary protection of services				
2.1.24		i) Existing electrical cables	No.	10		R
2.1.25		ii) Existing second class water pipe <160mm pipe	No.	2		R
2.1.26		iii) Existing water main < 100mm diameter	No.	2		R
2.1.27		iv) 900mm diameter AC pipe	No.	1		R
2.1.28		v) Existing stormwater pipe < 350mm diameter	No.	3		R
2.1.29		8.3.10 Topsoiling	m²	500		R
		PSD 8.3.14 Shoring to protect existing structures				
	PSD 8.3.14	a) Depth 0-2.5m				
2.1.30		i) Construction of New rising main	m²	190		R
2.1.31		ii) Shoring for New 900mm diameter HDPE pipeline at the Two Borehole wells	m²	25		R
2.1.32		iii) Shoring for construction of the New Overflow Manhole at the Existing inlet works	m²	25		R
		a) Depth 2.5-3m				
2.1.33		i) For construction of the New Tanker discharge Manhole at the Existing inlet works	m²	25		R
		b) Depth 3-6m				
Total Carried Forward						R

**BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
2.1.34	PSD 8.3.15	i) At the Maturation Pond for construction of new degritters and channels	m <sup>2</sup>	180		R
		Final grading				
2.1.35		a) Machine grading	m <sup>2</sup>	65		R
		b) Hand trimming				
2.1.36		i) Flat area with slopes less than 1:4	m <sup>2</sup>	30		R
2.1.37		(ii) Areas with slopes steeper than or equal to 1:4	m <sup>2</sup>	30		R
Total Carried Forward To Summary						R



## BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>3</b>	<b>SABS 1200 DB</b>	<b>SECTION DB: EARTHWORKS (PIPE TRENCHES)</b>				
3.1	PSDB 8.3.2	EXCAVATION				
	PSDB 8.3.2 (a)	Trench Excavation (All trenches deeper than 1,0m shall be shored)  a) Excavate in all materials for trenches, dewater, backfill, compact, and dispose of surplus or unsuitable material for:  i) Pipes up to and including 125mm external diameter for depths:  - Exceeding 0.0m up to 1.0m  - Exceeding 1.0 up to 2.0m  - Exceeding 2.0 up to 3.0m  ii) Pipes over 125mm and up to 710mm external diameter for depths:  - Exceeding 0.0m up to 1.0m  - Exceeding 1.0 up to 2.0m  - Exceeding 2.0 up to 3.0m  iii) Pipes over 710mm and up to 1000mm external diameter for depths:  - Exceeding 0.0m up to 1.0m  - Exceeding 1.0m up to 2.0m  - Exceeding 2.0m up to 3.0m	m	20		R
3.1.1		- Exceeding 0.0m up to 1.0m	m	20		R
3.1.2		- Exceeding 1.0 up to 2.0m	m	400		R
3.1.3		- Exceeding 2.0 up to 3.0m	m	130		R
3.1.4		- Exceeding 0.0m up to 1.0m	m	5		R
3.1.5		- Exceeding 1.0 up to 2.0m	m	15		R
3.1.6		- Exceeding 2.0 up to 3.0m	m	57		R
3.1.7		- Exceeding 0.0m up to 1.0m	m	35		R
3.1.8		- Exceeding 1.0m up to 2.0m	m	293		R
3.1.9		- Exceeding 2.0m up to 3.0m	m	10		R
	PSDB 8.3.2 (b)	b) Extra-over Payment Items PSD 8.3.2 for: (Provisional)  i) Hard rock excavation  iii) Hand excavation - soft material	m <sup>3</sup>			
3.1.10		i) Hard rock excavation	m <sup>3</sup>	35		R
3.1.11		iii) Hand excavation - soft material	m <sup>3</sup>	293		R
3.1.12	8.3.2	c) Excavate and dispose of unsuitable material from the trench bottom (provisional)	m <sup>3</sup>	10		R
	8.3.3	Excavation Ancillaries				
	8.3.3.1	Make up deficiency in backfill material (Provisional)				
3.1.13		a) From other necessary excavations on site	m <sup>3</sup>	80		R
3.1.14		c) By importation from commercial sources	m <sup>3</sup>	80		R
3.1.15	8.3.3.3	Compaction in Road Reserve	m <sup>3</sup>	5		R
3.2	8.3.4	PARTICULAR ITEMS				
	PSDB 8.3.4 (d)	d) Excavation by hand in all materials to expose pipe for removal and backfill				
Total Carried Forward						R

## BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
3.2.1	PSDB 8.3.5  8.3.5	i) Existing 50mm diameter water main	m³	10		R
3.2.2		ii) Existing 300mm diameter concrete stormwater pipe	m³	10		R
3.2.3		iii) Existing 900mm diameter AC pipeline	m³	30		R
		Existing services that Intersect or Adjoin a pipe trench				
		a) Services that intersect a trench.				
		i) Pipeline Existing Inlet works				
3.2.4		- Electrical cables	No.	10		R
3.2.5		- uPVC 110mm dia. sleeves with cables	No.	10		R
3.2.6		- Existing pipes <100mm diameter	No.	3		R
3.2.7		- Existing pipes 100-300mm diameter	No.	3		R
3.2.8		- Existing pipes 300-750mm diameter	No.	5		R
3.2.9		- Existing pipes 750-1000mm diameter	No.	5		R
3.2.10		- Barrier Kerbs and channels	No.	3		R
		b) Services that adjoin a pipe trench.				
		Pipeline Existing Inlet works				
3.2.11		- Electrical cables	No.	15		R
3.2.12		- uPVC 110mm dia. sleeves with cables	No.	10		R
3.2.13		- Existing pipes <100mm diameter	No.	3		R
3.2.14		- Existing pipes 100-300mm diameter	No.	5		R
3.2.15		- Existing pipes 300-750mm diameter	No.	5		R
3.2.16		- Existing pipes 750-1000mm diameter	No.	5		R
3.3	PSDB 8.3.6.1	FINISHING				
		Reinstate road surface complete with all courses				
3.3.1		a) Asphalt of thickness up to 80mm to roadway	m²	10		R
3.3.2		b) Basecourse material stabilised with 5% cement and compacted to 98% mod AASHTO density (2 layers of 150mm thick)	m²	10		R
3.3.3		c) Subbase material compacted to 95% mod AASHTO density (2 layers of 150mm thick)	m²	10		R
3.3.4		d) Concrete interlocking block paving of thickness 80mm to walkway	m²	10		R
3.3.5		e) Precast kerbing	m	2		R
Total Carried Forward						R

**BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
3.3.6		f) class 30MPa/19mm concrete 150mm thick with mesh reinforcement Ref 193	m <sup>2</sup>	4		R
3.3.7	PSD 8.3.8	Shoring of Pipe Trenches (Provisional)	m <sup>2</sup>	10		R
	SABS MM 8.4.1	Reinstate road markings (Provisional)				
3.3.8		a) White lines - unbroken	m	10		R
3.3.9		b) Yellow lines - unbroken	m	10		R
Total Carried Forward To Summary						R

**BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>4</b>	<b>SABS 1200 DK</b>	<b>SECTION DK: GABIONS AND PITCHING</b>				
	8.2.4	Geotextile				
4.1		a) Type 1 geotextile to underside of stone pitching	m <sup>2</sup>	15		R
	8.2.5	Pitching				
4.2		a) Grouted stone 150mm medium pitching to Hammarsdale Dam	m <sup>2</sup>	15		R
Total Carried Forward To Summary						R

## BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
5	<b>SANS 1200 DM</b>	<b>SECTION DM: EARTHWORKS (ROADS, SUBGRADE)</b>				
	8.3.3	Treatment of Road-bed  a) Road-bed preparation and compaction of material to 93% Mod AASHTO (100% for sand)				
5.1		i) Road surfaces at Inlet works	m³	350		R
		b) Compact Insitu subgrade				
5.2		i) Base of New concrete paved areas at inlet works to 95% Mod AASHTO density (100% for sand) (200mm deep)	m²	800		R
5.3		ii) Base of New concrete road at Tanker discharge area to 95% Mod AASHTO density (100% for sand) (200mm deep)	m²	50		R
5.1	8.3.4	CUT TO FILL  Compact material to a minimum of 93% of Mod. AASHTO density (100 % for sand):				
5.1.1		i) Road surfaces at Inlet works	m³	90		R
5.2	8.3.5	SELECTED LAYERS  Construct selected layers with selected material from excavations or stockpiles on site				
5.2.1		a) G7 selected layer compacted to 95% of mod. AASHTO density (100% for sand)  Extra over for importation of material from commercial sources	m³	50		R
5.2.2		a) G7 Quality material	m³	100		R
5.2.3	PSDM 8.3.18	Box Cutting next to Existing Kerbs and Channels	m	10		R
Total Carried Forward To Summary						R

## BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>6</b>	<b>SABS 1200 G</b>	<b>SECTION G: CONCRETE (STRUCTURAL)</b>				
6.1		NEW INLET WORKS CHANNEL (SCREENING AREA TO PUMP STATION SUMP)  Rates for smooth formwork shall include corner chamfers up to 25 x 25mm as specified				
	8.2	Formwork				
	8.2.1	Rough - Plane				
6.1.1		a) Vertical (0 to 300mm high)	m	228		R
6.1.2		b) Vertical (1.0 to 2.0m high)	m <sup>2</sup>	120		R
6.1.3		c) Vertical (2.0 to 4.0m high)	m <sup>2</sup>	460		R
6.1.4		d) Soffit of propped slab (2.0 to 6.0m high)	m <sup>2</sup>	75		R
	8.2.1	Rough - Circular				
6.1.5		a) Vertical (0 to 300mm high)	m	10		R
6.1.6		b) Vertical (1m to 2m high)	m <sup>2</sup>	55		R
6.1.7		c) Vertical (2m to 4m high)	m <sup>2</sup>	100		R
6.1.8		d) Sloping as detailed on drawing No.5331-ST-IW-114	m <sup>2</sup>	22		R
	8.2.2	Smooth - plane				
6.1.9		a) 15mm x 15mm chamfer	m	910		R
6.1.10		b) Vertical (0 to 300mm high)	m	5		R
6.1.11		c) Vertical (1.0 to 2.0m high)	m <sup>2</sup>	110		R
6.1.12		d) Vertical (2.0 to 4.0m high)	m <sup>2</sup>	709		R
6.1.13		e) Vertical columns walls(300mm x 450mm x 8.5m tall)	m <sup>2</sup>	108		R
6.1.14		f) Soffit of propped slab (2.0 to 6.0m high)	m <sup>2</sup>	125		R
6.1.15		g) Beams	m <sup>2</sup>	76		R
	8.2.2	Smooth - Circular				
6.1.16		a) Vertical (1m to 2m high)	m <sup>2</sup>	0		R
6.1.17		b) Vertical (2000 to 4000mm high)	m <sup>2</sup>	150		R
6.1.18		c) Sloping as detailed on drawing No. No.5331-ST-IW-114	m <sup>2</sup>	4		R
	8.2.6	Box out holes				
6.1.19		a) Box out holes and pockets for:  i) 900mm diameter HPDE pipe (with puddle flange)	No.	1		R
Total Carried Forward						R

## BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
6.1.20		ii) 110mm diameter uPVC pipe	No.	1		R
6.1.21		iii) 300mm diameter uPVC pipe	No.	1		R
	8.3	Reinforcement				
	8.3.1	Steel Bars				
		a) High tensile steel				
6.1.22		i) 8mm up to 16mm diameter	t	32		R
6.1.23		ii) 20mm up to 32mm (Provisional)	t	6		R
	8.4.1	Concrete				
		a) 10MPa/19mm concrete to:				
6.1.24		i) Blinding layer (horizontal)	m³	19		R
	PSG 8.4.1	b) 35 MPa /19mm concrete to:				
6.1.25		i) Walls	m³	177		R
6.1.26		ii) Bases and floor slab	m³	41		R
6.1.27		iii) Suspended floor slab	m³	15		R
6.1.28		iv) Roof slab	m³	27		R
6.1.29		v) Beams	m³	17		R
6.1.30		vi) Columns	m³	10		R
6.1.31		c) 15 MPa structural screed to channel floor	m³	11		R
	8.4.4	Unformed surface finishes				
6.1.32		a) Wood float finish to floor slab	m²	206		R
		b) Steel float finish to:				
6.1.33		i) Top of walls	m²	70		R
6.1.34		ii) Top of propped slab	m²	122		R
	8.5	Joints				
6.1.35		a) Construction Joint A complete as shown on Drawing No. 5331-ST-IW-116	m	15		R
6.1.36		b) Construction Joint B complete as shown on Drawing No. 5331-ST-IW-116	m	40		R
6.1.37		c) Construction Joint C complete as shown on Drawing No. 5331-ST-IW-116	m	180		R
	8.7	Grouting				
	PSG 8.7 (d)	Casting in of new pipes into concrete wall				
6.1.38		i) New 900mm diameter HDPE pipe (with puddle flange) from existing inlet works	No.	1		R
Total Carried Forward						R

## BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
6.1.39	PSG 8.7 (e)	Casting in of ducts into structure for ducts:				
		a) Up to 50mm diameter	m	10		R
6.1.40		b) 50mm diameter up to 100mm diameter	m	10		R
	PSG 8.12	Application of calcium aluminate corrosion (sewpercoat) protection, or equally approved coating system, on concrete structures				
6.1.41		i) Walls	m <sup>2</sup>	720		R
6.1.42		ii) Floor	m <sup>2</sup>	243		R
6.1.43		iii) suspended floors	m <sup>2</sup>	15		R
6.2		CONCRETE WORK AT THE NEW PUMP STATION				
		Rates for smooth formwork shall include corner chamfers up to 25 x 25mm as specified				
	8.2	Formwork				
	8.2.1	Rough - Plane				
		a) Vertical				
6.2.1		i) To walls, footings and bases (0 to 300mm high)	m	95		R
6.2.2		ii) To walls, footings and bases etc (300mm to 1.5m high)	m <sup>2</sup>	45		R
6.2.3		iii) To walls, footings and bases etc (1.5m to 4.0mm high)	m <sup>2</sup>	145		R
6.2.4		b) Sloping of sump slab as detailed on drawing No.5312-ST-A300-P	m <sup>2</sup>	62		R
6.2.5		c) Sloping planes to stairs soffit	m <sup>2</sup>	10		R
	8.2.2	Smooth - Plane				
		a) Vertical				
6.2.6		i) To sides of channels, sumps, walls etc (0mm to 500mm high)	m <sup>2</sup>	10		R
6.2.7		ii) To sides of channels, sumps, walls etc (500mm to 1.5mm high)	m <sup>2</sup>	90		R
6.2.8		iii) To sides of channels, sumps, walls etc (1.5mm to 4.5mm high)	m <sup>2</sup>	130		R
6.2.9		iv) Soffit of slab (3.0m to 6.0m high)	m <sup>2</sup>	220		R
6.2.10		v) Beams	m <sup>2</sup>	65		R
6.2.11		vi) Column walls (250mm x 350mm x 3m tall)	m <sup>2</sup>	7		R
Total Carried Forward						R



## BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
6.2.12		b) Sloping of sump slab as detailed on drawing No.5331-ST-IW-115	m <sup>2</sup>	67		R
		c) Narrow widths				
6.2.13		1) Staircase stringers	m	18		R
6.2.14		2) Staircase riser (198.5mm) approx. 3.2m height	No.	30		R
	8.3	Reinforcement				
	8.3.1	Steel Bars				
		a) High tensile steel				
6.2.15		1) 8mm up to 16mm diameter	t	34		R
6.2.16		2) 20mm up to 32mm (Provisional)	t	1		R
	8.3.2	High Tensile Welded Mesh				
6.2.17		a) Mesh Ref 193 (Provisional)	m <sup>2</sup>	1		R
6.2.18		b) Mesh Ref 395 (Provisional)	m <sup>2</sup>	1		R
	8.3.2	High Tensile Welded Mesh				
6.2.19		a) Mesh Ref 617	m <sup>2</sup>	92		R
	8.4.1	Concrete				
		a) 15MPa /19mm concrete to base slab				
6.2.20		i) Blinding	m <sup>3</sup>	20		R
	PSG 8.4.1	b) 35MPa /19mm concrete to base slab				
6.2.21		i) Strip Footing	m <sup>3</sup>	4		R
6.2.22		ii) Floor slab	m <sup>3</sup>	132		R
6.2.23		iii) Roof slab	m <sup>3</sup>	48		R
6.2.24		iv) Walls	m <sup>3</sup>	88		R
6.2.25		v) Suspended walkway	m <sup>3</sup>	4		R
6.2.26		vi) Beams	m <sup>3</sup>	6		R
6.2.27		vii) Columns	m <sup>3</sup>	2		R
6.2.28		viii) Suspended Floor slab	m <sup>3</sup>	5		R
6.2.29		ix) Staircase	m <sup>3</sup>	3		R
		c) 15MPa Structural screed to floor slab				
6.2.30		i) To floor slabs	m <sup>3</sup>	2		R
6.2.31		ii) To roof slabs finish to fall	m <sup>3</sup>	10		R
Total Carried Forward						R

## BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
6.2.32	8.4.4	e) Extra-over item 8.4.1 for the addition of admix--- floor protection (sika 614 or similar)				
		i) To floor slabs	m <sup>2</sup>	6		R
		Unformed surface finishes				
6.2.33		a) Wood float finish to floor slab	m <sup>2</sup>	215		R
6.2.34		b) Wood float finish to roof slab	m <sup>2</sup>	195		R
6.2.35	8.5	c) Steel Float finish to tops of walls	m <sup>2</sup>	203		R
6.2.36		d) Wood float finish to channel bases	m <sup>2</sup>	100		R
		Joints				
6.2.37		a) Construction Joint A complete as shown on Drawing No. 5331-ST-IW-116	m	40		R
6.2.38		b) Construction Joint B complete as shown on Drawing No. 5331-ST-IW-116	m	40		R
6.2.39	8.7	c) Construction Joint C complete as shown on Drawing No. 5331-ST-IW-116	m	70		R
6.2.40		d) Construction Joint D complete as shown on Drawing No. 5331-ST-IW-116	m	60		R
		Grouting				
		PSG 8.7 (d)				
6.2.41		i) New 630mm diameter Stainless steel 304 pipe (with puddle flange) into new Overflow sump wall	No.	1		R
6.2.42	PSG 8.7 (e)	ii) New 400mm diameter Stainless steel 304 pipe (with puddle flange) into new Pump station wall	No.	7		R
6.2.43		iii) New 700mm diameter Stainless steel 304 pipe (with puddle flange) into new Pump station wall	No.	2		R
		Casting in of ducts into structure for ducts:				
6.2.44		a) Up to 50mm diameter	m	10		R
6.2.45		b) 50mm diameter up to 100mm diameter	m	10		R
	PSG 8.12	Application of calcium aluminate corrosion (sewpercoat) protection, or equally approved coating system, on concrete structures				
6.2.46		i) Wall	m <sup>2</sup>	180		R
6.2.47		ii) Floor	m <sup>2</sup>	80		R
6.3		CONCRETE PLINTH FOR GRIT CLASSIFIER				
	8.2	Formwork				
Total Carried Forward						R

## BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
6.3.1	8.2.2	Smooth - Plane				
		a) Vertical (0 to 1.5m high)	m	36		R
	8.3	Reinforcement				
	8.3.1	Steel Bars				
		a) High tensile steel				
6.3.2		1) 8mm up to 16mm diameter	t	0.5		R
6.3.3		2) 20mm up to 32mm (Provisional)	t	0.5		R
	8.4.1	Concrete				
		b) 35MPa /19mm concrete to base slab				
6.3.4		i) Plinth	m³	5		R
	8.4.4	Unformed surface finishes				
6.3.5		a) Wood float finish to top of plinth	m²	16		R
6.4		CONCRETE ROAD AT THE INLET WORKS AND TANKER DISCHARGE AREA				
	8.2	Formwork				
	8.2.2	Rough - Plane				
6.4.1		a) Vertical (0 to 300mm high)	m	200		R
	8.3	Reinforcement				
	8.3.1	Steel Bars				
		a) High tensile steel				
6.4.2		1) 8mm up to 16mm diameter (Provisional)	t	0.1		R
6.4.3		2) 20mm up to 32mm (Provisional)	t	0.1		R
	8.3.2	High Tensile Welded Mesh				
6.4.4		a) Mesh Ref 617	m²	1 050		R
	8.4.1	Concrete				
6.4.5		a) 35MPa /19mm concrete to base slab	m³	170		R
	8.4.4	Unformed surface finishes				
6.4.6		b) Broom finish	m²	1 050		R
	8.5	Joints				
6.4.7		a) Construction Joint A ( Max Spacing longitudinal joints, 3.8m transverse joints, - Max spacing transverse joints, 4m) complete as shown on Drawing No. 5312-ST-A500-P	m	310		R
Total Carried Forward						R

**BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
6.5		CONCRETE WORK AT THE SECOND CLASS WATER PUMP STATION				
	8.2	Formwork				
	8.2.1	Rough				
		a) Vertical, plane				
6.5.1		i) To sides of sumps etc (0mm to 500mm high)	m <sup>2</sup>	2		R
		b) Narrow widths (0-300 mm high)				
6.5.2		i) Vertical, plane to plinths, slab	m	21		R
	8.2.2	Smooth - Plane				
6.5.3		a) Vertical (0 to 300mm high)	m	5		R
6.5.4		b) Vertical (300mm to 1.0m high)	m <sup>2</sup>	15		R
		c) Narrow widths (0-300 mm high)				
6.5.5		2) Staircase riser (150mm) approx 450m height	No.	2		R
	8.3	Reinforcement				
	8.3.1	Steel Bars				
		a) High tensile steel				
6.5.6		1) 8mm up to 16mm diameter	t	0.6		R
	8.3.2	High Tensile Welded Mesh				
6.5.7		a) Mesh Ref 617	m <sup>2</sup>	42		R
	8.4.1	Concrete				
		a) 35MPa /19mm concrete to base slab				
6.5.8		i) Walls	m <sup>3</sup>	5		R
6.5.9		ii) Floor slab	m <sup>3</sup>	15		R
6.5.10		iii) Plinth	m <sup>3</sup>	1		R
6.5.11		iv) Steps	m <sup>3</sup>	1		R
		b) 15MPa Structural screed to floor slab				
6.5.12		i) To floor slabs	m <sup>3</sup>	25		R
6.5.13		d) Extra-over item 8.4.1 for the addition of a protection layer of Sika 264 Selflevelling Epoxy or similar	m <sup>2</sup>	42		R
	8.4.4	Unformed surface finishes				
6.5.14		a) Steel float finish to top of slab	m <sup>2</sup>	8		R
Total Carried Forward						R

## BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
6.5.15	8.5	b) Wood float finish to floor and plinth slab	m²	42		R
		Joints				
6.5.16		a) Construction Joint A complete as shown on Drawing No. 5331-ST-IW-116	m	11		R
6.5.17	PSG 8.7 (e)	b) Construction Joint C complete as shown on Drawing No. 5331-ST-IW-116	m	29		R
		Casting in of ducts into structure for ducts:				
6.5.18		b) 50mm diameter up to 100mm diameter	m	40		R
6.6	PB 8.3.1	BRICKWORK				
6.7		BRICKWORK FOR WALLS				
		Brickwork of NFP bricks in class II mortar				
6.7.1		a) 110mm brickwork walls	m²	85		R
6.8		FACE BRICKWORK				
		Corobrik Tokai Red Rustic or similar approved face bricks pointed with recessed horizontal and flush vertical joints:				
6.8.1		Extra over brickwork in NFX bricks for face brickwork	m²	85		R
6.9		BRICKWORK SUNDRIES				
		a) 2.5mm Galvanised brick reinforcement:				
6.9.1		1) 150mm Wide reinforcement built in horizontally	m	390		R
	PB 3.3.2	b) Concrete ties				
6.9.2		32 x 1.6 mm Galvanised hoop iron tie 400mm long shot-fixed to concrete at every fourth course, including hole through joint filler if required	No	90		R
6.10		PLASTERING				
6.10.1		a) Plastering to structures	m²	85		R
6.11		GENERAL CONCRETE WORK				
6.12		MISCELLANEOUS WORK				
		Prestressed Concrete Lintels				
		a) 145 x70 mm				
6.12.1		1) 1.2m long	No	4		R
6.12.2		2) 1.5m long	No	2		R
6.12.3		3) 2.1 m long	No	6		R
Total Carried Forward						R

**BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
6.12.4		4) 3.0 m long	No	4		R
Total Carried Forward To Summary						R

## BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
7	SABS 1200 H	SECTION H: STRUCTURAL STEELWORK				
7.1		SECOND CLASS WATER PUMP STATION				
7.2	8.3.1	SUPPLY AND FABRICATION				
7.2.1	8.3.1.1	Preparation of shop detail drawings	Sum	1		R
7.2.2	8.3.1.2	Supply and fabrication of steelwork (see Drawing 5312-ST-A400-P) complete using steel to SANS 1431 Grade 355JR with all the necessary cleats, brackets, gussets, packs, etc., as follows:	t	2.5		R
7.3		DELIVERY TO SITE				
	8.3.2	Delivery of steelwork inclusive				
7.3.1		a) Normal loads	t	2.5		R
7.4	8.3.3	ERECTION				
7.4.1		Offloading, stacking on Site, and erection of steelwork	t	2.5		R
7.5	8.3.4	ERECTION BOLTS AND NUTS				
		Supply, deliver to Site and store as follows:				
7.5.1		Grade 4.6 bolts including flat or tapered washers, as appropriate (plain)	t	0.1		R
7.5.2		Grade 8.8 bolts including thru' hardened flat or tapered washers, as appropriate	t	0.1		R
	8.3.6	HOLDING-DOWN BOLTS AND NUTS Supply, deliver, and stack on Site as directed for building in by civil contractor, as follows:				
7.5.3		25mm diameter	t	0.2		R
7.5.4		16mm diameter	t	0.2		R
7.5.5		M10 chemical anchors	No	28		R
7.5.6		M16 Chemical anchors with 16mm plate	No	28		R
	8.3.7	Handrails				
		b) Hand rail assembly complete for:				
		1) Horizontal				
7.5.7		i) New Second class water Pump station as shown on Drawing No. 5331-ST-MISC-413	m	5		R
		3) Shaped ends				
7.5.8		i) New Second class water Pump station as shown on Drawing No. 5331-ST-MISC-413	No.	4		R
7.6		INLET WORKS (SCREENING AND PUMP STATION)				
Total Carried Forward						R

## BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
7.7	8.3.1	SUPPLY AND FABRICATION				
7.7.1	8.3.1.1	Preparation of shop detail drawings	Sum	1		R
	PSH 8.3.1.2	Supply and fabrication of steelwork (see Drawings) complete with all the necessary cleats, brackets, gussets, packs, etc., as follows:				
		a) Using steel to SANS 1431 Grade 355JR				
7.7.2		i) IPE 200 Crane Rail at the Inlet works Pump Station	t	1.0		R
7.7.3		ii) IPE 200 Crane Rail at the Inlet works Screening area	t	1.2		R
	8.3.7	Handrails				
		b) Hand rail assembly complete for:				
		1) Horizontal				
7.7.4		i) New Inlet works as shown on Drawing No.5331-ST-IW-113 and 5331-ST-IW-114	m	180		R
7.7.5		ii) New Inlet works Pump station as shown on Drawing No. 5331-ST-IW-115	m	20		R
		2) Sloping				
7.7.6		i) New Inlet works Pump station as shown on Drawing No.5331-ST-IW-115	m	50		R
		3) Shaped ends				
7.7.7		i) New Inlet works Pump station as shown on Drawing No. 5331-ST-IW-115	No.	8		R
7.7.8		ii) New Inlet works as shown on Drawing No.5331-ST-IW-113 and 5331-ST-IW-114	No.	24		R
Total Carried Forward To Summary						R



**BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>8</b>	<b>SABS 1200 HA</b>	<b>SECTION HA: STRUCTURAL STEELWORK (SUNDRY ITEMS)</b>				
	PSHA 8.3.8	Stainless steel 304 Gratings				
8.1		a) Second class water Pump Station : Over the sump as shown on Drawing No. 5331-ST-MISC-413	m²	5		R
8.2		b) New Inlet works Pump Station as shown on Drawing No.5331-ST-IW-115	m²	40		R
8.3		c) New Inlet works as shown on Drawing No.5331-ST-IW-113 and 5331-ST-IW-114	m²	12		R
8.1		SUNDRIES				
		1) 50x50x5 HDG angles with fishtails cast into floor slab :				
8.1.1		a) Second class water Pump Station as shown on Drawing No.5331-ST-MISC-413	m	2		R
8.1.2		b) New Inlet works Pump Station as shown on Drawing No.5331-ST-IW-115	m	60		R
8.1.3		c) New Inlet works as shown on Drawing No. 5331-ST-IW-113 and 5331-ST-IW-114	m	60		R
8.1.4	PSHA 8.3.11	Design, supply and cast into concrete road skip rail	Sum	1		R
Total Carried Forward To Summary						R

**BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>9</b>	<b>SABS 1200 HB</b>	<b>SECTION HB: CLADDING AND SHEETING</b>				
9.1		NEW SECOND CLASS WATER PUMP STATION				
	8.2.2	Supply, deliver to Site, erect and fix galvanised sheeting/cladding, etc., including the supply of all necessary fasteners, etc., and cutting and notching: (See Drawings)				
9.1.1		Approved troughed profile-cladding to sides and gables, 0,6mm	m <sup>2</sup>	55		R
9.1.2		Approved troughed profile-sheeting to roofs, Galvanised steel 0,6mm	m <sup>2</sup>	52		R
	8.2.3	Flashings				
9.1.3		Bullnose flashing 450mm radius finish and profile to match sheeting	m	10		R
9.1.4		Corner flashing	m	12		R
	8.2.3	Rainwater Goods				
9.1.5		a) 150mm diameter hot dipped galvanised steel gutter fixed to roof	m	6		R
9.1.6		b) 110mm diameter uPVC downpipe fixed to sides	m	12		R
9.1.7		c) Extra over downpipes for 45 deg elbow bend	No.	2		R
9.1.8		d) Extra over downpipes for shoe	No.	2		R
	8.2.5	Tests				
9.1.9		a) As specified in Subclause 7.2.1 of SANS 1200 HB	Sum	1		R
9.1.10		b) As specified in Subclause 7.2.2 of SANS 1200 HB	Sum	1		R
9.1.11		c) As specified in Subclause 7.3.1 of SANS 1200 HB	Sum	1		R
9.1.12		d) As specified in Subclause 7.3.2 of SANS 1200 HB	Sum	1		R
Total Carried Forward To Summary						R

**BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>10</b>	<b>SABS 1200 HC</b>	<b>SECTION HC: COROSSION PROTECTION OF STRUCTURAL STREELWORK</b>				
10.1	8.2.2	Transportation	t	5.0		R
	8.2.3	Surface preparation and coating application				
10.2		Hot-dip galvanising and paintwork of structural steelwork for canopy at the Second class water pump station as shown on Drawing No. 5331-ST-MISC-413	t	5.0		R
Total Carried Forward To Summary						R

## BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
11	SABS 1200 L	SECTION L: MEDIUM-PRESSURE PIPE LINES				
11.1		NEW PIPELINE AT THE INLET WORKS				
	PSL 8.2.1	a) Supply and lay Heavy duty HDPE PN 10 (PE80) sewer pipes on Class B bedding:				
11.1.1		i) 25mm diameter.(water pipe)	m	10		R
11.1.2		ii) 63mm diameter (water pipe)	m	10		R
11.1.3		iii) 90mm diameter (Scour pipe)	m	6		R
		b) Supply and lay Heavy duty HDPE PN 10 (PE80) sewer pipes on Class B bedding, Electrofusion welding				
11.1.4		i) 450mm diam EWS pipe	m	150		R
11.1.5		ii) 710mm diam rising main	m	212		R
		c) Heavy duty HDPE PN 4 (PE80) sewer pipes on Class B bedding, Electrofusion welding				
11.1.6		i) 600mm diam	m	212		R
11.1.7		ii) 900mm diam	m	66		R
11.2		SPECIALS AND FITTINGS				
		Extra over 8.2.1 for supplying, laying, bedding and testing of specials complete with couplings:				
		a) HDPE fittings to suit PN10 pipe				
11.2.1		ii) 25mm diameter x 90 degree bend	No.	2		R
11.2.2		ii) 63mm diameter x 90 degree bend	No.	2		R
11.2.3		iii) 63mm diameter x 45 degree bend	No.	2		R
11.2.4		iv) 63mm diameter x 22.5 degree bend	No.	1		R
		b)Electrofusion welding for fittings to suit HDPE sewer pipes :				
11.2.5		i) 710mm 45 deg bend	No.	3		R
11.2.6		ii) 710mm 90 deg bend	No	4		R
11.2.7		iii) 710mm SG Iron flange adaptor	No	4		R
11.2.8		iv)710mm dia x 90mm dia HDPE moulded scour Tee with HDG backing ring on branch	No	2		R
11.2.9		v)VJ Type coupling for Scour	No	4		R
		c) STAINLESS STEEL 304				
11.2.10		i) 400mm dia with puddle flange pipe casted into the wall	No.	7		R
11.2.11		ii) 710mm diam x 90 degree bend (double flanged)	No.	1		R
Total Carried Forward						R

## BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
11.2.12		iii) 710mm diam x 1250mm long pipe flanged both end	No.	2		R
11.2.13		iv) 710mm diam x 2000mm long pipe flanged both end	No.	1		R
11.2.14		v) 710mm diam x 80mm diam	No.	2		R
11.2.15		vi) 700mm diam T-piece flanged ends	No.	1		R
11.2.16		vii) 700mm dia end plate with gasket bolted	No.	1		R
11.2.17		viii) 700mm dia steel flange with puddle flange	No	2.0		R
11.3		VALVES				
	8.2.3	Extra over 8.2.1 for the supplying, fixing and bedding of:				
		a) Valves, resilient seal gate type, including electrofusion couplings and flanges to connect into HDPE pipe				
11.3.1		i) 80mm dia flanged scour valve	No.	2		R
11.3.2		b) 80mm, ARI D-023 or equal approved air valve with threaded connection, including s/s isolating ball valve and connection pipes	No.	2		R
	PSL 8.2.4	Flexible joints at structures				
11.3.3		a) 450mm diameter	No.	4		R
11.3.4		b) 600mm diameter	No.	4		R
11.3.4		c) 710mm diameter	No.	2		R
11.3.4		d) 900mm diameter	No.	2		R
	8.2.11	Thrust blocks as detailed on drawing C5331-C-IW-105				
11.3.5		a) Concrete Class 20/19	m³	4		R
	8.2.13	Valve and Hydrant Chambers etc				
11.3.6		i) Scour valve chamber complete with Type 3B valve box and thrust block	No.	2		R
11.3.7		ii) Type 1 valve chamber for EWS pipe	No	2		R
	8.2.15	Wrapping of pipes and flanges with Denso or similar protective wrapping:				
11.3.8		a) 710mm diam. VJ coupling	No.	2		R
11.3.9		b) 710mm dia flange adapter	No.	2		R
	PSL 8.2.16	Connect to existing pipelines				
Total Carried Forward						R

**BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
11.3.10		i) Connection of re-routed uPVC pipework to existing pipework (50mm diameter AC pipeline)	No.	1		R
11.3.11		ii) Connection of new 710mm rising main to existing pipework (700mm diameter AC pipeline)	No.	1		R
11.3.12	PSL 8.2.20	Markers Posts	No.	20		R
11.3.13	PSL8.2.21	Replacement of an existing leaking 600mm dia. gate valve	Prov Sum	1		R
Total Carried Forward To Summary						R

**BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>12</b>	<b>SABS 1200 LB</b>	<b>SECTION LB: BEDDING (PIPES)</b>				
	8.2.1	Provision of bedding from trench excavation				
12.1		a) Selected granular material	m³	174		R
12.2		b) Selected fill material	m³	288		R
	8.2.2.3	Provision of bedding by importation from commercial sources				
12.3		a) Selected granular material	m³	116		R
12.4		b) Selected fill material	m³	192		R
	8.2.4	Encasing of pipes in 20MPa/19mm concrete (provisional)				
12.5		a) 160mm diameter	m³	3		R
12.6		b) 600mm diameter	m³	3		R
12.7		c) 710mm diameter	m³	10		R
	PSLB 8.2.6	Provision of Bedding in waterlogged conditions				
12.8		a) Single size 19mm stone	m³	10		R
12.9		b) Geotextile	m³	10		R
Total Carried Forward To Summary						R

**BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>13</b>	<b>SABS 1200 LC</b>	<b>SECTION LC: CABLE DUCTS</b>				
	8.2.2	Excavation  a) Excavate in all materials for trenches, backfill, compact, and dispose of surplus material				
13.1		i) 110mm diameter ducts	m	200		R
13.2		i i) 160mm diameter ducts	m	200		R
	8.2.7	Drawpits/Manholes  Construct 600mm x 600mm AJB draw box with 300mm concrete surround to detail, with 230 brickwork, max height 1.2m including ductile iron cover and frame (600mm diameter EN 124 class C250)				
13.3		a) in sidewalk and verge  Construct 1000mm x 1000mm AJB draw box with 300mm concrete surround to detail, with 230 brickwork, including ductile iron cover and frame (600mm diameter EN 124 class C250)	No.	6		R
13.4		a) in road	No.	6		R
13.5	8.2.8	Cable route markers complete, installed, and record submitted	No	20		R
	PSLC 8.2.10	Sealing of duct ends				
13.6		a) Electrical ducts	No	10		R
13.7		b) Non-electrical ducts (100mm dia)	No	10		R
Total Carried Forward To Summary						R



## BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>14</b>	<b>SABS 1200 LD</b>	<b>SECTION LD: SEWERS</b>				
	PSLD 8.2.1	Supply, lay, joint, bed and test pipeline				
		a) Supply and lay uPVC Class 34 uPVC sewer pipes on Class B bedding:				
14.1		i) 160mm diam	m	85		R
	PSLD 8.2.2	Extra-over items 8.2.1 for specials				
		a) Fittings to suit uPVC sewer pipes :				
14.2		i) 160mm dia endcap	No.	4		R
14.3		ii) 160 x 160 dia plain 45 deg Y-junction	No.	4		R
14.4		iii) 160 dia plain 45 deg long radius bend	No.	4		R
		b) Stainless steel				
14.5		i) 600mm dia steel flange with puddle flange	No.	4		R
14.6		ii) 900mm dia steel flange with puddle flange	No.	2		R
	PSLD 8.2.3	Manholes				
		a) Sewer Manholes as detailed on Drawing No.5331-C-IW-109				
		i) For depths:				
14.7		- Over 1.0m up to 2.0m	No.	6		R
14.8		- Over 2.0m up to 3.0m	No.	1		R
14.9		- Over 3.0m up to 4.0m	No.	1		R
	PSLD 8.2.4	Extra-over PSLD 8.2.3 for construction of manholes or chambers on existing pipelines complete:				
14.10		i) Overflow Chamber A and B as shown on Drawing No.5331-C-IW-111	No	1		R
14.11		ii) Tanker discharge manhole as shown on Drawing No.5331-C-IW-110	No	1		R
14.12		iii) Inlet works pump station sump overflow manhole as shown on Drawing No.5331-C-IW-103	No	1		R
14.13		iv) Tie in point between existing and new rising main as shown on Drawing No.5331-C-IW-105	No	1		R
Total Carried Forward						R

**BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
14.14	PSLD 8.2.7	a) Construction of Discharge chamber complete as shown on drawings	No.	4.0		R
		i) Tanker washdown as shown Drawing 5331-C-DW-212				
	8.2.11	Break into and connect to existing manhole including flexible joints as shown on Drawings and make good all benching	No	1		R
14.15		i) Existing stormwater bypass as shown on Drawing No.5331-C-IW-111				
Total Carried Forward To Summary						R

**BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>15</b>	<b>SABS 1200 LE</b>	<b>SECTION LE: STORMWATER DRAINAGE</b>				
	PSLE 8.2.1	Supply and lay uPVC pipe, spigot and socket with rubber ring seal, on class B bedding				
15.1		a) 160mm diameter Class 34	m	12		R
		Concrete pipe culverts, spigot and socket type with rubber ring seal, on class B bedding				
15.2		i) 375 mm diameter Class 100D	m	15		R
15.3		ii) Rerouting of 375mm stormwater	m	150		R
	PSLE 8.2.8	Supply and Install Manholes, Catchpits, and Drainage Structures				
		CONCRETE MANHOLES for pipes up to 600mm dia as detailed on the drawing 5331-C-IW-109 for depths:				
15.4		- Up to 1.0m deep	No	1		R
15.5		- Over 1.0m up to 2.0m	No	3		R
15.6		- Over 2.0m up to 3.0m	No	1		R
		a) Single Grid Inlet unit for depths:				
15.7		ii) Over 0.0m up to 1.0m see Drawing No. 5331-C-IW-109	No	1		R
15.8		ii) Over 1.0m up to 1.5m	No	1		R
		b) Double kerb inlet unit for depths and kerb type:				
15.9		i) Over 1.0m up to 1.5m (BK2)	No	1		R
	8.2.10	Accessories for stormwater drainage structures				
15.10		a) Securex Z-600-D or similar approved heavy-duty ductile iron cover and frame conforming to SABS EN D 400 class	No	1		R
	PSLE 8.2.14	Subsurface Drains complete as detailed on the drawings				
15.11		a) Subsurface drains	m	20		R
15.12		b) Subsurface rodding eyes	No.	1		R
15.13		c) Subsurface manhole up to 1.5m deep	No.	1		R
15.14		d) Extra-over item (a) above for construction of sand filter in subsurface drains	m	5		R
	PSLE 8.2.15	Connections into existing manholes/ catchpit/ Chamber				
Total Carried Forward						R

**BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
15.15		i) Break into existing brickwork drop inlet chamber and grout new pipe in place, including cutting of new pipe flush with wall, removal and disposal of rubble, repair of plaster and benching.	Sum	1		R
15.16		ii) Connection into existing manhole/catchpit for 375mm diameter pipe	No.	2		R
15.17		iii) Connection into existing manhole/catchpit for 375mm diameter pipe	No.	1		R
Total Carried Forward To Summary						R

**BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>16</b>	<b>SABS 1200 ME</b>	<b>SECTION ME: SUBBASE</b>				
	8.2.3	Construct G9 quality subbase with material from commercial sources, compacted to 95% of mod. AASHTO maximum density.				
16.1		-Concrete Roads	m³	630		R
16.2	8.3.5	Extra over item 8.3.3 to process subbase material by stabilisation (C4)	m³	160		R
16.3	8.3.8	Stabilising agent; cement grade CEM II 32.5N for pavement layers	t	250		R
16.1		SUNDRIES				
16.1.1	PSMM 8.3.6	Statutory signs Stop sign supplied and erected complete	No.	3		R
16.1.2	PSMM 8.4.1	Retro-reflective Road Marking Paint Applied at a Nominal Rate of 0,42 l/m²	m	50		R
Total Carried Forward To Summary						R

**BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
17	SABS 1200 MJ	<b>SECTION MJ: SEGMENTED PAVING</b>				
17.1	PSMJ 8.2.2	Construction of paving complete  b) Concrete paver blocks, 35 MPa, 60mm thick on 25mm sand bedding on paved walkways	m <sup>2</sup>	200		R
Total Carried Forward To Summary						R

## BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
18	SABS 1200 MK	SECTION MK: KERBING AND CHANNELING				
18.1		CONCRETE KERBS AND CHANNELS				
18.2	8.2.1	PRECAST CONCRETE KERBING				
		Barrier kerbs				
		a) Type BK2				
18.2.1		i) Straights	m	10		R
18.2.2		ii) 1m to 4m radius	m	10		R
18.2.3		iii) 4m to 20m radius	m	1		R
18.2.4		iv) Exceeding 20m radius	m	1		R
		a) Type MK4				
18.2.5		i) Straights	m	100		R
18.2.6		ii) 1m to 4m radius	m	1		R
18.2.7		iv) Exceeding 20m radius	m	1		R
		Footpath edging				
		a) Type E3				
18.2.8		i) Straights	m	230		R
		Channel				
18.2.9		a) Type C1 channel	m	15		R
18.2.10		b) Type C1 double channel	m	23		R
		Barrier kerb and channel (Type BK2 & C1)				
18.2.11		i) Straights	m	185		R
18.2.12		ii) 1m to 4m radius	m	30		R
18.2.13		iii) 4m to 20m radius	m	50		R
	PSMK 8.2.14	Lift and reinstate				
		a) Barrier Kerb (BK1)				
18.2.14		i) Striahts	No	8		R
18.3		IN-SITU TRANSITIONS				
	PSMK 8.2.15	Concrete class 25 transition sections, 1m long between:				
18.3.1		a) Kerb and channel to kerb and channel, all types	No	2		R
18.3.2		b) Infall channel to outfall channel, all types	No	1		R
18.3.3		c) Kerb and channel to double C1 channel	No	2		R
Total Carried Forward						R

## BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
18.3.4		d) Concrete class 25 transition sharp bends between all types of precast section	No	15		R
Total Carried Forward To Summary						R



**BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>19</b>		<b>SECTION PAF: FENCING</b>				
	PAF8.1	Fencing				
19.1	PAF 8.1.1	Supply and install High Security Mesh Fence complete	m	35		R
	PAF 8.2	Fencing Additions				
19.2	PAF8.2.2	Supply and install concrete plinth complete	m	35		R
	PAF 8.2	Supply and install Gate complete				
19.3		(i) 3m wide and nominal height of 2400mm sliding gate	No	1		R
19.4		(ii) 5m wide and nominal height of 2400mm double swing gate	No	1		R
Total Carried Forward To Summary						R

**BILL 1 BOQ 2: INLET WORKS AND SECOND CLASS WATER PUMP STATION****SUMMARY OF SECTIONS**

SECTION	DESCRIPTION			AMOUNT R
1	SECTION C : SITE CLEARANCE			R
2	SECTION D: EARTHWORKS			R
3	SECTION DB: EARTHWORKS PIPE TRENCHES			R
4	SECTION DK: GABIONS AND PITCHING			R
5	SECTION DM: EARTHWORKS (ROADS, SUBGRADE)			R
6	SECTION G: CONCRETE (STRUCTURAL)			R
7	SECTION H: STRUCTURAL STEELWORK			R
8	SECTION HA: STRUCTURAL STEELWORK (SUNDRY ITEMS)			R
9	SECTION HB: CLADDING AND SHEETING			R
10	SECTION HC: COROSSION PROTECTION OF STRUCTURAL			R
11	SECTION L: MEDIUM-PRESSURE PIPE LINES			R
12	SECTION LB: BEDDING (PIPES)			R
13	SECTION LC: CABLE DUCTS			R
14	SECTION LD: SEWERS			R
15	SECTION LE: STORMWATER DRAINAGE			R
16	SECTION ME: SUBBASE			R
17	SECTION MJ: SEGMENTED PAVING			R
18	SECTION MK: KERBING AND CHANNELING			R
19	SECTION AF: FENCING			R
Total Carried Forward To Summary Of Bills				R

## BILL 1 BOQ 3: DEWATERING FACILITY

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>1</b>	<b>SABS 1200 C</b>	<b>SECTION C : SITE CLEARANCE</b>				
	8.2.1	Clear and Grub				
1.1		a) New Guardhouse	m <sup>2</sup>	35		R
1.2		b) New Dewatering Building Facility (including retaining wall and embankment)	m <sup>2</sup>	2 150		R
1.3		c) New Concrete Road	m <sup>2</sup>	2 350		R
	PSC 8.2.2	Remove and grub large trees of girth				
1.4		a) over 1 m and up to and including 2 m	No.	4		R
1.5		b) over 2 m and up to and including 3 m	No.	4		R
	PSC 8.2.7	Dismantle and Relocate Pipelines, Electricity Transmission Lines, Handrailing, Cables etc (where necessary)				
1.6		a) Electricity Transmission Lines where the New Dewatering Facility is located	m	50		R
1.7		b) Electrical cabling at the existing area	m	50		R
1.8		c) Potable water pipe (<100mm diameter) Security Building	m	5		R
1.9		d) Sewer pipe (<150mm diameter) Security Building	m	5		R
1.10		e) Electrical fittings on the interior and exterior of the Security Building	Sum	1		R
1.11		f) All sanitary fittings and office equipment	Sum	1		R
1.12		g) Existing 300mm dia pipe at TP A03 to be located at proposed dewatering building vicinity and relocate.	m	100		R
1.13		h) Existing pipe outlet (to be relocated and confirmed on site)	m	10		R
1.14		i) Existing stainless steel staircase to be dismantled and modified to accommodate the the new retaining wall.	Sum	1		R
	PSC 8.2.8	Demolish and remove structures / buildings / materials / etc				
1.15		a) Demolish existing reinforced concrete thickness up to 300mm	m <sup>2</sup>	5		R
1.16		b) Existing Security Building	Sum	1		R
	PSC 8.2.10	Remove topsoil to nominal depth of 150mm and stockpile				
1.17		a) At New Dewatering Facility	m <sup>2</sup>	4 500		R
1.18		b) At New Guardhouse Facility	m <sup>2</sup>	25		R
	PSC 8.2.11	Dealing with hazardous material				
Total Carried Forward						R

**BILL 1 BOQ 3: DEWATERING FACILITY**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.19	PSC 8.2.16	a) 110 to 160mm diameter AC pipes	m	10		R
		Saw cut through existing surface for trench excavation				
1.20	PSC 8.2.17	a) Premix (20mm to 80mm deep)	m	55		R
1.21		b) Reinforced Concrete (100mm to 200mm thick)	m	5		R
	PSC 8.2.18	Removal of existing kerbing, channelling and edging				
		a) Kerbing				
1.22		i) Existing kerbing	m	10		R
		b) Channelling				
1.23		i) Existing C1 infall and outfall	m	10		R
		Remove and dispose of existing pavement				
1.24		i) Existing premix surface at the Existing incoming asphalt road section (Premix 0mm to 80mm deep)	m <sup>2</sup>	750		R
Total Carried Forward To Summary						R

## BILL 1 BOQ 3: DEWATERING FACILITY

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>2</b>	<b>SABS 1200 D</b>	<b>SECTION D: EARTHWORKS</b>				
2.1	PSD 8.3.2	BULK EXCAVATION a) Excavate in all materials and use for embankment or backfill or dispose, as ordered				
2.1.1		i) Stockpile and maintain	m³	1 220		R
2.1.2		ii) Spoil to designated dump site (within freehaul distance) and spread	m³	3 250		R
2.1.3		iii) Cut to fill	m³	1 230		R
2.1.4		iii) Trench for embankment drainage system as shown in drawing 5331-C-DW-222	m³	70.0		R
2.1.5		b) Extra-over payment item 8.3.2 for: i) Hard rock excavation	m³	10		R
2.2	PSD 8.3.3	RESTRICTED EXCAVATION a) Excavate for restricted foundations, footings and pipe trenches and use for backfill or embankment or dispose as ordered for				
2.2.1		i) Stockpile and maintain	m³	15		R
2.2.2		ii) Spoil to designated dump site (within freehaul distance) and spread	m³	5		R
2.2.3		iii) Cut to fill	m³	20		R
2.2.4		b) Extra-over payment item 8.3.2 i) Hard rock excavation	m³	10		R
2.2.5		c) Extra over item PSD 8.3.3 for importation of approved sand fill from commercial sources	m³	15		R
2.2.6		d) Extra over PSD 8.3.3 for 5% cement stabilised sand	m³	10		R
2.2.7		e) Extra over item PSD 8.3.3 for restricted backfilling against structures from stockpile	m³	10		R
2.2.8		f) Extra over item PSD 8.3.3 for restricted backfill to fill voids formed by demolition	m³	20		R
	8.3.4	Importing of Material (including placing and compacting) a) Extra-over for importation of material from commercial sources				
2.2.9		1) 150mm thick G5 quality material (compacted to 95% of Mod AASHTO density) below NewBuilding floor slab	m³	145		R
Total Carried Forward						R

**BILL 1 BOQ 3: DEWATERING FACILITY**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
	8.3.8	Existing services				
	8.3.8.1	a) Excavate by hand in soft material to expose services				
2.2.10		i) Existing sewer pipes up to 200mm dia at Existing Guardhouse facility	m <sup>3</sup>	5		R
2.2.11		ii) Existing potable water pipe at Existing Guardhouse Facility	m <sup>3</sup>	5		R
2.2.12		iii) Existing Electrical Cables at Existing Guardhouse facility	m <sup>3</sup>	5		R
2.2.13		iv) Existing pipes up to 200mm dia AC SNL Pipes	m <sup>3</sup>	10		R
2.2.14		v) Existing stormwater Pipe up to 300mm dia at proposed Dewatering Building facility	m <sup>3</sup>	10		R
	8.3.8.2	Dealing with services that are at risk because of the construction of earthworks				
2.2.15		b) Temporary protection of pipes up to 300mm diameter	m	100		R
	8.3.10	Topsoiling				
2.2.16		150 mm top soil from stockpile	m <sup>2</sup>	980		R
Total Carried Forward To Summary						R

## BILL 1 BOQ 3: DEWATERING FACILITY

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>3</b>		<b>SECTION DB: EARTHWORKS (PIPE TRENCHES)</b>				
3.1	PSDB 8.3.2	EXCAVATION				
	PSDB 8.3.2 (a)	Trench Excavation (All trenches deeper than 1,0m shall be shored)  a) Excavate in all materials for trenches, dewater, backfill, compact, and dispose of surplus or unsuitable material for:  i) Pipes up to and including 125mm external diameter for depths:  - Exceeding 0.0m up to 1.0m  - Exceeding 1.0 up to 2.0m  - Exceeding 2.0 up to 3.0m  ii) Pipes over 125mm and up to 710mm external diameter for depths:  - Exceeding 0.0m up to 1.0m  - Exceeding 1.0 up to 2.0m  - Exceeding 2.0 up to 3.0m	m	30		R
3.1.1		- Exceeding 0.0m up to 1.0m	m	30		R
3.1.2		- Exceeding 1.0 up to 2.0m	m	250		R
3.1.3		- Exceeding 2.0 up to 3.0m	m	50		R
3.1.4		- Exceeding 0.0m up to 1.0m	m	5		R
3.1.5		- Exceeding 1.0 up to 2.0m	m	10		R
3.1.6		- Exceeding 2.0 up to 3.0m	m	10		R
	PSDB 8.3.2 (b)	b) Extra-over Payment Items PSD 8.3.2 for: (Provisional)  i) Hard rock excavation  iii) Hand excavation - soft material	m³	5		R
3.1.7		i) Hard rock excavation	m³	5		R
3.1.8		iii) Hand excavation - soft material	m³	5		R
3.1.9	8.3.2	c) Excavate and dispose of unsuitable material from the trench bottom (provisional)	m³	5		R
	8.3.3	Excavation Ancillaries				
	8.3.3.1	Make up deficiency in backfill material (Provisional)				
3.1.10		a) From other necessary excavations on site	m³	10		R
3.1.11		c) By importation from commercial sources	m³	10		R
3.1.12	8.3.3.3	Compaction in Road Reserve	m³	10		R
3.2	8.3.4	PARTICULAR ITEMS				
	PSDB 8.3.4 (c)	c) Excavate by hand in all materials to verify existing services, or as directed by the Engineer and backfill  ii) Existing second class water pipe <160mm diameter  ii) Existing drainage pipe <160mm diameter	m³	5		R
3.2.1		ii) Existing second class water pipe <160mm diameter	m³	5		R
3.2.2		ii) Existing drainage pipe <160mm diameter	m³	5		R
Total Carried Forward						R

## BILL 1 BOQ 3: DEWATERING FACILITY

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
3.2.3	PSDB 8.3.5	iii) Existing electrical cables	m <sup>3</sup>	5		R
3.2.4		iv) Existing water main < 100mm diameter	m <sup>3</sup>	5		R
3.2.5		v) Existing Sludge feed 200mm diameter AC pipeline	m <sup>3</sup>	5		R
3.2.6		vi) Existing SNL 200mm diameter AC pipe	m <sup>3</sup>	5		R
		Existing services that Intersect or Adjoin a pipe trench				
		a) Services that intersect a trench.				
		i) Pipeline Existing Main gate entrance and Dewatering facility				
3.2.7		- Electrical cables	No.	10		R
3.2.8		- uPVC 110mm dia. sleeves with cables	No.	10		R
3.2.9		- Existing pipes <100mm diameter	No.	10		R
3.2.10		- Existing pipes 100-300mm diameter	No.	5		R
3.2.11		- Barrier Kerbs and channels	No.	15		R
		b) Services that adjoin a pipe trench.				
		Pipeline Existing Inlet works				
3.2.12		- Electrical cables	No.	5		R
3.2.13		- uPVC 110mm dia. sleeves with cables	No.	5		R
3.2.14		- Existing pipes <100mm diameter	No.	5		R
3.2.15		- Existing pipes 100-300mm diameter	No.	5		R
3.3	PSDB 8.3.6	FINISHING				
	PSDB 8.3.6.1	Reinstate road surface complete with all courses				
3.3.1		a) Asphalt of thickness 30mm to parking area	m <sup>2</sup>	5		R
3.3.2		a) Asphalt of thickness 40mm to roadway	m <sup>2</sup>	10		R
3.3.3		b) Basecourse material stabilised with 5% cement and compacted to 98% mod AASHTO density (2 layers of 150mm thick)	m <sup>2</sup>	10		R
3.3.4		c) Subbase material compacted to 95% mod AASHTO density (2 layers of 150mm thick)	m <sup>2</sup>	10		R
3.3.5		d) Concrete interlocking block paving of thickness 60mm to walkway	m <sup>2</sup>	10		R
3.3.6		e) Precast kerbing	m	10		R
Total Carried Forward						R



**BILL 1 BOQ 3: DEWATERING FACILITY**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
3.3.7		f) class 30MPa/19mm concrete 150mm thick with mesh reinforcement Ref 193	m <sup>2</sup>	5		R
3.3.8	PSD 8.3.14	Shoring to protect existing structures : Pipe Trenches (Provisional)	m <sup>2</sup>	10		R
	SABS MM 8.4.1	Reinstate road markings (Provisional)				
3.3.9		a) White lines - unbroken	m	10		R
3.3.10		b) Yellow lines - unbroken	m	10		R
Total Carried Forward To Summary						R

## BILL 1 BOQ 3: DEWATERING FACILITY

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>4</b>	<b>SANS 1200 DM</b>	<b>SECTION DM: EARTHWORKS (ROADS, SUBGRADE)</b>				
	8.3.3	Treatment of Road-bed  a) Road-bed preparation and compaction of 200mm thick material to 93% Mod AASHTO (100% for sand)				
4.1		(i) Road A (Incoming Road towards Dewatering Building facility)	m³	180		R
4.2		(ii) Road B (Ring Road around Dewatering Building facility)	m³	410		R
		b) In - Place treatment of road-bed in intermediate material by:				
4.3		(i) Ripping	m³	580		R
		c) In - Place treatment of road-bed in hard rock material by:				
4.4		(i) Ripping	m³	200		R
	PSDM 8.3.4	Cut to fill  G9 quality fill Compacted to at least 93% mod. AASHTO maximum density (100% for sand)				
4.5		(a) Road A (Incoming Road towards Dewatering Building facility)	m³	210		R
4.6		(b) Road B (Ring Road around Dewatering Building facility)	m³	4 300		R
	PSDM 8.3.4	Borrow to fill  (i) Construct imported G7 quality upper selected subgrade layer from commercial source, compacted to 95% mod. AASHTO density (100% for sand);				
4.7		-Road A (Incoming Road towards Dewatering Building facility)	m³	120		R
4.8		-Road B (Ring Road around Dewatering Building facility)  (ii) Construct 200mm Thick G9 Quality Fill material Compacted to 97% MOD AASHTO Density for lower selected subgrade with material from commercial sources	m³	650.0		R
4.9		-Road A (Incoming Road towards Dewatering Building facility)	m³	90		R
4.10		-Road B (Ring Road around Dewatering Building facility)  (iii) Construct 200mm Thick G9 Quality Fill material Compacted to 97% MOD AASHTO Density for lower selected subgrade. with material from designated excavations.	m³	210		R
Total Carried Forward						R

**BILL 1 BOQ 3: DEWATERING FACILITY**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
4.11	PSDM 8.3.6	-Road A (Incoming Road towards Dewatering Building facility)	m³	90		R
4.12		-Road B (Ring Road around Dewatering Building facility)	m³	210		R
		Cut to spoil or stockpile from				
		Stockpile Material with excavations from excavated road prism (Guardhouse and Dewatering Building)				
4.13		(a) Soft Material Excavation - Roadways building paved areas	m³	1 200		R
		Spoil Material from excavations from road prism including (Guardhouse and Dewatering Building)				
4.14		b) Soft Material Excavation - Roadways including proposed paved areas	m³	3 300		R
4.15		c) Hard Rock Excavation - Roadways including proposed paved areas	m³	10		R
Total Carried Forward To Summary						R

## BILL 1 BOQ 3: DEWATERING FACILITY

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>5</b>		<b>SECTION G: CONCRETE (STRUCTURAL)</b>				
5.1		RETAINING WALL				
5.2	8.2	FORMWORK				
		Rates for smooth formwork shall include corner chamfers up to 25 x 25mm as specified				
	8.2.1	Rough				
		a) Vertical, plane				
5.2.1		i) To filled sides of retaining wall (1m to 1.5m high)	m <sup>2</sup>	180		R
	8.2.5	b) Narrow widths (0-200 mm high)				
5.2.2		ii) Vertical, plane to footings and bases	m	115		R
	8.2.2	Smooth				
		a) Vertical, plane				
5.2.3		i) To exposed sides of retaining wall (1m to 1.5m high)	m <sup>2</sup>	180		R
5.3	8.3	REINFORCEMENT				
	8.3.1	Steel Bars				
		a) High tensile steel				
5.3.1		i) Not exceeding 8mm dia.	t	0.4		R
5.3.2		i) 8mm up to 16mm diameter	t	7.0		R
5.4	8.4	CONCRETE				
		a) 15MPa/19mm concrete to:				
5.4.1	8.4.2	i) Blinding layer (horizontal)	m <sup>3</sup>	8		R
		b) 30 MPa/19mm concrete to:				
5.4.2	8.4.1	ii) Strip footings	m <sup>3</sup>	30		R
5.4.3	8.4.1	iii) Retaining wall stem	m <sup>3</sup>	30		R
5.5	8.4.4	UNFORMED SURFACE FINISHES				
5.5.1		c) Wood float finish to top of wall stem	m <sup>2</sup>	25		R
5.5.2		(i) Cascade drain for dewatering facility embankment See Drawing No.5331-C-DW-222	m <sup>2</sup>	45		R
5.6	8.5	JOINTS				
5.6.1		a) Construction joint detail complete as shown on Drawing No. 5331-C-DW-217	m	20		R
Total Carried Forward						R

## BILL 1 BOQ 3: DEWATERING FACILITY

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
5.6.2		b) 10mm Isolation joint with jointex and 10x10mm Polyurethane sealant as shown on Drawing No. 5331-C-DW-219	m	115		R
5.7		<b>EMBANKMENT CHANNEL</b>				
5.8	8.4.4	UNFORMED SURFACE FINISHES				
5.8.1		d) Class U2 surface finish to cast in situ concrete cutoff channel See Drawing No. 5331-C-DW-222	m <sup>2</sup>	150		R
5.8.2		d) Class U2 surface finish to cast in situ concrete cascade drain See Drawing No. 5331-C-DW-222	m <sup>2</sup>	50		R
5.9		<b>DEWATERING FACILITY CONCRETE ROAD</b>				
5.10	8.2	FORMWORK				
		Rates for smooth formwork shall include corner chamfers up to 25 x 25mm as specified				
	8.2.1	Rough				
		a) Narrow widths (0-300 mm high)				
5.10.1		i) Vertical, plane to road side	m	330		R
5.11	8.3	REINFORCEMENT				
	8.3.1	Steel Bars				
		a) High tensile steel				
5.11.1		i) Not exceeding 8mm dia.	t	0.1		R
5.11.2		i) 8mm up to 16mm diameter	t	0.1		R
	8.3.2	High Tensile Welded Mesh				
5.11.3		a) Mesh Ref 193 (Provisional)	m <sup>2</sup>	5		R
5.11.4		b) Mesh Ref 617	m <sup>2</sup>	3 000		R
5.12	8.4.1	CONCRETE				
		a) 15MPa/19mm concrete to:				
5.12.1		i) Blinding layer (horizontal)	m <sup>3</sup>	150		R
		b) 30 MPa/19mm concrete to:				
5.12.2		i) Concrete road	m <sup>3</sup>	480		R
5.13	8.4.4	UNFORMED SURFACE FINISHES				
5.13.1		a) Broom finish to concrete road	m <sup>2</sup>	3 000		R
5.14	8.5	JOINTS				
Total Carried Forward						R

## BILL 1 BOQ 3: DEWATERING FACILITY

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
5.14.1		a) Construction Joint A ( Max Spacing longitudinal joints, 3.8m transverse joints, - Max spacing transverse joints, 4m) complete as shown on Drawing No. 5331-ST-IW-116	m	450		R
5.15	8.2	NEW SLUDGE DEWATERING BUILDING FORMWORK  Rates for smooth formwork shall include corner chamfers up to 25 x 25mm as specified  Formwork to soffits of solid slabs etc shall be deemed to be to slabs not exceeding 250mm thick unless otherwise described				
	8.2.1	Rough a) Vertical, sides				
5.15.1		i) Edges, risers, ends and reveals not exceeding 300mm high or wide	m <sup>2</sup>	60		R
	8.2.5	b) Soffits				
5.15.2		ii) Slabs propped up exceeding 1.5m and not exceeding 3.5m high	m <sup>2</sup>	5		R
	8.2.2	Smooth a) Vertical, Sides				
5.15.3		i) Outer face of walls of circular silo exceeding 1m radius with a total height exceeding 8m and not exceeding 9.5m above bearing level	m <sup>2</sup>	283		R
5.15.4		ii) Inner face of walls of circular silo exceeding 1m radius with a total height exceeding 8m and not exceeding 9.5m above sloping bearing level	m <sup>2</sup>	251		R
5.15.5		iii) Outer face of walls of conical section of circular silo exceeding 1m radius propped up exceeding 8m and not exceeding 9.5m above bearing level	m <sup>2</sup>	80		R
5.15.6		iv) Rectangular columns in foundations	m <sup>2</sup>	132		R
5.15.7		v) Rectangular columns with total height exceeding 3.5m and not exceeding 5m above bearing level	m <sup>2</sup>	322		R
5.15.8		vi) Rectangular columns with total height exceeding 3.5m and not exceeding 5m above bearing level	m <sup>2</sup>	220		R
5.15.9		vii) Inverted beams circular not exceeding 1m radius	m <sup>2</sup>	2		R
Total Carried Forward						R

## BILL 1 BOQ 3: DEWATERING FACILITY

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
5.15.10		viii) Inverted beams above concrete circular not exceeding 1m radius	m <sup>2</sup>	1		R
5.15.11		ix) Edges exceeding 300mm high	m <sup>2</sup>	35		R
5.15.12		x) Edges, risers, ends and reveals not exceeding 300mm high or wide	m <sup>2</sup>	320		R
5.15.13		xi) Sloping and stepped outer edges of stairs 360mm high extreme	m <sup>2</sup>	13		R
		b) Soffits				
5.15.14		i) Slabs propped up exceeding 3.5m and not exceeding 5m high	m <sup>2</sup>	304		R
5.15.15		ii) Slabs propped up exceeding 8m and not exceeding 9.5m high off sloping surfaces	m <sup>2</sup>	33		R
5.15.16		iii) Landings	m <sup>2</sup>	5		R
5.15.17		iv) Stairs with sloping soffits	m <sup>2</sup>	8		R
		c) Sides and Soffits				
5.15.18		i) Beams propped up exceeding 1.5m and not exceeding 3.5m high	m <sup>2</sup>	239		R
5.15.19		ii) Isolated beams propped up exceeding 1.5m and not exceeding 3.5m high	m <sup>2</sup>	268		R
5.15.20		iii) Isolated beams propped up exceeding 8m and not exceeding 9.5m high	m <sup>2</sup>	88		R
		d) Sloping top surfaces				
5.15.21		i) Inner face of walls of conical section of circular silo exceeding 1m radius	m <sup>2</sup>	66		R
5.15.22		ii) Extra over last for 3mm thick HDPE anchor knob sheet - AKS CPL green or similar approved	m <sup>2</sup>	66		R
		e) Boxing in smooth formwork to form				
5.15.23		i) 25 x 25mm Chamfer along top or bottom edge	m	743		R
5.15.24		ii) 25 x 25mm Chamfer along top or bottom edge circular on plan exceeding 1m radius	m	62		R
5.15.25		iii) 25 x 25mm Vertical chamfer at corner	m	678		R
		f) Boxing out smooth formwork to form				
Total Carried Forward						R

## BILL 1 BOQ 3: DEWATERING FACILITY

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
5.15.26		i) 300 x 400 x 662mm High overall crane rail support with sloping soffit 400mm from top of support on 450mm wide face of column, top of support 1513mm from top of column	No	10		R
		g) Smooth formwork to form				
5.15.27		i) Opening exceeding 2m and not exceeding 3m girth through 250mm slab	No	4		R
5.16	8.3	REINFORCEMENT				
	8.3.1	Steel Bars				
		a) Mild steel				
5.16.1		i) Various diameters	t	10.0		R
		b) High tensile steel				
5.16.2		i) Various diameters	t	95.4		R
		c) Fabric Mesh reinforcement				
5.16.3		i) Type ref 395 fabric reinforcement in concrete surface beds, slabs, etc	m <sup>2</sup>	847.0		R
5.17	8.4	CONCRETE UNREINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES				
		a) 15MPa/19mm concrete to:				
5.17.1	8.4.2	i) Surface blinding under footings and bases	m <sup>3</sup>	10		R
		REINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES				
		b) 30 MPa/19mm concrete to:				
5.17.2	8.4.1	i) Bases	m <sup>3</sup>	149		R
5.17.3	8.4.1	ii) Foundation beams	m <sup>3</sup>	27		R
		REINFORCED CONCRETE c) 30 MPa/19mm concrete to:				
5.17.4	8.4.1	i) Surface beds cast in panels on waterproofing	m <sup>3</sup>	176		R
5.17.5	8.4.1	ii) Ramps on waterproofing	m <sup>3</sup>	3		R
	8.4.1	iii) Bottoms of floor drains on waterproofing	m <sup>3</sup>	5		R
5.17.6	8.4.1	iv) Slabs including beams and inverted beams	m <sup>3</sup>	122		R
Total Carried Forward						R



## BILL 1 BOQ 3: DEWATERING FACILITY

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
5.17.7	8.4.1	v) Raisings on tops of slabs	m <sup>3</sup>	1		R
5.17.8	8.4.1	vi) Plinths	m <sup>3</sup>	8		R
5.17.9	8.4.1	vii) Isolated beams	m <sup>3</sup>	50		R
5.17.10	8.4.1	viii) Stairs including landings, beams and inverted beams	m <sup>3</sup>	4		R
5.17.11	8.4.1	ix) Columns in foundations	m <sup>3</sup>	18		R
5.17.12	8.4.1	x) Columns	m <sup>3</sup>	85		R
5.17.13	8.4.1	xii) Walls of cylindrical silo	m <sup>3</sup>	80		R
5.17.14	8.4.1	xiii) Conical walls of cylindrical silo	m <sup>3</sup>	22		R
5.18	8.4.4	UNFORMED SURFACE FINISHES				
5.18.1		a) Wood float finish to top surfaces of concrete				
5.18.1.1		(i) Surface beds, slabs, etc	m <sup>2</sup>	359		R
5.18.2		b) Wood float finish to top surfaces of concrete with "Dry Shake" hardener added in accordance with the Manufacturer's Instructions				
5.18.2.1		(i) Surface beds, slabs, etc to falls	m <sup>2</sup>	23		R
5.18.3		c) Steel trowel finish to top surfaces of concrete				
5.18.3.1		(i) Tops of beams, walls, etc	m <sup>2</sup>	177		R
5.18.3.2		(ii) Surface beds, slabs, etc to falls	m <sup>2</sup>	65		R
5.18.4		d) Non-shrink epoxy leveling grout				
5.18.4.1		(i) Bedding approximately 5mm thick under 230 x 130mm base plate including chamfered edges all round	No	20		R
5.19	8.5	JOINTS				
5.19.1		"Kilcher bearing" slip joints between horizontal concrete and brick surfaces including cement mortar bed a) Not exceeding 300mm wide	m	228		R
5.19.2		Expansion joints with approved joint forming material between vertical concrete and brick surfaces b) 6mm Joints not exceeding 300mm high	m	189		R
Total Carried Forward						R

**BILL 1 BOQ 3: DEWATERING FACILITY**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
5.19.3		Sleeves c) 100mm Diameter pipe sleeve through 250mm thick slab	No	4		R
5.19.4		d) 150mm Diameter pipe sleeve through 250mm thick slab	No	8		R
5.19.5		e) 250mm Diameter pipe sleeve through 250mm thick slab	No	12		R
5.19.6		f) 700mm Diameter galvanised pipe not exceeding 1000mm long with and including one flanged end, blank flange, bolts and gasket cast through 250mm thick slab	No	2		R
Total Carried Forward To Summary						R

## BILL 1 BOQ 3: DEWATERING FACILITY

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>6</b>	<b>SABS 1200 L</b>	<b>SECTION L: MEDIUM-PRESSURE PIPE LINES</b>				
	PSL 8.2.1	Supply, lay and bed HDPE PE80 PN10:				
6.1		i) 200mm diameter.	m	100		R
		b) Electrofusion welding for fittings to suit HDPE sewer pipes :				
6.2		i) VJ Type coupling for Scour	No	1		R
6.1		SPECIALS AND FITTINGS				
		Extra over 8.2.1 for supplying, laying, bedding and testing of specials complete with couplings:				
6.2		STAINLESS STEEL 304				
6.2.1		i) 200mm diam x 90 degree bend (one side flanged)	No.	1		R
6.2.2		ii) 200mm diam x 1000mm long pipe flanged both end	No.	1		R
6.3		HDPE PE80 PN10				
6.3.1		i) 200mm diam x 90 degree bend	No.	2		R
6.3.2		i) 200mm diam x 11.5 degree bend	No.	1		R
6.3.3		iii) 200mm diam x 80mm diam scour tee	No.	2		R
6.4		VALVES				
	8.2.3	Extra over 8.2.1 for the supplying, fixing and bedding of:				
		a) Valves, resilient seal gate type, including electrofusion couplings and flanges to connect into HDPE pipe				
6.4.1		i) 80 mm diam. for Scour valve to HDPE connection	No.	1		R
	PSL 8.2.4	Flexible joints at structures				
6.4.2		a) 200mm diameter	No.	1		R
	8.2.13	Valve and Hydrant Chambers etc				
6.4.3		i) Scour valve chamber complete with Type 3B valve box and thrust block	No.	1		R
	8.2.15	Wrapping of pipes and flanges with Denso or similar protective wrapping:				
6.4.4		a) 200mm diam. VJ - type coupling	No.	1		R
6.4.5		b) 200mm dia flange adapter	No.	2		R
	8.2.11	Thrust blocks as detailed on drawings				
6.4.6		a) Concrete Class 20/19	m³	5		R
Total Carried Forward						R

**BILL 1 BOQ 3: DEWATERING FACILITY**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
6.4.7	PSL 8.2.16	Connect to existing pipelines  i) Connection of re-routed uPVC pipework to existing pipework (50mm diameter AC pipeline)	No.	2		R
6.4.8	PSL 8.2.20	Markers Posts	No.	20		R
Total Carried Forward To Summary						R

**BILL 1 BOQ 3: DEWATERING FACILITY**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>7</b>		<b>SECTION LB: BEDDING (PIPES)</b>				
	8.2.1	Provision of bedding from trench excavation				
7.1		a) Selected granular material	m³	60		R
7.2		b) Selected fill material	m³	120		R
	8.2.2.3	Provision of bedding by importation from commercial sources				
7.3		a) Selected granular material	m³	60		R
7.4		b) Selected fill material	m³	30		R
	8.2.4	Encasing of pipes in 20MPa/19mm concrete (provisional)				
7.5		a) 300mm diameter Class 75D Pipe	m³	5		R
7.6		b) 450mm diameter Class 75D Pipe	m³	5		R
	PSLB 8.2.6	Provision of Bedding in waterlogged conditions				
7.7		a) Single size 19mm stone	m³	10		R
7.8		b) Geotextile	m³	10		R
Total Carried Forward To Summary						R

**BILL 1 BOQ 3: DEWATERING FACILITY**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>8</b>	<b>SABS 1200 LC</b>	<b>SECTION LC: CABLE DUCTS</b>				
	8.2.2	Excavation  a) Excavate in all materials for trenches, backfill, compact, and dispose of surplus material				
8.1		i) 110mm diameter ducts	m	150		R
8.2		i i) 160mm diameter ducts	m	150		R
	8.2.7	Drawpits/Manholes  Construct 600mm x 600mm AJB draw box with 300mm concrete surround to detail, with 230 brickwork,max height 1.2m including ductile iron cover and frame (600mm diameter EN 124 class C250)				
8.3		a) in sidewalk and verge  Construct 1000mm x 1000mm AJB draw box with 300mm concrete surround to detail, with 230 brickwork,max height 1.2m including ductile iron cover and frame (600mm diameter EN 124 class C250)	No.	6		R
8.4		a) in road	No.	6		R
8.5	8.2.8	Cable route markers complete, installed, and record submitted	No	20		R
	PSLC 8.2.10	Sealing of duct ends				
8.6		a) Electrical ducts	No	10		R
8.7		b) Non-electrical ducts (100mm dia)	No	10		R
Total Carried Forward To Summary						R

## BILL 1 BOQ 3: DEWATERING FACILITY

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>9</b>	<b>SABS 1200 LD</b>	<b>SECTION LD: SEWERS</b>				
	PSLD 8.2.1	Supply, lay, joint, bed and test pipeline a) uPVC Class 34 sewer pipes on Class B bedding				
9.1		i) 160mm diam	m	5		R
9.2		ii) 200mm diam	m	10		R
9.3		iii) 315mm diam	m	145		R
	PSLD 8.2.2	Extra-over items 8.2.1 for specials a) Fittings to suit uPVC sewer pipes :				
9.4		i) 110mm dia endcap	No.	1		R
9.5		ii) 160 x 110 dia plain 45 deg Y-junction	No.	1		R
9.6		iii) 110 dia plain 45 deg long radius bend	No.	1		R
	PSLD 8.2.3	Manholes a) Sewer Manholes as detailed on drawing No.5331-C-DW-212 i) For depths:				
9.7		- Over 0.0m up to 1.0m	No.	4		R
9.8		- Over 1.0m up to 2.0m	No.	6		R
9.9		- Over 2.0m up to 3.0m	No.	1		R
9.10		- Over 3.0m up to 4.0m	No.	1		R
	PSLD 8.2.4	Extra-over PSLD 8.2.3 for construction of manholes or chambers on existing pipelines				
9.11		i) New SNL Manhole	No.	1		R
	PSLD 8.2.7	a) Construction of Discharge chamber complete as shown on drawings				
9.12		i) Tanker washdown as shown Drawing 5331-C-DW-212	No.	2		R
9.13	8.2.11	Break into and connect to existing manhole including flexible joints as shown on Drawings and make good all benching	m³	1		R
Total Carried Forward To Summary						R

## BILL 1 BOQ 3: DEWATERING FACILITY

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
10	SABS 1200 LE	<b>SECTION LE: STORMWATER DRAINAGE</b>				
	8.2.1	Concrete pipe culverts, spigot and socket type with rubber ring seal, on flexible bedding				
10.1		i) 300 mm diameter Class 75D	m	120		R
		Concrete pipe culverts, spigot and socket type with rubber ring seal, on class B bedding				
10.2		i) 375 mm diameter Class 100D	m	10		R
	PSLE 8.2.8	a) Supply and install 1000mm Dia Manhole or similar complete as detailed on the drawings 5331-C-DW-208 and 5331-C-DW-209				
10.3		i) Over 1.0 up to 2.0m	No	3		R
10.4		ii) Over 2.0 up to 3.0m	No	3		R
10.5		iii) Over 3.0 up to 4.0	No	1		R
		b) Single Grid Inlet unit for depths:				
10.6		i) Over 0.5m up to 1.0m	No	2		R
		c) Double kerb inlet unit for depths and kerb type:				
	8.2.10	Accessories for stormwater drainage structures				
10.7		a) Securex Z-600-D or similar approved heavy-duty ductile iron cover and frame conforming to SABS EN D 400 class	No	6		R
	PSLE 8.2.14	Subsurface Drains complete for retaining wall as detailed on the drawings				
10.8		a) Subsurface drains system complete as shown on Drawing No. 5331-C-DW-217	m	200		R
	PSLE 8.2.15	Connections into existing manholes/ inlets				
10.9		i) Connection into proposed manhole/grid inlet for 110mm diameter pipe	No.	2		R
Total Carried Forward To Summary						R



## BILL 1 BOQ 3: DEWATERING FACILITY

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>11</b>	<b>SABSA 1200 ME</b>	<b>SECTION ME: SUBBASE</b>				
11.1	8.2.3	Construct G5 quality subbase with material from commercial sources, compacted to 95% of mod. AASHTO maximum density.	m³	82		R
	8.3.3	Construct 100 mm Cement Stabilized subbase (C4) material with material from commercial sources compacted to 97% Mod. AASHTO Density				
		a) 100mm to roadways at dewatering building facility				
11.2		-Road A (Incoming Road towards Dewatering Building facility)	m³	80		R
11.3		-Road B (Ring Road around Dewatering Building facility)	m³	230		R
		b) 100 mm Cement Stabilized subbase (C4) Compacted to 97% Mod.AASHTO Density for:				
11.4		- Guardhouse paved area at entrance	m³	8		R
11.5		- Dewatering Building paved area	m³	150		R
11.1		SUNDRIES				
11.1.1	PSMM 8.3.6	Statutory signs, street names, and the like, supplied and erected complete	No	6		R
11.1.2	PSMM 8.4.1	Retro-reflective Road Marking Paint Applied at a Nominal Rate of 0,42 l/m2	m	150		R
Total Carried Forward To Summary						R

**BILL 1 BOQ 3: DEWATERING FACILITY**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>12</b>	<b>SABS 1200 MF</b>	<b>SECTION MF: BASE</b>				
	8.3.3	Construct 100 mm Cement Stabilized subbase (C4) compacted to 97% Mod. AASHTO Density				
12.1		-Road A (Incoming Road towards Dewatering Building facility)	m³	80		R
12.2		-Road B (Ring Road around Dewatering Building facility)	m³	230		R
12.3		b) 100 mm to sidewalks	m³	20		R
Total Carried Forward To Summary						R

**BILL 1 BOQ 3: DEWATERING FACILITY**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>13</b>	<b>SABS 1200 MJ</b>	<b>SECTION MJ: SEGMENTED PAVING</b>				
	PSMJ 8.2.2	Construction of paving complete  a) 60mm interlocking paving blocks Class 30/2.0 S-C (Colour grey) on 25mm sand, on paved walkways				
13.1		i) Guardhouse Paved area at entrance	m <sup>2</sup>	25		R
13.2		ii) Dewatering Building Facility Paved area	m <sup>2</sup>	140		R
Total Carried Forward To Summary						R

## BILL 1 BOQ 3: DEWATERING FACILITY

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>14</b>	<b>SABS 1200 MK</b>	<b>SECTION MK: KERBING AND CHANNELING</b>				
14.1		CONCRETE KERBS AND CHANNELS				
14.2	8.2.1	PRECAST CONCRETE KERBING				
		Barrier kerbs				
		a) Type BK4				
14.2.1		i) Straights	m	610		R
14.2.2		ii) 1m to 4m radius	m	40		R
14.2.3		iii) 4m to 20m radius	m	45		R
14.2.4		iv) Exceeding 20m radius	m	10		R
		Footpath edging				
		a) Type E3				
14.2.5		i) Straights	m	20		R
14.2.6		ii) 1m to 4m radius	m	5		R
14.2.7		iii) 4m to 20m radius	m	5		R
14.2.8		iv) Exceeding 20m radius	m	5		R
		Channel				
14.2.9		a) Type C1 channel	m	410		R
14.2.10		b) Type C1 double channel	m	30		R
	PSMK 8.2.14	Lift and reinstate				
		a) Barrier Kerb (BK1)				
14.2.11		i) Striahts	No	8		R
		Cast in situ mesh reinforced concrete cutoff channel				
	8.2.7	Trimming of excavations for concrete-lined open drains:				
14.2.12		(a) In soft material	m <sup>2</sup>	90		R
14.2.13		(c) In hard material	m <sup>2</sup>	10		R
		Concrete lining for open cut off drains:				
		(a) Cast in situ concrete lining class 20/19				
14.2.14	8.2.8	(i) Cut off channel for dewatering facility embankment See Drawing No. 5331-C-MISC-407 & 5331-C-DW-222	m <sup>3</sup>	15		R
		Class U2 surface finish to cast in situ concrete				
Total Carried Forward						R

## BILL 1 BOQ 3: DEWATERING FACILITY

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
14.2.15		(i) Cut off channel for dewatering facility embankment See Drawing No.5331-C-MISC-407 & 5331-C-DW-222	m <sup>2</sup>	120		R
	8.2.9	Formwork to cast in situ concrete cut off drain (Class F1 surface finish):				
14.2.16		(b) To sides with formwork on both internal and external faces (each face measured)	m <sup>2</sup>	250		R
14.2.17		(c) To ends of slabs	m <sup>2</sup>	6		R
	8.2.10	Sealed joints in concrete linings of open cutoff drains:				
14.2.18		(i) Spaced at 10m intervals	m	20		R
	8.2.13	Water Proofing				
14.2.19		250 Micron DPM under cast insitu concrete channel See Drawing No. 5331-C-DW-222	m <sup>2</sup>	120		R
		Cast in situ mesh reinforced concrete cascade drain				
	8.2.7	Trimming of excavations for concrete-lined open drains:				
14.2.20		(a) In soft material	m <sup>2</sup>	25		R
14.2.21		(b) In hard material	m <sup>2</sup>	5		R
		Concrete lining for open cascade drains:				
		(a) Cast in situ concrete lining class 20/19				
14.2.22	8.2.8	(i) Cascade drain for dewatering facility embankment See Drawing No. 5331-C-DW-222	m <sup>3</sup>	5		R
	8.2.9	Formwork to cast in situ concrete cascade drain (Class F2 surface finish):				
14.2.23		(a) To sides with formwork on both internal and external faces (each face measured)	m <sup>2</sup>	30		R
14.2.24		(b) To ends of slabs	m <sup>2</sup>	10		R
14.2.25	8.2.12	Steel Reinforcement Mesh Ref 193 to Cascade drain	t	0.5		R
	8.2.13	Water Proofing				
14.2.26		250 Micron DPM under cast insitu concrete channel See Drawing No. 5331-C-DW-222	m <sup>2</sup>	40		R
Total Carried Forward To Summary						R

**BILL 1 BOQ 3: DEWATERING FACILITY**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>15</b>	<b>SABS 1200 MM</b>	<b>SECTION MM: ANCILLARY ROADWORKS</b>				
15.1		SCHEDULED ITEMS FOR GUARDRAILS FOR ROAD A AS PER DRAWINGS 5331-C-DW-216, 217, 218 AND 219				
15.2	8.2.1	GUARDRAIL ON POSTS				
15.2.1		a) Galvanized	m	200		R
15.3	8.2.2	EXTRA-OVER FOR ITEM 8.2.1 FOR HORIZONTALLY CURVED GUARDRAIL	m	20		R
	8.2.3	End units				
15.3.1		a) End wings (Bullnose)	No	4		R
15.3.2	8.2.5	Reflector plates	No	70		R
15.4		SCHEDULED ITEMS FOR GUARDRAILS FOR PROTECTION AROUND SILOS				
15.5	8.2.1	GUARDRAIL ON POSTS FOR ROAD B				
15.5.1		a) Galvanized	m	15		R
	8.2.3	End units				
15.5.2		a) End wings (Bullnose)	No	4		R
15.5.3	8.2.5	Reflector plates	No	10		R
15.6	PSMM 8.2.8	Steel base plate and housing for post along road a as per drawings DRAWINGS 5331-C-DW-216 AND 217	No	15		R
Total Carried Forward To Summary						R

**BILL 1 BOQ 3: DEWATERING FACILITY**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>16</b>		<b>SECTION PGE: EROSION CONTROL</b>				
16.1	PGE 7.3.1	Supply of erosion control mat				
		Supply of biodegradable jute netting/matting to dewatering facility embankment slope for erosion control. See Drawing 5331-C-DW-222	m <sup>2</sup>	1 200		R
16.2	PGE 7.3.2	Installation of erosion control mat				
		Installation of biodegradable jute netting/matting to dewatering facility embankment slope for erosion control. See Drawing 5331-C-DW-222	m <sup>2</sup>	1 200		R
Total Carried Forward To Summary						R

**BILL 1 BOQ 3: DEWATERING FACILITY****SUMMARY OF SECTIONS**

SECTION	DESCRIPTION				AMOUNT R
1	SECTION C : SITE CLEARANCE				R
2	SECTION D: EARTHWORKS				R
3	SECTION DB: EARTHWORKS (PIPE TRENCHES)				R
4	SECTION DM: EARTHWORKS (ROADS, SUBGRADE)				R
5	SECTION G: CONCRETE (STRUCTURAL)				R
6	SECTION L: MEDIUM-PRESSURE PIPE LINES				R
7	SECTION LB: BEDDING (PIPES)				R
8	SECTION LC: CABLE DUCTS				R
9	SECTION LD: SEWERS				R
10	SECTION LE: STORMWATER DRAINAGE				R
11	SECTION ME: SUBBASE				R
12	SECTION MF: BASE				R
13	SECTION MJ: SEGMENTED PAVING				R
14	SECTION MK: KERBING AND CHANNELING				R
15	SECTION MM: ANCILLARY ROADWORKS				R
16	SECTION PGE: EROSION CONTROL				R
Total Carried Forward To Summary Of Bills					R



**BILL 1 BOQ 4: SERVICES POTABLE WATER & SECOND CLASS WATER**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>1</b>	<b>SANS 1200 C</b>	<b>SECTION C: SITE CLEARANCE</b>				
1.1		CLEAR SITE				
1.1.1	8.2.1	Clear and grub	m <sup>2</sup>	525		R
	8.2.2	Remove and grub large trees of girth:				
1.1.2		a) Less than 1.0m	No	1		R
1.1.3		b) Over 1.0m up to 2.0m	No	1		R
1.1.4		c) Over 2.0m up to 3.0m	No	1		R
	PSC 8.2.16	Saw cut through existing surface for trench excavation				
1.1.5		a) Premix (20mm to 80mm deep)	m	170		R
1.1.6		b) Reinforced Concrete (100mm to 200mm thick)	m	40		R
	PSC 8.2.17	Removal of existing kerbing, channelling and edging				
1.1.7		c) Lift and remove existing interlocking pavers in the sidewalk (up to 80 mm thick)	m <sup>2</sup>	368		R
1.1.8	PSC 8.2.18	Removal of existing asphalt surfacing	m <sup>2</sup>	51		R
Total Carried Forward To Summary						R

## BILL 1 BOQ 4: SERVICES POTABLE WATER &amp; SECOND CLASS WATER

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>2</b>	<b>SABS 1200 D</b>	<b>SECTION D: EARTHWORKS</b>				
	PSD 8.3.3	Restricted Excavation				
2.1		AT SECOND CLASS WATER PUMP STATION				
		a) Excavate in all materials and use for embankment or backfill or dispose, as ordered				
2.1.1		i) Stockpile and Maintain	m³	10		R
2.1.2		iii) Cut to fill	m³	10		R
		b) Extra-over payment item 8.3.3 for:				
2.1.3		i) Hard rock excavation	m³	1		R
2.1.4		c) Extra-over for item PSD 8.3.3 for importation of approved sand fill from commercial sources	m³	8		R
2.1.5		d) Extra-over for item PSD 8.3.3 for 5% cement stabilised sand	m³	2		R
2.1.6		e) Extra-over for item PSD 8.3.3 for restricted backfilling against structures	m³	5		R
	8.3.4	Importing of Materials				
		a) Importation of materials from commercial sources or from borrow pits, place and compact				
		i) G9-quality material (compacted to 100% of Mod AASHTO density for fill to :				
2.1.7		- New concrete slab at the Second Class water pump station	m³	3		R
		Extra-over for importation of material from commercial sources				
2.1.8		i) G7-quality material (compacted to 95% of Mod AASHTO density for 100% for sand fill to Paved area	m³	5		R
2.1.9		ii) G8-quality material (compacted to 95% of Mod AASHTO density for fill to Paved area	m³	5		R
	8.3.8.1	c) Excavate by hand in soft material to expose services				
Total Carried Forward						R

**BILL 1 BOQ 4: SERVICES POTABLE WATER & SECOND CLASS WATER**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
2.1.10	8.3.8.2	ii) Existing second class water pipe ( <100mm diameter)	m³	1		R
2.1.11		iii) Existing electrical cables	m³	5		R
		Dealing with services that are at risk because of the construction of earthworks				
		a) Cables				
2.1.12		i) Electrical cables	No.	2		R
		c) Temporary protection of services				
2.1.13		i) Existing electrical cables	No.	2		R
2.1.14		ii) Existing second class water pipe <160mm pipe	No.	2		R
2.1.15		iii) Existing water main < 100mm diameter	No.	2		R
2.1.16		iv) 900mm diameter AC pipe	No.	1		R
2.1.17		v) Existing stormwater pipe < 350mm diameter	No.	3		R
2.1.18	8.3.10	Topsoiling	m²	25		R
Total Carried Forward To Summary						R

## BILL 1 BOQ 4: SERVICES POTABLE WATER &amp; SECOND CLASS WATER

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>3</b>	<b>SANS 1200 DB</b>	<b>SECTION DB: EARTHWORKS (PIPE TRENCHES)</b>				
3.1		REMOVAL OF TOPSOIL				
3.1.1	8.3.1	Remove topsoil to 150mm depth, stockpile and maintain	m <sup>2</sup>	350		R
3.2	8.3.2	EXCAVATION				
	PSDB 8.3.2 a)	a) Excavate by hand all materials for trenches, dewater, backfill, compact, and dispose of surplus or unsuitable material for:				
		1) Pipes up to 150mm diameter and trench depth:				
3.2.1		i) Exceeding 0.0m up to 1.0m	m	630		R
3.2.2		ii) Exceeding 1.0m up to 2.0m	m	420		R
3.2.3		iii) Exceeding 2.0m up to 3.0m	m	1		R
		1) Pipes over 150mm up to 315mm diameter and trench depth:				
3.2.4		i) Exceeding 0.0m up to 1.0m	m	20		R
3.2.5		ii) Exceeding 1.0m up to 2.0m	m	20		R
3.2.6		iii) Exceeding 2.0m up to 3.0m	m	2		R
	PSDB 8.3.2 b)	Extra-over Payment items 8.3.2 for:				
3.2.7		1) Hard rock excavation	m <sup>3</sup>	1		R
3.2.8		2) Hand excavation - soft material	m <sup>3</sup>	756		R
3.2.9	8.3.2	c) Excavate and dispose of unsuitable material from the trench bottom (provisional)	m <sup>3</sup>	10		R
	8.3.3.1	Make up deficiency in backfill material				
3.2.10		a) from stockpile	m <sup>3</sup>	252		R
3.3	8.3.4	PARTICULAR ITEMS				
	PSDB 8.3.4 (c)	Excavate by hand in all material to verify positions of existing services, or as directed by the Engineer and backfill				
3.3.1		1) Existing 63-100mm diameter potable water pipe	m <sup>3</sup>	5		R
3.3.2		2) Existing 150mm diameter second class water pipe	m <sup>3</sup>	5		R
3.3.3		3) Existing 700mm diameter rising main	m <sup>3</sup>	2		R
3.3.4		4) Existing 900mm diameter effluent pipe	m <sup>3</sup>	2		R
3.3.5		5) Existing 160mm-700mm sludge pipes around the aerators	m <sup>3</sup>	10		R
Total Carried Forward						R

**BILL 1 BOQ 4: SERVICES POTABLE WATER & SECOND CLASS WATER**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
3.3.6	8.3.5	6) 2 No. Existing 200mm AC pipe around the sludge drying beds	m³	3		R
		Existing services that adjoin or intersect trench				
		a) Services that intersect a trench.				
3.3.7		1) Pipes up to 150mm diameter	No	20		R
3.3.8		2) Pipes larger than 150mm up to 300mm diameter	No	20		R
3.3.9		3) Pipes larger than 300mm up to 1.0m diameter	No	20		R
3.3.10		4) Pipes larger than 1.0m diameter	No	20		R
3.3.11		5) Telkom or Electrical cables and sleeves	No	20		R
		8.3.5(b)	b) Services that adjoin a pipe trench.			
3.3.12		1) Pipes up to 150mm diameter	m	30		R
3.3.13		2) Pipes larger than 150mm up to 300mm diameter	m	30		R
3.3.14	8.3.5(b)	3) Pipes larger than 300mm up to 1.0m diameter	m	100		R
3.3.15		4) Pipes larger than 1.0m diameter	m	30		R
3.3.16		5) Telkom or Electrical cables and sleeves	m	30		R
3.4		PSDB 8.3.6	FINISHING			
		PSDB 8.3.6.1	Reinstate road surfaces to existing road pavement complete with all courses 150mm thick basecourse			
3.4.1	8.3.5(b)	a) Asphalt of thickness not more than 60mm in roadway	m²	51		R
3.4.2		b) Basecourse material stabilised with 5% cement and compacted to 98% mod AASHTO density (2 layers of 150mm thick)	m³	20		R
3.4.3		c) 150mm thick G5 quality subbase (from recovered material) compacted to 95% mod. AASHTO	m³	20		R
3.4.4		e) Precast kerbing from storage, including laying, bedding and grouting	m	100		R
3.4.5		f) Reinforced concrete slab 200mm thickness	m²	15		R
Total Carried Forward To Summary						R

## BILL 1 BOQ 4: SERVICES POTABLE WATER &amp; SECOND CLASS WATER

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>4</b>	<b>SABS 1200 G</b>	<b>SECTION G: CONCRETE (STRUCTURAL)</b>				
4.1		CONCRETE WORK AT THE SECOND CLASS WATER PUMP STATION				
	8.2	Formwork				
	8.2.1	Rough				
		a) Vertical, plane				
4.1.1		i) To sides of sumps etc (0mm to 500mm high)	m <sup>2</sup>	2		R
		b) Narrow widths (0-300 mm high)				
4.1.2		i) Vertical, plane to plinths, slab	m	21		R
	8.2.2	Smooth - Plane				
4.1.3		a) Vertical (0 to 300mm high)	m	5		R
4.1.4		b) Vertical (300mm to 1.0m high)	m <sup>2</sup>	15		R
		c) Narrow widths (0-300 mm high)				
4.1.5		2) Staircase riser (150mm) approx 450m height	No.	2		R
	8.3	Reinforcement				
	8.3.1	Steel Bars				
		a) High tensile steel				
4.1.6		1) 8mm up to 16mm diameter	t	0.6		R
	8.3.2	High Tensile Welded Mesh				
4.1.7		a) Mesh Ref 617	m <sup>2</sup>	42		R
	8.4.1	Concrete				
		a) 35MPa /19mm concrete to base slab				
4.1.8		i) Walls	m <sup>3</sup>	5		R
4.1.9		ii) Floor slab	m <sup>3</sup>	15		R
4.1.10		iii) Plinth	m <sup>3</sup>	1		R
4.1.11		iv) Steps	m <sup>3</sup>	1		R
		b) 15MPa Structural screed to floor slab				
4.1.12		i) To floor slabs	m <sup>3</sup>	25		R
4.1.13		d) Extra-over item 8.4.1 for the addition of a protection layer of Sika 264 Selflevelling Epoxy or similar	m <sup>2</sup>	42		R
	8.4.4	Unformed surface finishes				
4.1.14		a) Steel float finish to top of slab	m <sup>2</sup>	8		R
Total Carried Forward						R

**BILL 1 BOQ 4: SERVICES POTABLE WATER & SECOND CLASS WATER**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
4.1.15	8.5	b) Wood float finish to floor and plinth slab	m <sup>2</sup>	42		R
		Joints				
4.1.16		a) Construction Joint A complete as shown on Drawing No. 5331-ST-IW-116	m	11		R
4.1.17	PSG 8.7 (e)	b) Construction Joint C complete as shown on Drawing No. 5331-ST-IW-116	m	29		R
		Casting in of ducts into structure for ducts:				
4.1.18		b) 50mm diameter up to 100mm diameter	m	40		R
Total Carried Forward To Summary						R

## BILL 1 BOQ 4: SERVICES POTABLE WATER &amp; SECOND CLASS WATER

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>5</b>	<b>SABS 1200 H</b>	<b>SECTION H: STRUCTURAL STEELWORK</b>				
5.1		SECOND CLASS WATER PUMP STATION				
5.2	8.3.1	SUPPLY AND FABRICATION				
5.2.1	8.3.1.1	Preparation of shop detail drawings	Sum	1		R
5.2.2	8.3.1.2	Supply and fabrication of steelwork (see Drawing 5312-ST-A400-P) complete using steel to SANS 1431 Grade 355JR with all the necessary cleats, brackets, gussets, packs, etc., as follows:	t	2.5		R
5.3		DELIVERY TO SITE				
	8.3.2	Delivery of steelwork inclusive				
5.3.1		a) Normal loads	t	2.5		R
5.4	8.3.3	ERECTION				
5.4.1		Offloading, stacking on Site, and erection of steelwork	t	2.5		R
5.5	8.3.4	ERECTION BOLTS AND NUTS				
		Supply, deliver to Site and store as follows:				
5.5.1		Grade 4.6 bolts including flat or tapered washers, as appropriate (plain)	t	0.1		R
5.5.2		Grade 8.8 bolts including thru' hardened flat or tapered washers, as appropriate	t	0.1		R
	8.3.6	HOLDING-DOWN BOLTS AND NUTS Supply, deliver, and stack on Site as directed for building in by civil contractor, as follows:				
5.5.3		25mm diameter	t	0.2		R
5.5.4		16mm diameter	t	0.2		R
5.5.5		M10 chemical anchors	No	28		R
5.5.6		M16 Chemical anchors with 16mm plate	No	28		R
	8.3.7	Handrails				
		b) Hand rail assembly complete for:				
		1) Horizontal				
5.5.7		i) New Second class water Pump station as shown on Drawing No. 5331-ST-MISC-413	m	5		R
		3) Shaped ends				
5.5.8		i) New Second class water Pump station as shown on Drawing No. 5331-ST-MISC-413	No.	4		R
Total Carried Forward To Summary						R



**BILL 1 BOQ 4: SERVICES POTABLE WATER & SECOND CLASS WATER**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>6</b>	<b>SABS 1200 HA</b>	<b>SECTION HA: STRUCTURAL STEELWORK (SUNDRY ITEMS)</b>				
	PSHA 8.3.8	Stainless steel 304 Gratings				
6.1		a) Second class water Pump Station : Over the sump as shown on Drawing No. 5331-ST-MISC-413	m <sup>2</sup>	5		R
		SUNDRIES				
		1) 50x50x5 HDG angles with fishtails cast into floor slab :				
6.1.1		a) Second class water Pump Station as shown on Drawing No.5331-ST-MISC-413	m	2		R
6.1.2	PSHA 8.3.11	Design, supply and cast into concrete road skip rail	Sum	1		R
Total Carried Forward To Summary						R

## BILL 1 BOQ 4: SERVICES POTABLE WATER &amp; SECOND CLASS WATER

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>7</b>	<b>SABS 1200 HB</b>	<b>SECTION HB: CLADDING AND SHEETING</b>				
7.1		NEW SECOND CLASS WATER PUMP STATION				
	8.2.2	Supply, deliver to Site, erect and fix galvanised sheeting/cladding, etc., including the supply of all necessary fasteners, etc., and cutting and notching: (See Drawings)				
7.1.1		Approved troughed profile-cladding to sides and gables, 0,6mm	m <sup>2</sup>	55		R
7.1.2		Approved troughed profile-sheeting to roofs, Galvanised steel 0,6mm	m <sup>2</sup>	52		R
	8.2.3	Flashings				
7.1.3		Bullnose flashing 450mm radius finish and profile to match sheeting	m	10		R
7.1.4		Corner flashing	m	12		R
	8.2.3	Rainwater Goods				
7.1.5		a) 150mm diameter hot dipped galvanised steel gutter fixed to roof	m	6		R
7.1.6		b) 110mm diameter uPVC downpipe fixed to sides	m	12		R
7.1.7		c) Extra over downpipes for 45 deg elbow bend	No.	2		R
7.1.8		d) Extra over downpipes for shoe	No.	2		R
	8.2.5	Tests				
7.1.9		a) As specified in Subclause 7.2.1 of SANS 1200 HB	Sum	1		R
7.1.10		b) As specified in Subclause 7.2.2 of SANS 1200 HB	Sum	1		R
7.1.11		c) As specified in Subclause 7.3.1 of SANS 1200 HB	Sum	1		R
7.1.12		d) As specified in Subclause 7.3.2 of SANS 1200 HB	Sum	1		R
Total Carried Forward To Summary						R

**BILL 1 BOQ 4: SERVICES POTABLE WATER & SECOND CLASS WATER**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>8</b>	<b>SABS 1200 HC</b>	<b>SECTION HC: COROSSION PROTECTION OF STRUCTURAL STEELWORK</b>				
8.1	8.2.2	Transportation	t	5.0		R
	8.2.3	Surface preparation and coating application				
8.2		Hot-dip galvanising and paintwork of structural steelwork for canopy at the Second class water pump station as shown on Drawing No. 5331-ST-MISC-413	t	5.0		R
Total Carried Forward To Summary						R

**BILL 1 BOQ 4: SERVICES POTABLE WATER & SECOND CLASS WATER**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>9</b>	<b>SANS 1200 L</b>	<b>SECTION L: MEDIUM-PRESSURE PIPELINES</b>				
	8.2.1	Supply, handle, lay, bed and test pipes complete with couplings/joints				
		a) HDPE PN10 (PE80) on class B bedding				
9.1		(i) 63mm dia	m	300		R
9.2		(ii) 100mm dia	m	100		R
9.3		(iii) 150mm dia	m	680		R
9.1		SPECIALS AND FITTINGS				
	8.2.3	Extra over 8.2.1 for supplying, laying, bedding and testing of specials complete with couplings:				
		HPDE PN10 fittings to suit pipework				
9.1.1		a) 63mm x 22.5 degree bend	No	2		R
9.1.2		b) 63mm x 45 degree bend	No	5		R
9.1.3		c) 63mm x 90 degree bend	No.	30		R
9.1.4		d) 63mm equal Tee	No.	15		R
9.1.5		e) 100x 63 Tee	No.	1		R
9.1.6		f) 100mm x 90 degree bend	No.	4		R
9.1.7		g) 100mm equal Tee	No.	3		R
9.1.8		h) 150mm x 22.5 degree bend	No	5		R
9.1.9		i) 150mm x 45 degree bend	No	10		R
9.1.10		j) 150mm x 90 degree bend	No	13		R
9.1.11		k) 150mm equal Tee	No	30		R
		SG Iron Hydrant Tees				
9.1.12		i) 150mm x 80mm Tee	No	3		R
		VJ Type Flange Adapter:				
9.1.13		a) 50mm diameter	No	2		R
9.1.14		b) 65mm diameter	No	2		R
9.1.15		c) 100mm diameter	No.	2		R
9.1.16		d) 160mm diameter	No	2		R
		VJ Type Coupling:				
9.1.17		a) 150mm diameter	No	2		R
		Ductile Iron Saddles:				
9.1.18		b) 150mm diameter	No	2		R
Total Carried Forward						R

**BILL 1 BOQ 4: SERVICES POTABLE WATER & SECOND CLASS WATER**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
9.1.19		End Caps: b) 150mm diameter Stainless Steel BSP Socket	No	1.0		R
9.1.20		a) 80mm dia socket	No	1		R
9.2		VALVES				
	8.2.3	Extra over 8.2.1 for the supplying, installation, testing and bedding of:  PN16 Flanged Resilient Seal Gate Valve plus all fittings water and second class water reticulation system, as per details drawing				
9.2.1		a) 80mm dia flanged	No	3		R
9.2.2		b) 100mm dia flanged	No.	4		R
9.2.3		c) 160mm dia flanged	No	18		R
9.2.4	8.2.11	Thrust Blocks as per details drawing	m³	3		R
	8.2.13	Valve chambers complete as shown on drawings:				
9.2.5		a) Type 2 valve chamber	No	4		R
9.2.6		b) Hydrant chamber	No	2		R
9.3		FIRE HYDRANTS				
		a) Supply, install and connection of fire hydrant with new valve				
9.3.1		i) with tamperproof valve	No	2		R
9.3.2		b) Installation and connection of fire hydrant	No	2		R
9.3.3		c) 110mm x 80mm SG Iron Tees	No	2		R
9.3.4		d) 500mm long piece , flanged on both sides	No	2		R
	PSL 8.2.20	Markers for Valves and Fire Hydrants				
9.3.5		Markers Posts	No	20		R
Total Carried Forward To Summary						R

**BILL 1 BOQ 4: SERVICES POTABLE WATER & SECOND CLASS WATER**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>10</b>	<b>SANS 1200 LB</b>	<b>SECTION LB : BEDDING (PIPES)</b>				
	8.2.1	Provision of bedding from trench excavation				
10.1		(a) Selected granular material	m <sup>3</sup>	32		R
10.2		(b) Selected fill material	m <sup>3</sup>	128		R
	8.2.2.3	Provision of bedding by importation from commercial sources				
10.3		(a) Selected granular material	m <sup>3</sup>	128		R
10.4		(b) Selected fill material	m <sup>3</sup>	32		R
	PSLB 8.2.6	Provision of Bedding in waterlogged conditions				
10.5		(a) Single size 19mm stone	m <sup>3</sup>	5		R
10.6		(b) Bidim A4 or equal approved geotextile	m <sup>2</sup>	10		R
Total Carried Forward To Summary						R

**BILL 1 BOQ 4: SERVICES POTABLE WATER & SECOND CLASS WATER**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>11</b>	<b>SANS 1200 MK</b>	<b>SECTION MK: KERBING AND CHANNELING</b>				
	8.2.1	Concrete kerbing				
		a) Barrier Kerb (Type BK2)				
11.1		i) Straights	m	150		R
11.2		ii) 1m to 4m radius	m	5		R
11.3		iii) 4m to 20m radius	m	5		R
11.4		iii) Exceeding 20m radius	m	10.0		R
		Channel				
11.5		a) Type C1 channel	m	300		R
11.6		b) Type C1 double channel	m	10		R
	PSMK 8.2.14	Lift and reinstate				
		a) Barrier Kerb (BK2)				
11.7		i) Striahts	No	20		R
Total Carried Forward To Summary						R

**BILL 1 BOQ 4: SERVICES POTABLE WATER & SECOND CLASS WATER****SUMMARY OF SECTIONS**

SECTION	DESCRIPTION			AMOUNT R
1	SECTION C: SITE CLEARANCE			R
2	SECTION D: EARTHWORKS			R
3	SECTION DB: EARTHWORKS (PIPE TRENCHES)			R
4	SECTION G: CONCRETE (STRUCTURAL)			R
5	SECTION H: STRUCTURAL STEELWORK			R
6	SECTION HA: STRUCTURAL STEELWORK (SUNDRY ITEMS)			R
7	SECTION HB: CLADDING AND SHEETING			R
8	SECTION HC: CORROSION PROTECTION OF STRUCTURAL STEELWORK			R
9	SECTION L: MEDIUM-PRESSURE PIPELINES			R
10	SECTION LB : BEDDING (PIPES)			R
11	SECTION MK: KERBING AND CHANNELING			R
Total Carried Forward To Summary Of Bills				R



**BILL 1 BOQ 5 : REACTOR AND OTHER MISCELLANEOUS ITEMS**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>1</b>	<b>SABS 1200 DA</b>	<b>SECTION DA: EARTHWORKS (SMALL WORKS)</b>				
	8.3.1	Excavation				
		b)Excavate in all materials and use for embankment or backfill or dispose, as ordered:				
1.1		i) For foundation of steel platforms	m³	40		R
Total Carried Forward To Summary						R

## BILL 1 BOQ 5 : REACTOR AND OTHER MISCELLANEOUS ITEMS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>2</b>	<b>SABS 1200 GA</b>	<b>SECTION GA: CONCRETE (SMALL WORKS)</b>				
2.1		STEEL PLATFORM				
2.2	8.2	FORMWORK ITEMS				
	8.2.1	Rough				
		a) Vertical				
2.2.1		i) Foundation of steel platforms	m <sup>2</sup>	34		R
2.3	8.3	REINFORCEMENT ITEMS				
2.3.1	8.3.1	High-Tensile Steel bars	kg	410		R
2.4	8.4	CONCRETE ITEMS				
2.4.1	8.4.3	30 MPa / 19 mm Concrete to foundations	m <sup>3</sup>	6		R
	8.4.4	Unformed Surface Finishes				
2.4.2		a) Wood-floated Finish to top of foundation	m <sup>2</sup>	27		R
2.5		REACTOR PLATFORM				
2.6	8.2	FORMWORK ITEMS				
	8.2.2	Smooth				
		a) Vertical				
2.6.1		i) Column bases	m <sup>2</sup>	6		R
2.6.2		ii) Columns	m <sup>2</sup>	40		R
2.6.3		iii) Beams	m <sup>2</sup>	15		R
2.6.4		iv) Wier	m <sup>2</sup>	32		R
2.6.5		v) Stairs	m <sup>2</sup>	2		R
		b) Horizontal				
2.6.6		i) Beams	m <sup>2</sup>	15		R
2.6.7		ii) Floor slab	m <sup>2</sup>	15		R
2.6.8		iii) Wier	m <sup>2</sup>	6		R
2.7	8.3	REINFORCEMENT ITEMS				
	8.3.1	High-Tensile Steel bars				
2.7.1		i) Column bases	kg	290		R
2.7.2		ii) Columns	kg	670		R
2.7.3		iii) Beams	kg	720		R
2.7.4		iv) Floor slab	kg	630		R
2.7.5		v) Wier	kg	550		R
Total Carried Forward						R

## BILL 1 BOQ 5 : REACTOR AND OTHER MISCELLANEOUS ITEMS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
2.7.6		vi) Stairs	kg	200		R
2.8	8.4	CONCRETE ITEMS				
	8.4.3	40 MPa / 19 mm Concrete to:				
2.8.1		i) Column bases	m <sup>3</sup>	2.0		R
2.8.2		ii) Columns	m <sup>3</sup>	4.0		R
2.8.3		iii) Beams	m <sup>3</sup>	5.0		R
2.8.4		iv) Floor slab	m <sup>3</sup>	4.0		R
2.8.5		v) Wier	m <sup>3</sup>	3.0		R
2.8.6		vi) Stairs	m <sup>3</sup>	1.0		R
	8.4.4	Unformed Surface Finishes				
2.8.7		a) Wood-floated Finish to top of column bases	m <sup>2</sup>	6		R
2.8.8		b) Wood-floated Finish to top of floor slab	m <sup>2</sup>	30		R
2.8.9		b) Wood-floated Finish to stairs	m <sup>2</sup>	2		R
2.9	PSG 8.10	DEMOLITION AND REMOVAL OF STRUCTURAL CONCRETE				
2.9.1	PSG 8.10.1	Existing bridge, Columns and Platform	m <sup>3</sup>	85		R
2.10	PSG 8.11	SURFACE AND STRUCTURAL REPAIR OF CONCRETE MEMBERS				
	PSG 8.11.1	Concrete contact surface preparation to:				
2.10.1		i) Existing walls (where required)	m <sup>2</sup>	10		R
	PSG 8.11.2	Corrosion protection coating ( Sika top Armatex 110 Epocem or similar approved) to :				
2.10.2		i) Exposed reinforcement	m <sup>2</sup>	10		R
	PSG 8.11.3	Bonding layer ( Sika top Armatex 110 Epocem or similar approved) to:				
2.10.3		i) Existing walls (where required)	m <sup>2</sup>	10		R
	PSG 8.11.4	Proprietary Cementitious mortar ( Sika mono top 615 HB) to:				
2.10.4		i) Existing walls (where required)	m <sup>2</sup>	10		R
	PSG 8.11.5	Grouting and Crack injection (SikagROUT 212 and Sikadur 31) to:				
2.10.5		i) Existing walls (where required)	m	20		R
	PSG 8.11.6	Joint sealant (Polysulphide complete with backing chord):				
Total Carried Forward						R

**BILL 1 BOQ 5 : REACTOR AND OTHER MISCELLANEOUS ITEMS**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
2.10.6		a) Existing floor joints	m	380		R
2.11	PSG 8.12	PROTECTIVE COATINGS AND TREATMENTS FOR CONCRETE				
2.11.1	PSG 8.12.1	Cleaning and preparation of concrete surface	m <sup>2</sup>	650		R
	PSG 8.12.2	Application of protective treatment				
		a) Water repellent (Sewpercoat P625 or similar approved)				
2.11.2		i) To existing concrete	m <sup>2</sup>	650		R
2.11.3		ii) To new concrete (Columns)	m <sup>2</sup>	10		R
Total Carried Forward To Summary						R

## BILL 1 BOQ 5 : REACTOR AND OTHER MISCELLANEOUS ITEMS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>3</b>	<b>SABS 1200 H</b>	<b>SECTION H: STRUCTURAL STEELWORK</b>				
3.1		STEEL PLATFORM				
	8.3.6	Holding-Down (HD) Bolts to reinforced concrete combined base foundations				
3.1.1		i) Supply and installation of holding-down bolts, complete with washer plates, grouting and short term protection concrete. Refer to Detail 12 and Detail 13 of Drawing 5331-M-R-303.	No	240		R
3.1.2		ii) Supply and installation of anchor plates, complete with grouting. Refer to Detail 6 of Drawing 5331-M-R-303.	No	6		R
3.1.3	8.3.5	Site welding, welding of the column to the base plate using a 5mm fillet weld.	m	30		R
		B. Handrails of the steel platform structure (10 off)				
	8.3.7	Handrails				
3.1.4		a) Handrail assembly complete as per Drawing 5331-M-R-302.	m	95		R
		C. Steel platform structure (10 off)				
	8.3.1	Supply and Fabrication				
3.1.5	8.3.1.1	Preparation of shop detail drawings	No	10		R
	8.3.1.2	Supply and fabrication of steelwork to steel platform				
3.1.6		i) PC100x50 beams and columns	t	3.9		R
3.1.7		ii) 70x70x6 equal leg angle - bracing members	t	1.1		R
3.1.8		iii) 150x8 kicker plate	t	1.1		R
3.1.9		iv) 80x80x8 equal leg angle - angle cleat (connection)	t	0.3		R
3.1.10		v) 50x50x8 equal leg angle - angle cleat (connection)	t	0.1		R
3.1.11		vi) Supply and installation of plates as per drawings	t	0.9		R
	8.3.9	Flooring				
3.1.12		a) Open grid floors, using Vitagrid VE 30x3.	m²	74		R
	8.3.4	Erection bolts				
3.1.13		i) M12 Class 8.8 bolts.	No	1 370		R
3.1.14		ii) M12 Adhesive anchor bolts	No	100		R
Total Carried Forward						R

**BILL 1 BOQ 5 : REACTOR AND OTHER MISCELLANEOUS ITEMS**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
3.1.15	8.3.5	Site welding, welding of flat plates and gusset plates to columns and beams using a 5mm fillet weld.	m	175.0		R
	8.3.1	Delivery to site				
3.1.16	8.3.2.1	Normal delivery	t	7.3		R
3.1.17	8.3.3	Erection on site	t	7.3		R
3.2		REACTOR PLATFORM				
	8.3.7	Handrails				
3.2.1		i) Removal of existing handrails	m	240		R
3.2.2		ii) Corrosion protection of existing handrails in accordance to the SIGMA specifications	m	240		R
3.2.3		iii) Reinstatement of existing handrails (including fixing of new bracket and anchor bolt)	m	240		R
Total Carried Forward To Summary						R

**BILL 1 BOQ 5 : REACTOR AND OTHER MISCELLANEOUS ITEMS****SUMMARY OF SECTIONS**

SECTION	DESCRIPTION			AMOUNT R
1	SECTION DA: EARTHWORKS (SMALL WORKS)			R
2	SECTION GA: CONCRETE (SMALL WORKS)			R
3	SECTION H: STRUCTURAL STEELWORK			R
Total Carried Forward To Summary Of Bills				R

**BILL 2 BOQ 1: ALTERATIONS & REFURBISHMENT OF ADMIN BUILDING**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b><u>SECTION 1</u></b>				
		<b><u>PRELIMINARIES</u></b>				
		NOTE: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 190 for Haylett formula purposes				
		Allow for preliminary and general items				
1.1		Fixed	Sum	1		R
1.2		Time	Sum	1		R
1.3		Value	Sum	1		R
Total Carried Forward To Summary: Section 1						R



## BILL 2 BOQ 1: ALTERATIONS &amp; REFURBISHMENT OF ADMIN BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 2</b> <b>ALTERATIONS</b> <p>PREAMBLES For Preambles see "Model preambles for Trades"</p> <p>NOTE: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 102 for Haylett formula purposes</p> <b>SUPPLEMENTARY PREAMBLES</b> <p>Refer to the specification at the beginning of this document for full requirements</p> <b>REMOVAL OF EXISTING WORK</b> <p><u>Breaking down/up and removing brickwork, concrete, etc</u></p> <p>Note: breaking of walls deemed to include plaster, tile or paint finishes</p>				
2.1		M90 Block wall or half brick wall	m <sup>2</sup>	69		R
		<u>Take up and remove roofs, ceilings, partitions, floors, etc.</u>				
2.2		Loose stone chip to flat roofs not exceeding 100mm thick, carefully stockpile re-use	m <sup>2</sup>	236		R
2.3		Plasterboard ceilings, including, insulation, cornice and light fittings	m <sup>2</sup>	16		R
2.4		Woodwool/rockwool acoustic ceiling panels and exposed Tee suspension system, affixed directly to concrete soffit, including grinding or scraping off all adhesive	m <sup>2</sup>	135		R
2.5		Rockwool panels as before but suspended not exceeding 1m below concrete soffit, including cornices and minor bulkheads.	m <sup>2</sup>	61		R
2.6		Acrylic or bituminous waterproofing membrane to flat concrete roofs including protective layers, and prepare for new waterproofing (elsewhere)	m <sup>2</sup>	236		R
2.7		Timber or gypsum clad partition walling approximately 90mm thick, including studs and grounds (not exceeding 3m high)	m <sup>2</sup>	15		R
2.8		Existing control equipment enclosure, approximately 2800mm high and 5400mm girth with drywall panelling and cupboard doors including sundry obsolete switchgear and guages	Sum	1		R
Total Carried Forward						R

## BILL 2 BOQ 1: ALTERATIONS &amp; REFURBISHMENT OF ADMIN BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
2.9		Existing control equipment floor duct approximately 3000 x 1200 x 400mm deep, including vastrap flooring and frame and sundry sleeving and cabling and prepare for filling (elsewhere)	Sum	1		R
2.10		Spiral staircase 2800mm high and approximately 1700mm diameter including precast concrete treads and steel support complete	Sum	1		R
2.11		<u>Taking out and removing doors, windows, etc including thresholds, sills, etc from brick walls, generally</u> Single hollow core door and steel frame	No	9		R
2.12		Double (or one and half) door and frame	No	3		R
2.13		<u>Taking out and removing aluminium shopfront style windows, or parts of aluminium shopfront style windows, including fair cutting, and repairs to adjacent mullions, cills, etc, and temporary support</u> Louvred fanlight 1600 x 700mm high in two panes	No	1		R
2.14		Window 4750 x 1318mm high, in four equal panes	No	2		R
2.15		Glazed door and sidelight, 1188 x 2058mm overall	No	6		R
2.16		<u>Taking off and removing wall finishes</u> White glazed tile or similar, patch and stone back plaster under and prepare for new finishes	m²	67		R
2.17		<u>Taking up and removing floor coverings</u> Quarry Tile floor including timber skirtings including scraping, grinding or otherwise removing all traces of old adhesive and preparing screed for new tiles (elsewhere),	m²	169		R
2.18		Carpet and underlay, ditto	m²	93		R
2.19		<u>Take out and remove sanitary fittings, including cutting back supply and waste piping and carefully capping/sealing same</u> Toilet pedestal and cistern	No	4		R
2.20		Shower enclosure and plinth	No	2		R
2.21		Basin or sink	No	6		R
2.22		250l Geyser ditto, but carefully set aside for re-use	Sum	1		R
Total Carried Forward						R

## BILL 2 BOQ 1: ALTERATIONS &amp; REFURBISHMENT OF ADMIN BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		<u>Taking out/off and removing sundry metal or timber fittings</u>				
2.23		Steel balustrade approx 1m high, part curved	m	8		R
2.24		Sign, shelf or other minor fitting	No	25		R
2.25		Pinboard, whiteboard or similar	No	8		R
2.26		Built in cupboard, not exceeding 5m2 on elevation	No	4		R
2.27		Reception counter and glazed screen, not exceeding 6m2 on elevation	Sum	1		R
2.28		Built in shelving to existing admin store, not exceeding 15m2 on elevation	Sum	1		R
2.29		Built in cupboards to existing tea kitchen, including floor and high level cupboards and counter-tops	Sum	1		R
2.30		Laboratory tables, built in cupboards and counter tops and fume extractor complete from existing laboratory room	Sum	1		R
2.31		Obsolete ducted air handling to passage ceilings (approximately 20m long) including high level room outlet vents (approximately 10No, not exceeding 2,5m2), and timber surrounds and prepare for filling (elsewhere)	Sum	1		R
		<b>BUILDING UP OPENINGS</b>				
		<u>Blockwork in class II mortar in building up openings</u>				
2.32		90mm Blockwork	m²	2		R
2.33		150mm Blockwork	m²	5		R
		<u>Brickwork in NFP bricks in class II mortar in building up openings</u>				
2.34		One brick wall	m²	4		R
		<b>SUNDRIES</b>				
2.35		Cutting toothings and bonding new brick or block-work to existing	m²	12		R
		Calci face brick to match existing, or to Architects approval				
2.36		Extra over brickwork for face brickwork in patches	m²	4		R
		<b>MAKING GOOD FINISHES, ETC</b>				
		<u>Making good internal cement plaster</u>				
2.37		Walls in patches	m²	12		R
		<u>Making good profiled steel roof sheeting to match existing</u>				
2.39		0.8mm IBR profile colour finished, not exceeding 25Deg pitch, in patches	m²	5		R
2.40		0.8mm Flashings, not exceeding 400mm girth thrice bent, ditto	m	8		R
Total Carried Forward						R

## BILL 2 BOQ 1: ALTERATIONS &amp; REFURBISHMENT OF ADMIN BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		<b>NEW OPENINGS THROUGH EXISTING WALLS ETC</b>				
		Note: walls may have partial openings already from removed windows, etc				
		<u>Breaking out for and forming openings through plasterboard partition walls including new timber grounds and making good plasterboard on both sides and into reveals</u>				
2.41		Opening not exceeding 0,5m2 through one brick wall	No	1		R
		<u>Breaking out for and forming openings through brick walls including propping for precast or insitu cast lintels (taken elsewhere) and making good plaster on both sides and into reveals and with screeded concrete thresholds with steel trowelled finish (making good paintwork elsewhere)</u>				
2.42		Opening not exceeding 0,5m2 through one brick wall	No	1		R
2.43		Ditto, exceeding 0,5m2 and not exceeding 1,5m2	No	3		R
		<u>Breaking out for and forming openings through brick walls for new doors and frames including propping for precast or cast insitu concrete lintels (taken elsewhere) and making good plaster on both sides and into reveals and with rendered concrete thresholds with steel trowelled finish (new doors and frames and making good paintwork elsewhere)</u>				
2.44		Single door through one brick wall	No	1		R
		<u>Breaking our for and forming opening through reinforced concrete</u>				
2.45		Opening 2400 x 750mm high through 150mm fluted wall	No	1		R
2.46		Opening approximately 2400 x 13000mm wide through slab approximately 200mm thick for stair (elsewhere), including fair cutting all round	No	1		R
2.47		Opening for foundation 1500 x 1500 x 300mm deep through existing surface bed and earth sub-base including fair cutting all round and making good damp proof membrane	No.	1		R
		<b>BUILDING WORK IN CONNECTION WITH ELECTRICAL AND MECHANICAL</b>				
		<u>Take out and remove</u>				
2.48		Surface mounted electrical conduit, related conductors	m	45		R
2.49		light fitting or similar and strip out related conductors	No	35		R
2.50		Switch or plug outlet, related conductors and prepare for new	No	28		R
2.51		DB Board including breakers, related conductors	No	5		R
2.52		Air conditioner unit	No	10		R
2.53		Specialist IT and server equipment, plant control equipment relocation	Sum	1		R
Total Carried Forward To Summary: Section 2						R

## BILL 2 BOQ 1: ALTERATIONS &amp; REFURBISHMENT OF ADMIN BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 3</b>				
		<b><u>CONCRETE, FORMWORK AND REINFORCEMENT</u></b>				
		For preambles see "Model Preambles for Trades"				
		NOTE: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 110 for Haylett formula purposes				
		<b>REINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES</b>				
		<u>25MPa/19mm concrete</u>				
3.1		Strip footings, bases, etc	m <sup>3</sup>	2		R
		<b>REINFORCED CONCRETE</b>				
		<u>25MPa/19mm concrete</u>				
3.2		Filling to steel stairs and landings	m <sup>3</sup>	1		R
3.3		Surface beds on waterproofing	m <sup>3</sup>	1		R
3.4		Walls	m <sup>3</sup>	1		R
		<b>TEST BLOCKS</b>				
3.5		Making and testing 150 x 150 x 150mm concrete strength test cube (Provisional)	No	1		R
		<b>ROUGH FORMWORK (DEGREE OF ACCURACY II)</b>				
		<u>Rough formwork to sides</u>				
3.6		Walls, not exceeding 3.5m high	m <sup>2</sup>	12		R
		<b>EXTRA ON ROUGH FORMWORK FOR</b>				
3.7		Fluted (IBR) face to match existing walls, including all patching, stoning and dressing to smooth finish	m <sup>2</sup>	6		R
		<b>REINFORCEMENT</b>				
		<u>Steel reinforcement to structural concrete work</u>				
3.8		Bars in diameters not exceeding 25mm	t	5		R
		<u>Fabric reinforcement</u>				
3.9		Type 193 fabric reinforcement in concrete surface beds, slabs, etc	m <sup>2</sup>	2		R
Total Carried Forward To Summary: Section 3						R

## BILL 2 BOQ 1: ALTERATIONS &amp; REFURBISHMENT OF ADMIN BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 4</b>				
		<b>MASONRY</b>				
		For preambles see "Model Preambles for Trades"				
		NOTE: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 116 for Haylett formula purposes				
		<b>SUPERSTRUCTURE</b>				
		<u>Brickwork of NFP bricks in class II mortar</u>				
4.1		Half brick walls	m <sup>2</sup>	29		R
4.2		One brick walls	m <sup>2</sup>	10		R
		<b>BRICKWORK SUNDRIES</b>				
		<u>Brickwork reinforcement</u>				
4.3		75mm Built in horizontally	m	90		R
4.4		150mm Ditto	m	30		R
		<u>Prestressed fabricated lintels</u>				
4.5		100 x 70mm Lintels in lengths not exceeding 3m	m	12		R
		<u>Galvanised hoop iron cramps, ties, etc</u>				
4.6		30 x 1,6mm Cramp 500mm long with one end fixed to window or door frames, etc. and built into brickwork	No	22		R
		<u>Expansion joints with 10mm 'Masonite' bitumen impregnated softboard between horizontal and/or vertical brick or concrete surfaces:</u>				
4.7		Joint not exceeding 300mm high or wide.	m	17		R
Total Carried Forward To Summary: Section 4						R

## BILL 2 BOQ 1: ALTERATIONS &amp; REFURBISHMENT OF ADMIN BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 5</b> <b>WATERPROOFING</b> For preambles see "Model Preambles for Trades"  NOTE: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 120 for Haylett formula purposes  <b>SUPPLEMENTARY PREAMBLES</b> <u>Waterproofing</u>  Waterproofing of roofs, basements, etc shall be laid under a ten year guarantee. Waterproofing to roofs shall be laid to even falls to outlets etc with necessary ridges, hips and valleys. Descriptions of sheet or membrane waterproofing shall be deemed to include additional labour to turn-ups and turn-downs  <b>DAMP-PROOFING OF WALLS AND FLOORS</b> <u>One layer of 375 micron "Consol Plastics Brikrip DPC" embossed damp proof course</u>  In walls  <u>One layer of 250 micron "Consol Plastics Gunplas USB Green" waterproof sheeting sealed at laps with "Gunplas Pressure Sensitive Tape"</u>				
5.1		In walls	m <sup>2</sup>	2		R
5.2		Under surface beds	m <sup>2</sup>	5		R
		<b>WATERPROOFING TO ROOFS, BASEMENTS, ETC</b> <u>4mm "Derbigum SP" fully bonded waterproofing</u> Flat roofs, upstands, etc	m <sup>2</sup>	270		R
5.3						
5.4		Additional membrane 150mm girth at internal and external angles	m	105		R
5.5		Additional membrane at 100mm diameter outlet	No	2		R
		<b>PROTECTIVE ROOFING PAINT, ETC</b> <u>Two coats bituminous aluminium paint</u> On waterproofing to flat roofs	m <sup>2</sup>	270		R
5.6						
5.7		<u>High density polystyrene foam sheet</u> 25mm, laid loose over roof waterproofing <u>Stone chip</u>	m <sup>2</sup>	236		R
5.8		From stock piles on site (supplement where necessary), spread and level in nominal 80mm layer	m <sup>2</sup>	236		R
		<b>JOINT SEALANTS ETC</b> <u>Polysulphide sealing compound including backing cord, bond breaker, primer, etc</u> 10 x 10mm In expansion joints	m	17		R
5.9						
Total Carried Forward To Summary: Section 5						R

## BILL 2 BOQ 1: ALTERATIONS &amp; REFURBISHMENT OF ADMIN BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 6</b> <b>FLOOR COVERINGS, WALL LININGS, ETC</b> For preambles see "Model Preambles for Trades"  NOTE: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 130 for Haylett formula purposes  <b>FLOOR COVERINGS</b>  <u>Van Dyck "FLORPOINT" broadloom carpet tile, 500 x 500mm.</u> <u>(Sample to be provided to client for approval)</u>				
6.1		Floors	m <sup>2</sup>	77		R
		<u>Belgotex "Sylvan" Heavy duty Dry back vinyl plank flooring, including stripping and polishing. (Sample to be provided to client for approval)</u>				
6.2		Floors	m <sup>2</sup>	61		R
		<u>Trims, edging, etc</u>				
6.3		Aluminium cover strip 45mm	m	10		R
Total Carried Forward To Summary: Section 6						R



## BILL 2 BOQ 1: ALTERATIONS &amp; REFURBISHMENT OF ADMIN BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
7.1		<b><u>SECTION 7</u></b> <b><u>CARPENTRY AND JOINERY</u></b> For preambles see "Model Preambles for Trades"  NOTE: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 126 for Haylett formula purposes  <b>SKIRTINGS, ETC.</b> <u>Wrought meranti</u> 19 x 70mm Skirting plugged, including 30mm quadrant to match existing	m	196		R
7.2		<b>DOORS</b> <u>Semi-solid flush panel door with concealed edge strips and timber veneer</u> 40mm Single door (D04), 813 x 2032mm high	No	1		R
7.3		<u>Solid core flush panel door with concealed edge strips and timber veneer</u> 40mm Single door (D05/06), 813 x 2032mm high	No	3		R
Total Carried Forward To Summary: Section 7						R

## BILL 2 BOQ 1: ALTERATIONS &amp; REFURBISHMENT OF ADMIN BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 8</b>  <b>CEILINGS, PARTITIONS AND ACCESS FLOORING</b>  For preambles see "Model Preambles for Trades"  NOTE: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 128 for Haylett formula purposes  <b>SUPPLEMENTARY PREAMBLES</b>  <u>Rhino-Drywall PartitionSystem</u>  Partitioning shall comprise steel framing formed of 52 x 25 x 0,6mm top and bottom tracks and 51 x 35 x 0,6mm vertical studs at maximum 600mm centres, friction fitted or pop-riveted to the top and bottom tracks with similar additional vertical studs as necessary at abutments, ends, etc and covered as described with wallboard screwed to studding with Drywall screws at maximum 220mm centres.  Boards are to be bevel edged gypsum plasterboard sheets generally in 1200mm widths and in single lengths to the height. Sheets shall be butt jointed and finished with Rhino tape and Readymix D jointing compound all in accordance with the manufacturer's instructions. Intersections and abutments are measured separately and descriptions shall be deemed to include any additional studs, corner beads, jointing compound, tape, etc.  <b>CEILINGS</b>  <u>6.4mm gypsum plasterboard with "Rhino M" cover strips</u>  Ceilings including 38 x 38mm sawn softwood branderling at 450mm centres  Extra on ceiling for opening for surface mounted light fitting (elsewhere) including additional support if required  75mm Coved cornices to suit  <u>6.4mm Gypsum plasterboard with skimmed joints and faces, including ground, hangers, etc</u>  200mm high vertical bulkhead (at change in ceiling levels) including additional support and trim top and bottom  <u>Gyprex white washable vinyl clad lay in proprietary suspended ceiling system including exposed Tees, hangers, etc</u>  600 x 600 x 12,5 Panels, suspended not exceeding 1m from concrete structure  22mm Shadowline cornice to suit  Extra on ceiling for opening for drop in light fitting, including all additional trim and support if required  <b>INSULATION</b>  <u>Isotherm Insulation</u>  100mm Thick, to ceilings				
8.1		Ceilings including 38 x 38mm sawn softwood branderling at 450mm centres	m²	16		R
8.2		Extra on ceiling for opening for surface mounted light fitting (elsewhere) including additional support if required	No	2		R
8.3		75mm Coved cornices to suit	m	16		R
8.4		<u>6.4mm Gypsum plasterboard with skimmed joints and faces, including ground, hangers, etc</u> 200mm high vertical bulkhead (at change in ceiling levels) including additional support and trim top and bottom	m	50		R
8.5		<u>Gyprex white washable vinyl clad lay in proprietary suspended ceiling system including exposed Tees, hangers, etc</u> 600 x 600 x 12,5 Panels, suspended not exceeding 1m from concrete structure	m²	187		R
8.6		22mm Shadowline cornice to suit	m	223		R
8.7		Extra on ceiling for opening for drop in light fitting, including all additional trim and support if required	No	22		R
8.8		<u>Isotherm Insulation</u> 100mm Thick, to ceilings	m²	16		R
Total Carried Forward						R

## BILL 2 BOQ 1: ALTERATIONS &amp; REFURBISHMENT OF ADMIN BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		<b>DRYWALL PARTITIONS ETC</b>				
		Work Group No 138 for Haylett formula purposes				
		<u>Rhino-Drywall steel stud partitioning with 12.5mm Rhino board both sides</u>				
8.9		Partitioning 2800mm high	m	9		R
		<u>Extra over Rhino dry-wall partitioning for:</u>				
8.10		Right angle or skew angle (on plan)	No	3		R
8.11		Tee intersection or wall intersection	No	3		R
8.12		Semi solid flush door (D03), including aluminium frame and ironmongery	No	2		R
8.13		Aluminium glazed deadlight (W08) 600 x 1800mm high with 6mm safety glass	No	1		R
8.14		Ditto but 675 x 1800mm (W09) high	No	1		R
8.15		Ditto but 2000 x 900mm high (W10). ditto	No	1		R
		<b>PROPRIETARY PARTITION SYSTEMS</b>				
		<u>Vitrex "Classic" modular toilet partitions including supports and fixings complete</u>				
8.16		1800mm high	m	10		R
		<u>Extr over Vitrex toilet partitioning for:</u>				
8.17		Right angle	No	2		R
8.18		Tee intersection or wall intersection	No	8		R
8.19		Cubicle door, including frame finish and furniture	No	4		R
Total Carried Forward To Summary: Section 8						R

## BILL 2 BOQ 1: ALTERATIONS &amp; REFURBISHMENT OF ADMIN BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 9</b>				
		<b><u>IRONMONGERY</u></b>				
		For preambles see "Model Preambles for Trades"				
		NOTE: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 132 for Haylett formula purposes				
		<b>EN-SUITE LOCKS</b>				
9.1		Union "Gower, 3 lever morticed lockset	No	2		R
		<b>PUSH PLATES AND HANDLES</b>				
9.2		Union AL5066-06AS, push plate	No	2		R
9.3		Union 5D63 Pull handle on 152 x 152mm backplate,	No	2		R
		<b>DOOR CLOSERS</b>				
9.4		Dorma TS91B, cam action	No	2		R
		<b>BATHROOM</b>				
9.5		Franke HF2400HD stainless steel sensor operated hand dryer	No	2		R
9.6		Franke "Rodan" RODx618 soap dispensator	No	2		R
9.7		Franke "Rodan" RODX607 wall mounted stainless steel bin	No	2		R
9.8		Franke "Medius" MEDX001HP 600mm stainless steel towel rail	No	1		R
9.9		Vitraflex TR3 stainless steel lockable toilet paper dispensator	No	4		R
		<b>SUNDRY</b>				
9.10		Union AL8730AS stop	No	5		R
9.11		Emergency key box (break glass) with key	No	2		R
9.12		Union AL5063E-06ASE (male or female) doorsign	No	2		R
9.13		300 x 350mm Trox "AGS - T", natural anodised door grille including fitting in timber door (door elsewhere)	No	6		R
9.14		Service all existing ironmongery to Admin building; strip locksets (approx 10No), replace worn components, lubricate and re-assemble including provision of new key and master key sets as required	Sum	1		R
Total Carried Forward To Summary: Section 9						R

## BILL 2 BOQ 1: ALTERATIONS &amp; REFURBISHMENT OF ADMIN BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b><u>SECTION 10</u></b>  <b><u>METALWORK</u></b>  For preambles see "Model Preambles for Trades"  NOTE: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 136 for Haylett formula purposes  <b>SUPPLEMENTARY PREAMBLES</b>  Note: Aluminium windows to match existing windows. New shopfront windows are generally to be inserted or removed from existing shopfront style aluminium facade, and must match the mullion style and be fitted into existing openings. Rates to include for repairs to all purpose made cills, plinth detail, etc  Windows generally are glazed with 5mm safety glass (OEApproved). Tinting, as well as removal of the old existing tint, is taken under the glazing trade  Deadlights in partition walls are taken under "Ceilings and Partitions Trade"  Aluminium doors and windows are to include for all furniture and ironmongery, as per the Architects schedules 5331-ST-A-14/15 & 16  <b>ALUMINIUM</b>  <u>Aluminium windows including frames and furniture, glazed</u>				
10.1		Deadlight (W11) 600 x 900mm high, single fixed pane	No	1		R
10.2		Ditto (W12) 1500 x 900, ditto	No	1		R
10.3		Fanlight (D01) 1600 x 700mm high in two equal fixed panes	No	1		R
10.4		Window (W13) 600 x 1800mm high, single fixed pane	No	1		R
10.5		Window (W06) 2400 x 750mm high, in two equal side hung pivoting lights	No	1		R
10.6		Shopfront window (W01/W03) 1188 x 2058mm high, single fixed pane	No	2		R
10.7		Ditto (W02) but 1318mm high, ditto	No	1		R
10.8		Ditto (W04) but 1048mm high, ditto	No	1		R
10.9		Shopfront window (W07) 4750 x 1318mm high, in four equal panes	No	1		R
		<u>Aluminium doors including frames and ironmongery, glazed with clear safety glass</u>				
10.10		Single door and sidelight combination (D02) 1188 x 2058mm high overall	No	1		R
Total Carried Forward						R

## BILL 2 BOQ 1: ALTERATIONS &amp; REFURBISHMENT OF ADMIN BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
10.11		<b>GALVANISED PRESSED STEEL DOOR FRAMES</b> <u>1,2mm Double rebated frames suitable for half brick walls</u> Frame for door 813 x 2032mm high	No	4		R
10.12		<b>SUNDRY METALWORK</b> Purpose built steel stair structure including all welded frames, treads and fixing for concrete infill (elsewhere)	Sum	1		R
10.13		Balustrading to last	Sum	1		R
Total Carried Forward To Summary: Section 10						R

## BILL 2 BOQ 1: ALTERATIONS &amp; REFURBISHMENT OF ADMIN BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b><u>SECTION 11</u></b> <b><u>PLASTERING</u></b> For preambles see "Model Preambles for Trades"  NOTE: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 142 for Haylett formula purposes  <b><u>SCREEDS</u></b> <u>Cementitious self-levelling screed topping, including preparation/ grinding and primer</u>  11.1 Nominal 4mm thick to floors m <sup>2</sup> 276 R				
		<b><u>INTERNAL PLASTER</u></b> <u>Cement plaster on brickwork</u> 11.2 On walls m <sup>2</sup> 97 R				
		11.3 On narrow widths m <sup>2</sup> 8 R				
Total Carried Forward To Summary: Section 11						R

## BILL 2 BOQ 1: ALTERATIONS &amp; REFURBISHMENT OF ADMIN BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 12</b>				
		<b>TILING</b>				
		For preambles see "Model Preambles for Trades"				
		NOTE: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 144 for Haylett formula purposes				
		<b>WALL TILING</b>				
		<u>300 x 200mm Johnson ceramic</u> (Sample pattern to be provided for Client Approval)				
12.1		In patterns, including adhesive and grouting in coloured grout	m <sup>2</sup>	77		R
12.2		Ditto but in narrow widths, ditto	m <sup>2</sup>	8		R
		<u>Trim, edging, etc</u>				
12.3		uPVC Corner trim	m	18		R
12.4		Natural anodised aluminium tile edge strip	m	8		R
		<b>FLOOR TILING</b>				
		<u>330 x 330mm Johnson ceramic. (Sample to be provided to client for approval)</u>				
12.5		In patterns, including adhesive and grouting in coloured epoxy grout	m <sup>2</sup>	138		R
12.6		Ditto but in narrow widths including stair treads, ditto	m <sup>2</sup>	10		R
12.7		75mm high Skirting tile	m	5		R
		<u>Trim, edging, etc</u>				
12.8		Natural anodised aluminium tile edge strip	m	25		R
Total Carried Forward To Summary: Section 12						R



## BILL 2 BOQ 1: ALTERATIONS &amp; REFURBISHMENT OF ADMIN BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 13</b>				
		<b>PLUMBING AND DRAINAGE</b>				
		For preambles see "Model Preambles for Trades"				
		NOTE: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 146 for Haylett formula purposes				
		<b>SOIL DRAINAGE</b>				
		Note: Rates for piping in trenches to include for all excavation, imported bedding, compaction and carting off				
		<u>uPVC pipes, Class 34</u>				
13.1		110mm Pipes laid in and including trenches not exceeding 1m deep	m	9		R
13.2		Ditto but exceeding 1m and not exceeding 2m deep	m	18		R
		<u>Extra over uPVC pipes for fittings</u>				
13.3		110mm Bend	No	4		R
13.4		110mm Junction	No	7		R
13.5		110mm Rod/Inspection eye	No	2		R
		<u>uPVC gulleys</u>				
13.6		250mm Gully not exceeding 600mm deep, including concrete base and half brick surround plastered	No	2		R
		<u>Masonry Sumps, catchpits, inspection chambers, etc (gratings and covers elsewhere), including all excavation, reinforced concrete base and slabs</u>				
		Note: All brickwork to be hard burnt engineering brick, brought to fair face				
13.7		Inspection chamber 650 x 650mm and exceeding 1500mm and not exceeding 1750mm deep internally	No	1		R
		<u>Gratings, covers, etc</u>				
13.8		450 x 600mm, 68kg Cast iron single seal manhole cover and frame type 8A	No	1		R
		<u>Sundries</u>				
		<u>Extra over all soil drainage for:</u>				
13.9		Breaking up hard rock, reinforced concrete and the like	m³	4		R
13.10		Search, locate, excavate for and break into existing manhole for new connection	No	2		R
Total Carried Forward						R

## BILL 2 BOQ 1: ALTERATIONS &amp; REFURBISHMENT OF ADMIN BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		<b>SANITARY FITTINGS</b>				
		Work Group No 148 for Haylett formula purposes				
13.11		Vaal "Orchid" T1 wall hung WC pan 439100WH including brackets and "Jazz" thermoset seat	No	4		R
13.12		Vaal "Hibiscus" wall hung basin 702303WP(single tap hole) including brackets	No	4		R
13.13		Vaal "Lavatera" T1 wall hung urinal 705426WH, including brackets, domed grating and spreader	No	1		R
13.14		Franke "Cascade" single bowl sink CDX611 925 x 500mm, including basket strainer waste	No	1		R
		<b>WASTE UNIONS ETC</b>				
13.15		40mm Basin waste union.	No	4		R
		<b>TRAPS ETC</b>				
		<u>Flexitraps</u>				
13.16		50mm trap	No	1		R
		<u>Cobra Watertech</u>				
13.17		32mm 350 CP bottle trap	No	5		R
		<b>TAPS, VALVES, ETC</b>				
13.18		15mm "Ball-o-stop valve	No	5		R
13.19		15mm Cobra "Star" pillar tap 111-15	No	4		R
13.20		Ditto but high waist, ditto 113	No	1		R
13.21		Cobra "Junior" Top entry toilet flush valve FJ2-210	No	4		R
13.22		Ditto but urinal flush valve FJ6-000	No	1		R
13.23		20mm Combination pressure reducing valve, stop cock and screen	No	1		R
13.24		20mm Non return/ air vent valve	No	2		R
Total Carried Forward						R

## BILL 2 BOQ 1: ALTERATIONS &amp; REFURBISHMENT OF ADMIN BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		<b>SANITARY PLUMBING</b>				
		<u>uPVC soil and vent pipe</u>				
13.25		50mm Pipes	m	15		R
13.26		110mm Pipes	m	11		R
		<u>Extra over uPVC pipes for fittings</u>				
13.27		50mm BSP adaptor	No	5		R
13.28		50mm Bend	No	2		R
13.29		50mm Access bend	No	5		R
13.30		50mm Junction	No	1		R
13.31		50mm Vent Valve	No	1		R
13.32		110mm Bend	No	2		R
13.33		110mm Junction	No	1		R
13.34		110mm Pan connector	No	4		R
13.35		110mm Access bend	No	4		R
13.36		110mm vent valve	No	1		R
13.37		110mm reducer	No	1		R
		<u>Sundries</u>				
13.38		Testing waste water system	Sum	1		R
Total Carried Forward						R

## BILL 2 BOQ 1: ALTERATIONS &amp; REFURBISHMENT OF ADMIN BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		<b>WATER SUPPLIES</b>				
		Note: pipes described as "chased" shall include for chasing into brick or block walls, wrapping with densyl tape or similar expansion protection, and patching with mesh scrim				
		<u>Class II copper pipes</u>				
13.39		15mm Pipes	m	35		R
13.40		15mm Pipes, chased	m	15		R
13.41		22mm Pipes	m	22		R
13.42		22mm Pipes, chased	m	10		R
13.43		28mm Pipes, including trenches	m	10		R
		<u>Extra over copper pipes for capillary fittings</u>				
13.44		15mm Fittings	No	45		R
13.45		22mm Fittings	No	22		R
		<u>Extra over pipes for compression fittings</u>				
13.46		15mm Fittings	No	8		R
13.47		22mm Fittings	No	4		R
13.48		28mm Fittings	No	4		R
		<u>Copper overflow and service pipes</u>				
13.59		15mm Braided stainless service pipe not exceeding 400mm long including connections	No	5		R
		<u>Sundries</u>				
13.60		Testing water pipe system	Sum	1		R
		<b>ELECTRIC WATER HEATERS</b>				
13.61		7,5Litre Zip hydroboil 307062W, including spout	No.	1		R
		<b>FIRE</b>				
13.62		Extinguisher, 4,5kg including wall mount	No	4		R
13.63		Ditto but 9kg, ditto	No	1		R
		<b>BUILDERS WORK IN CONNECTION</b>				
		<u>Coring, holes, etc</u>				
13.64		Fair cutting through reinforced concrete not exceeding 250mm thick	m	20		R
13.65		Drill (diamond core bit or equal) not exceeding 50mm through 250mm reinforced concrete	No	4		R
13.66		Ditto but not exceeding 150mm, ditto	No	8		R
Total Carried Forward To Summary: Section 13						R

## BILL 2 BOQ 1: ALTERATIONS &amp; REFURBISHMENT OF ADMIN BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 14</b>  <b>GLAZING</b>  For preambles see "Model Preambles for Trades"  NOTE: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 150 for Haylett formula purposes  <b>SOLAR FILM</b>  <u>Prepare existing filmed windows by scraping and cleaning all traces of existing adhesive film and apply new "Silver solar tint"</u>				
14.1		Windows	m <sup>2</sup>	62		R
		<u>Remove and replace existing filmed windows and apply new "Silver solar tint" to new glazing</u>				
14.2		Windows	m <sup>2</sup>	62		R
		<b>MIRRORS</b>				
14.3		450 x 600mm Bevel edge mirror, cap screws and grommets	No	4		R
Total Carried Forward To Summary: Section 14						R

## BILL 2 BOQ 1: ALTERATIONS &amp; REFURBISHMENT OF ADMIN BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 15</b>				
		<b>PAINTWORK</b>				
		For preambles see "Model Preambles for Trades"				
		NOTE: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 152 for Haylett formula purposes				
		<b>PAINTWORK ETC TO NEW WORK</b>				
		<b>ON SMOOTH PLASTER OR CONCRETE</b>				
		<u>Prepare, plaster primer and two coats Plascon "Polvin" PVA</u>				
15.1		Ceilings	m <sup>2</sup>	10		R
		<u>Prepare, prime with Plaster Primer and two coats eggshell pastel enamel (colour swatch to be approved by client)</u>				
15.2		Internal walls	m <sup>2</sup>	34		R
		<u>Prepare, prime with plaster primer and two coats Plascon "non drip" enamel</u>				
15.3		Internal walls	m <sup>2</sup>	10		R
		<b>ON PLASTER BOARD</b>				
		<u>Prepare, undercoat and apply two coats Super acrylic PVA</u>				
15.4		Ceilings and cornices	m <sup>2</sup>	16		R
		<u>Prepare, prime with Plaster Primer and two coats Plascon "double velvet"</u>				
15.5		Partition walls	m <sup>2</sup>	43		R
		<b>ON STEEL</b>				
		<u>Galvkleen, self etching primer and two coats Plascon "universal" enamel paint on galvanised</u>				
15.6		Door frames	m <sup>2</sup>	5		R
		<u>Prepare, prime with self etching primer and two coats Plascon "non-drip" enamel</u>				
15.7		Sundry angle rails, cills or pipes, not exceeding 300mm girth	m	15		R
		<b>ON WOOD</b>				
		<u>Prepare and apply three coats of Plascon Polyurethane varnish</u>				
15.8		Doors and frames	m <sup>2</sup>	23		R
15.9		Skirtings, rails, etc not exceeding 300 mm girth	m	196		R
Total Carried Forward						R

## BILL 2 BOQ 1: ALTERATIONS &amp; REFURBISHMENT OF ADMIN BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		<b>PAINTWORK ETC TO PREVIOUSLY PAINTED WORK</b>				
		<b>ON PLASTERBOARD</b>				
		<u>Prepare, prime with Plaster Primer and two coats Plascon "double velvet"</u>				
15.10		Drywall partitions	m <sup>2</sup>	8		R
		<u>Prepare and two coats Plascon "Polvin" PVA</u>				
15.11		Ceilings and cornices	m <sup>2</sup>	35		R
		<b>ON FIBRE REINFORCED CEMENT</b>				
		<u>Prepare and apply two coats Plascon universal enamel</u>				
15.12		Fiber cement fascias, barges, and enclosed eaves	m <sup>2</sup>	25		R
		<b>ON OFF SHUTTER CONCRETE</b>				
		<u>Prepare only, clean down with concrete cleaner</u>				
15.13		Fluted walls	m <sup>2</sup>	45		R
15.14		Ceilings and beams	m <sup>2</sup>	15		R
		<b>ON FLOATED PLASTER</b>				
		<u>Prepare, prime with Plaster Primer and two coats Plascon "double velvet"</u>				
15.15		Internal walls	m <sup>2</sup>	498		R
		<u>Prepare, prime with plaster primer and two coats Plascon "non drip" enamel</u>				
15.16		Internal walls	m <sup>2</sup>	5		R
		<b>ON METAL</b>				
		<u>Prepare and apply two coats Plascon "non-drip" enamel</u>				
15.17		Sundry angle rails, cills or pipes, not exceeding 300mm girth	m	25		R
		<b>ON WOOD</b>				
		<u>Prepare and Two coats Plascon polyurethane varnish</u>				
15.18		Doors	m <sup>2</sup>	19		R
15.19		Skirtings, rails, cills etc not exceeding 300mm girth	m	5		R
Total Carried Forward To Summary: Section 15						R

## BILL 2 BOQ 1: ALTERATIONS &amp; REFURBISHMENT OF ADMIN BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 16</b>				
		<b>PROVISIONAL SUMS</b>				
		All provisional sums cover supply of material and equipment and installation. Provisional sums are nett and do not include builder's discount (excluding settlement discount) and Value-Added Tax but the Tenderer may allow under "Profit" items any profit he considers necessary				
		<b>SHOPFITTING AND JOINERY</b>				
		<u>Built in Cupboards</u>				
16.1		Provide for built in cupboards to new tea kitchen	Sum	1	R 50 000.00	R 50 000.00
16.2		Allow for profit and attendance if required.	%	R 50 000.00		R
16.3		Provide for built in shelving to new cleaners store	Sum	1	R 5 000.00	R 5 000.00
16.4		Allow for profit and attendance if required.	%	R 5 000.00		R
16.5		Provide for built in shelving to admin store	Sum	1	R 15 000.00	R 15 000.00
16.6		Allow for profit and attendance if required	%	R 15 000.00		R
		<b>SUNDRY</b>				
16.7		Provide for "hawk" stainless steel safety shower installation	Sum	1	R 10 000.00	R 10 000.00
16.8		Allow for profit and attendance if required	%	R 10 000.00		R
		<b>BUDGETARY ALLOWANCES</b>				
		The following monetary provisions are to be omitted from the contract sum and used as directed below.				
16.9		Hot water supply	Sum	1		R 25 000.00
16.10		Moisture barrier, epoxy or polurethane paint-on barrier to floors to receive vinyl flooring	Sum	1		R 5 000.00
Total Carried Forward To Summary: Section 16						R



## BILL 2 BOQ 1: ALTERATIONS &amp; REFURBISHMENT OF ADMIN BUILDING

## SUMMARY OF SECTIONS

SECTION	DESCRIPTION			AMOUNT R
1	PRELIMINARIES			R
2	ALTERATIONS			R
3	CONCRETE, FORMWORK AND REINFORCEMENT			R
4	MASONRY			R
5	WATERPROOFING			R
6	FLOOR COVERINGS			R
7	CARPENTRY AND JOINERY			R
8	CEILINGS AND PARTITIONS			R
9	IRONMONGERY			R
10	METALWORK			R
11	PLASTERING			R
12	TILING			R
13	PLUMBING AND DRAINAGE			R
14	GLAZING			R
15	PAINTWORK			R
16	PROVISIONAL SUMS			R
Total Carried Forward To Summary Of Bills				R

**BILL 2 BOQ 2: NEW RAW SEWAGE PUMP STATION**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 1</b>  <b>PRELIMINARIES</b>  These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.  Note: This document is based on preliminary Engineers Drawings: 5312-ST-A001 Rev 05312-ST-A300 Rev 0Engineer's sketches, schedules, project specifications by engineer and query/assumption lists, being the state of all information available as at 18 June 2021  Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 190 for Haylett formula purposes  Allow for preliminary and general items				
1.1		Fixed	Sum	1		R
1.2		Time	Sum	1		R
1.3		Value	Sum	1		R
Total Carried Forward To Summary: Section 1						R

## BILL 2 BOQ 2: NEW RAW SEWAGE PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 2</b>  <b>MASONRY</b>  For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors  These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.  Note: This document is based on preliminary Engineers Drawings: 5312-ST-A001 Rev 05312-ST-A300 Rev 0 Engineer's sketches, schedules, project specifications by engineer and query/assumption lists, being the state of all information available as at 18 June 2021  Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 116 for Haylett formula purposes  <b>SUPPLEMENTARY PREAMBLES</b>  <b>BRICKWORK</b>  <u>Sizes in descriptions</u>  Where sizes in descriptions are given in brick units, "one brick" shall represent the length and "half brick" the width of a brick  <u>Face bricks</u>  Bricks shall be ordered timeously to obtain uniformity in size and colour  <b>SUPERSTRUCTURE</b>  <u>Brickwork of NFPE bricks (14 MPa nominal compressive strength) in class I mortar in loadbearing walls etc</u>				
2.1		Half brick walls	m²	7		R
2.2		One brick walls	m²	242		R
Total Carried Forward						R

## BILL 2 BOQ 2: NEW RAW SEWAGE PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		<b>BRICKWORK SUNDRIES</b>				
		<u>Chip off projections, fill up crevices, cement wash with 1:6 cement and sand slurry and apply two coats 'Brixal' bitumen emulsion waterproofing coating:</u>				
2.3		On outer face of inner skin of brick walls including any additional labour required in raising wall in two separate skins and working around wire ties and/or brick reinforcing fabric.	m²	162		R
		<u>Fair face to brickwork in horizontal stretcher bond pointed with flush horizontal and vertical joints</u>				
2.4		Extra for fair face	m²	221		R
		<u>Brickwork reinforcement</u>				
2.5		75mm Wide reinforcement built in horizontally	m	20		R
2.6		150mm Wide reinforcement built in horizontally	m	725		R
		<u>Prestressed fabricated lintels</u>				
2.7		100 x 70mm Lintels in lengths not exceeding 3m	m	2		R
		<u>Turning pieces</u>				
2.8		220mm Wide turning piece to lintels etc	m	6		R
		<b>MOVEMENT JOINTS ETC</b>				
		<u>"Kilcher bearing" slip joints between horizontal concrete and brick surfaces including cement mortar bed</u>				
2.9		Not exceeding 300mm wide	m	101		R
		<b>FACE BRICKWORK</b>				
		<u>"Calci" face bricks pointed with ruled horizontal and vertical joints</u>				
2.10		Extra over brickwork for face brickwork	m²	167		R
2.11		Extra over brickwork for brick-on-edge header course lintel	m	6		R
		<u>Brick-on-edge header course copings, sills, etc of "Calci" face bricks pointed with recessed joints on all exposed faces</u>				
2.12		220mm Wide sill set sloping and slightly projecting	m	4		R
Total Carried Forward To Summary: Section 2						R

## BILL 2 BOQ 2: NEW RAW SEWAGE PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 3</b>  <b>WATERPROOFING</b>  For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors  These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.  Note: This document is based on preliminary Engineers Drawings: 5312-ST-A001 Rev 05312-ST-A300 Rev 0 Engineer's sketches, schedules, project specifications by engineer and query/assumption lists, being the state of all information available as at 18 June 2021  Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 120 for Haylett formula purposes  <b>SUPPLEMENTARY PREAMBLES</b>  <u>Waterproofing</u>  Waterproofing of roofs, basements, etc shall be laid under a ten year guarantee. Waterproofing to roofs shall be laid to even falls to outlets etc with necessary ridges, hips and valleys. Descriptions of sheet or membrane waterproofing shall be deemed to include additional labour to turn-ups and turn-downs  <b>DAMP-PROOFING OF WALLS AND FLOORS</b>  <u>One layer of 375 micron "Consol Plastics Brikrip DPC" embossed damp proof course</u>  3.1 In walls m <sup>2</sup> 20 R  <b>WATERPROOFING TO ROOFS, BASEMENTS, ETC</b>  <u>4mm "Derbigum SP" fully bonded waterproofing</u>  3.2 On flat roofs m <sup>2</sup> 203 R 3.3 Sealing edges to brickwork or concrete m 81 R  <b>PROTECTIVE ROOFING PAINT</b>  <u>Two coats "Silvakote" bituminous aluminium paint</u>  3.4 On waterproofing to roofs m <sup>2</sup> 195 R  <b>JOINT SEALANTS ETC</b>  <u>Silicone sealing compound</u>  3.5 Sealing between sanitary fitting and wall tiling m 4 R  <u>Approved tinted silicone sealing compound</u>  3.6 Sealing around aluminium windows / doors and face brick wall. m 15 R				
Total Carried Forward To Summary: Section 3						R

## BILL 2 BOQ 2: NEW RAW SEWAGE PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 4</b>				
		<b>CARPENTRY AND JOINERY</b>				
		For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors				
		These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.				
		Note: This document is based on preliminary Engineers Drawings: 5312-ST-A001 Rev 05312-ST-A300 Rev 0Engineer's sketches, schedules, project specifications by engineer and query/assumption lists, being the state of all information available as at 18 June 2021				
		Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 126 for Haylett formula purposes				
		<b>DOORS ETC</b>				
		<u>Wrought meranti doors hung to steel frames</u>				
4.1		40mm Framed and ledged and braced batten door 813 x 2 032mm high of 40 x 144mm top rail, 20 x 104mm middle ledge, braces and stiles and 40 x 220mm bottom rail filled in with 20 x 75mm tongue and groove battens V jointed one side	No	3		R
		<u>Wrought iroko doors hung to steel or timber frames</u>				
4.2		40mm Framed and ledged and braced batten double door 1 610 x 2 032mm high of 40 x 144mm top rails, 20 x 104mm middle ledges, braces and stiles and 40 x 220mm bottom rails filled in with 20 x 75mm tongue and groove battens V jointed one side in two equal leaves with rebated meeting stiles	No	2		R
4.3		40mm Framed and ledged and braced batten double door 1 610 x 2 468mm high of 40 x 144mm top rails, 20 x 104mm middle ledges, braces and stiles and 40 x 220mm bottom rails filled in with 20 x 75mm tongue and groove battens V jointed one side in two equal leaves with rebated meeting stiles and cut-out at top meeting edge size 125mm wide x 250mm deep on each leaf	No	1		R
		<u>Semi-solid flush doors with commercial veneer hung to steel frames</u>				
4.4		40mm Door 813 x 2032mm high	No	1		R
		<b>FRAMED FRAMES ETC</b>				
		<u>Wrought iroko</u>				
4.5		114 x 76mm Rebated frames plugged	m	7		R
Total Carried Forward To Summary: Section 4						R

## BILL 2 BOQ 2: NEW RAW SEWAGE PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 5</b>				
		<b>IRONMONGERY</b>				
		For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors				
		These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.				
		Note: This document is based on preliminary Engineers Drawings: 5312-ST-A001 Rev 05312-ST-A300 Rev 0Engineer's sketches, schedules, project specifications by engineer and query/assumption lists, being the state of all information available as at 18 June 2021				
		Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 132 for Haylett formula purposes				
		<b>HINGES, BOLTS, ETC</b>				
5.1		100mm Brass parliament hinge (3 hinges / leaf) (2 hinges upper leaf and 1 hinge lower leaf)	No	4		R
		"Union"				
5.2		150mm Type 8052 flush bolt with keep fixed to metal	No	3		R
5.3		150mm Type 8052 flush bolt with keep let into concrete	No	3		R
5.4		Heavy duty cabin hook, mounted on timber block	No	8		R
		<b>LOCKS</b>				
		"Union"				
5.5		"Gower CZ6822495" three lever lockset with striking plate fixed to metal	No	1		R
5.6		"Gower CZ6833452" three lever lockset with striking plate fixed to metal	No	3		R
5.7		"Gower CZ6833452" three lever rebated lockset with and including rebate conversion set	No	3		R
		<b>BATHROOM FITTINGS</b>				
5.8		Vitraflex TR3 stainless steel lockable toilet paper dispensar	No	1		R
		"Franke"				
5.9		"Rodan RODX618" stainless steel soap dispenser plugged and screwed to wall	No	1		R
5.1		"Rodan RODX600" stainless steel paper towel dispenser plugged and screwed to wall	No	1		R
5.11		"Rodan RODX607" stainless steel wall mounted bin plugged and screwed to wall	No	1		R
		<b>SUNDRIES</b>				
		"Union"				
5.12		CZ 8731SC door stop plugged	No	7		R
5.13		8025SS Hat and coat hook with rubber buffer	No	1		R
Total Carried Forward To Summary: Section 5						R

## BILL 2 BOQ 2: NEW RAW SEWAGE PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 6</b>				
		<b>METALWORK</b>				
		For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors				
		These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.				
		Note: This document is based on preliminary Engineers Drawings: 5312-ST-A001 Rev 05312-ST-A300 Rev 0 Engineer's sketches, schedules, project specifications by engineer and query/assumption lists, being the state of all information available as at 18 June 2021				
		Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 149 for Haylett formula purposes				
		<b>GALVANIZED STEEL HANDRAILS, BALUSTRADES, ETC</b>				
		<u>"Matlock" patent handrailing and balustrading to concrete</u>				
6.1		Type HS two rail tubular series complete with equal sized hand, kneerails and bends to suit both	m	11		R
6.2		Extra over hand & kneerail for 90 degree bend	No	2		R
6.3		Extra over hand & kneerail for 140 degree ramp	No	2		R
6.4		Extra over hand & kneerail for 40 degree angle closure	No	2		R
6.5		Extra over hand & kneerail for tube wall end plate	No	2		R
6.6		Type B90 stanchion 1000mm long	No	4		R
6.7		Type BTA40 stanchion 1000mm long	No	8		R
6.8		75mm M16 expansion bolt	No	28		R
		<b>GRADE 316 STAINLESS STEEL HANDRAILS, BALUSTRADES, ETC</b>				
		<u>"Matlock" patent handrailing and balustrading to concrete</u>				
6.9		Type HS two rail tubular series complete with equal sized hand, kneerails and bends to suit both	m	10		R
6.10		Extra over hand & kneerail for 90 degree bend	No	2		R
6.11		Extra over hand & kneerail for 140 degree ramp	No	2		R
6.12		Extra over hand & kneerail for 40 degree angle closure	No	1		R
6.13		Extra over hand & kneerail for tube wall end plate	No	2		R
6.14		Type B90 stanchion 1000mm long	No	5		R
6.15		Type BTA40 stanchion 1000mm long	No	5		R
6.16		75mm M16 expansion bolt	No	24		R
Total Carried Forward						R



## BILL 2 BOQ 2: NEW RAW SEWAGE PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		<b>SUNDRY GALVANIZED STEELWORK</b>				
		<u>Floor duct gratings, etc</u>				
6.17		40 x 3mm "Rectagrid by Andrew Mentis" or similar approved fully banded duct gratings in approximately 500mm widths and suitable lengths laid loose in framing	m²	3		R
6.18		40 x 3mm "Rectagrid by Andrew Mentis" or similar approved fully banded duct gratings in approximately 800mm widths and suitable lengths laid loose in framing	m²	19		R
6.19		45 x 45 x 5mm Angle section framing with 50 x 3mm flat section lugs with fishtailed end each 200mm girth welded on at 500mm centres including embedding in concrete	m	73		R
6.20		Extra over 45 x 45 x 5mm angle section for mitred L-intersection	No	32		R
		<b>GALVANIZED PRESSED STEEL DOOR FRAMES</b>				
		<u>1.6mm Rebated frames suitable for half brick walls</u>				
6.21		Frame for door 813 x 2032mm high	No	1		R
		<u>1.6mm Rebated frames suitable for one brick walls</u>				
6.22		Frame for door 813 x 2032mm high	No	3		R
6.23		Frame for double door 1610 x 2032mm high	No	2		R
		<b>ALUMINIUM WINDOWS, DOORS, ETC</b>				
		<u>"Wispeco type - 36 Casement Window System" Natural anodised aluminium windows glazed with 4mm obscure glass and plugged to brickwork or concrete</u>				
6.24		Window 600 x 900mm high with one top hung opening out light and one fixed light	No	1		R
6.25		Window 1200 x 1200mm high with two side hung opening out lights	No	1		R
		<u>"Wispeco type - 36 Casement Window System" Natural anodised aluminium windows glazed with 6.38mm toughened safety glass with silver reflective solar tint and plugged to brickwork or concrete</u>				
6.26		Window 2400 x 1200mm high with four equal fixed lights	No	1		R
Total Carried Forward To Summary: Section 6						R

## BILL 2 BOQ 2: NEW RAW SEWAGE PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b><u>SECTION 7</u></b>  <b><u>PLASTERING</u></b>  For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors  These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.  Note: This document is based on preliminary Engineers Drawings: 5312-ST-A001 Rev 05312-ST-A300 Rev 0Engineer's sketches, schedules, project specifications by engineer and query/assumption lists, being the state of all information available as at 18 June 2021  Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 142 for Haylett formula purposes  <b><u>SCREEDS</u></b>  <u>Screeds wood floated on concrete</u>  7.1 30mm Thick on floors and landings m <sup>2</sup> 26 R 7.2 Average 60mm thick on floors to falls and currents m <sup>2</sup> 147 R 7.3 Average 60mm thick on roofs to falls and currents to receive waterproofing membrane (elsewhere measured) m <sup>2</sup> 194 R 7.4 30mm Thick on treads and risers of stairs including reedings m <sup>2</sup> 13 R 7.5 50 x 50mm Triangular fillet in angle with upstand m <sup>2</sup> 10 R  <b><u>INTERNAL PLASTER</u></b>  <u>Cement plaster on brickwork</u> 7.6 On walls m <sup>2</sup> 53 R 7.7 On narrow widths m <sup>2</sup> 2 R  <u>Cement plaster on concrete</u> 7.8 On soffits of slabs m <sup>2</sup> 20 R  <b><u>SPECIALIST SCREED FLOOR COVERINGS</u></b>  All specialist screed floor coverings are to be executed in strict accordance with the manufacturer's instructions  <u>6-9mm Thick "Flowfresh RT" heavy duty chemical resistant antimicrobial treated polyurethane resin floor coating manufactured by "Flowcrete" on screed</u> 7.9 On floors m <sup>2</sup> 147 R				
Total Carried Forward To Summary: Section 7						R

## BILL 2 BOQ 2: NEW RAW SEWAGE PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 8</b>				
		<b>TILING</b>				
		For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors				
		These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.				
		Note: This document is based on preliminary Engineers Drawings: 5312-ST-A001 Rev 05312-ST-A300 Rev 0 Engineer's sketches, schedules, project specifications by engineer and query/assumption lists, being the state of all information available as at 18 June 2021				
		Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 144 for Haylett formula purposes				
		<b>WALL TILING</b>				
		<u>300 x 200mm Johnson ceramic</u>				
8.1		On walls	m²	13		R
8.2		On walls in isolated panels, splashbacks, etc	m²	1		R
8.3		On narrow widths	m²	1		R
		<b>FLOOR TILING</b>				
		<u>330 x 330mm "Johnson" ceramic floor tiles fixed with adhesive and flush pointed with tinted waterproof jointing compound</u>				
8.4		On floors and landings	m²	20		R
8.5		Skirting 75mm high of cut tiles	m	17		R
		<u>Trim, edging, etc</u>				
8.6		Natural anodised aluminium tile edge strip	m	27		R
Total Carried Forward To Summary: Section 8						R

## BILL 2 BOQ 2: NEW RAW SEWAGE PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<p><b>SECTION 9</b></p> <p><b>PLUMBING AND DRAINAGE</b></p> <p>For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors</p> <p>These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.</p> <p>Note: This document is based on preliminary Engineers Drawings: 5312-ST-A001 Rev 05312-ST-A300 Rev 0Engineer's sketches, schedules, project specifications by engineer and query/assumption lists, being the state of all information available as at 18 June 2021</p> <p>Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 148 for Haylett formula purposes</p> <p><b>SUPPLEMENTARY PREAMBLES</b></p> <p><u>uPVC pipes and fittings:</u></p> <p>Soil, waste and vent pipes and fittings shall be solvent weld jointed</p> <p><u>Copper pipes:</u></p> <p>Pipes shall be hard drawn and half-hard pipes of the class stated. Class 0 (thin walled hard drawn) pipes shall not be bent. Class 1 (thin walled half-hard), class 2 (half-hard) and class 3 (heavy walled half-hard) pipes shall only be bent with benders with inner and outer formers. Fittings to copper waste, vent and anti-syphon pipes, capillary solder fittings and compression fittings shall be "Cobra Watertech" type. Capillary solder fittings shall comply with ISO 2016. Only compression fittings shall be used in walls or in ground</p> <p><u>Fixing of pipes</u></p> <p>Unless specifically otherwise stated, descriptions of pipes shall be deemed to include fixing to walls etc, casting in, building in or suspending not exceeding 1m below suspension level</p> <p><u>Reducing fittings</u></p> <p>Where fittings have reducing ends or branches they are described as "reducing". In the case of pipes with diameters not exceeding 60mm only the largest end or branch size is given. Should the contractor wish to use other fittings and bushes or reducers he may do so on the understanding that no claim in this regard will be entertained. In the case of pipes with diameters exceeding 60mm all sizes are given and no claim for extra bushes, reducers, etc will be entertained</p>				

## BILL 2 BOQ 2: NEW RAW SEWAGE PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SANITARY FITTINGS</b>				
		Work Group No 148 for Haylett formula purposes				
		<u>"Franke" stainless steel</u>				
9.1		Drop-on sink and drainer 900 x 535mm wide with one bowl	No	1		R
		<u>"Vaal"</u>				
9.2		455 x 290mm "Bantam 7030" or similar approved single hole cloakroom basin	No	1		R
9.3		"Orchid 439100" top inlet wall hung wc pan with double flap "Jazz Thermoset 8531Z0" seat and "8082Z0" floor bracket (flushing valve elsewhere)	No	1		R
		<b>WASTE UNIONS ETC</b>				
		<u>"Cobra Watertech"</u>				
9.4		32mm "301" Basin waste union	No	1		R
9.5		38mm "316" Sink waste union	No	1		R
		<b>TRAPS ETC</b>				
		<u>"Cobra Watertech"</u>				
9.6		32mm "345/50" CP bottle trap	No	1		R
9.7		38mm "365/50" CP bottle trap	No	1		R
		<b>TAPS, VALVES, ETC</b>				
		<u>"Cobra Watertech"</u>				
9.8		15mm "Ball-o-stop" valve	No	2		R
9.9		15mm Cobra "Star" pillar tap 111-15	No	1		R
9.10		15mm Cobra "Star" pillar tap 113	No	1		R
9.11		20mm 121RB stopcock	No	1		R
9.12		FJ2.210CP "Flushmaster Junior" toilet flush valve	No	1		R
Total Carried Forward						R

## BILL 2 BOQ 2: NEW RAW SEWAGE PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		<b>SANITARY PLUMBING</b>				
		<u>uPVC pipes</u>				
9.13		50mm Pipes	m	10		R
9.14		110mm Pipes	m	8		R
		<u>Extra over uPVC pipes for fittings</u>				
9.15		50mm BSP adaptor	No	2		R
9.16		50mm Bend	No	4		R
9.17		50mm IE bend	No	3		R
9.18		110mm Reducer	No	2		R
9.19		110mm Bend	No	2		R
9.20		110mm IE junction	No	2		R
9.21		110mm Pan connector	No	1		R
9.22		110mm "GI Two-way" vent valve	No	1		R
		<u>Sundries</u>				
9.23		Testing waste pipe system	Sum	1		R
Total Carried Forward						R

## BILL 2 BOQ 2: NEW RAW SEWAGE PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		<b>WATER SUPPLIES</b>				
		Note: Pipes described as "chased" shall include for chasing into brick walls, wrapping with densyl tape or similar expansion protection, and patching with mesh scrim				
		<u>Class II copper pipes</u>				
9.24		15mm Pipes chased into brick walls	m	16		R
9.25		20mm Pipes chased into brick walls	m	8		R
		<u>Extra over class II copper pipes for brass compression fittings</u>				
9.26		15mm Fittings	No	16		R
9.27		20mm Fittings	No	8		R
		<u>Service pipes</u>				
9.28		15mm Braided stainless service pipe not exceeding 400mm long including connections	No	2		R
		<u>Sundries</u>				
9.29		Testing water pipe system	Sum	1		R
		<b>ELECTRIC WATER HEATERS, ETC</b>				
		<u>"Franke"</u>				
9.30		7.5 litre "Franke Zip Hydroboil" water boiler with brushed stainless steel casing screwed to and including plugs in plastered wall with connection to 15mm copper pipe including necessary connector.	No	1		R
		<b>FIRE APPLIANCES ETC</b>				
		<u>"Chubb"</u>				
9.31		9kg Foam fire extinguisher	No	4		R
9.32		4,5kg Dry carbon powder fire extinguisher	No	4		R
Total Carried Forward To Summary: Section 9						R

## BILL 2 BOQ 2: NEW RAW SEWAGE PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 10</b>				
		<b>PAINTWORK</b>				
		For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors				
		These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.				
		Note: This document is based on preliminary Engineers Drawings: 5312-ST-A001 Rev 05312-ST-A300 Rev 0 Engineer's sketches, schedules, project specifications by engineer and query/assumption lists, being the state of all information available as at 18 June 2021				
		Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 152 for Haylett formula purposes				
		<b>PAINTWORK ETC TO NEW WORK</b>				
		<b>ON FLOATED PLASTER OR CONCRETE</b>				
		<u>Prepare, one universal undercoat and and two coats Plascon acrylic PVA</u>				
10.1		On ceilings	m²	20		R
		<u>Prepare, prime with Plaster Primer and two coats Plascon "Double Velvet"</u>				
10.2		On internal walls	m²	41		R
		<b>ON METAL</b>				
		<u>One coat universal undercoat and two coats "Plascon" non-drip enamel on galvanised steel</u>				
10.3		On door frames	m²	10		R
		<b>ON WOOD</b>				
		<u>Two coats wood primer</u>				
10.4		On backs of frames, linings, etc not exceeding 300mm wide	m²	1		R
		<u>Two coats "Plascon" clear polyurethane varnish</u>				
10.5		On doors	m²	33		R
10.6		On door frames, etc	m²	2		R
		<u>One coat wood primer, one undercoat and two coats alkyd enamel paint</u>				
10.7		On doors	m²	4		R
Total Carried Forward To Summary: Section 10						R



**BILL 2 BOQ 2: NEW RAW SEWAGE PUMP STATION**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b><u>SECTION 11</u></b>  <b><u>PROVISIONAL SUMS</u></b>  <b>SUPPLEMENTARY PREAMBLES</b>  All provisional sums cover supply of material and equipment and installation. Provisional sums are nett and do not include builder's discount (excluding settlement discount) and Value-Added Tax but the Tenderer may allow under "Profit" items any profit he considers necessary  <b>JOINERY FITTINGS</b>				
11.1		Post-formed desk top installation and kitchen sink cupboard complete	Sum	1	R 4 400.00	R 4 400.00
11.2		Allow for profit if required	%	R 4 400.00		R
11.3		Allow for attendance if required	Sum	1		R
Total Carried Forward To Summary: Section 11						R

## BILL 2 BOQ 2: NEW RAW SEWAGE PUMP STATION

## SUMMARY OF SECTIONS

SECTION	DESCRIPTION				AMOUNT R
1	PRELIMINARIES				R
2	MASONRY				R
3	WATERPROOFING				R
4	CARPENTRY AND JOINERY				R
5	IRONMONGERY				R
6	METALWORK				R
7	PLASTERING				R
8	TILING				R
9	PLUMBING AND DRAINAGE				R
10	PAINTWORK				R
11	PROVISIONAL SUMS				R
Total Carried Forward To Summary Of Bills					R

**BILL 2 BOQ 3: NEW GUARDHOUSES**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b><u>THE FOLLOWING IN NO 2 GUARD HOUSES</u></b>  <b><u>SECTION 1</u></b>  <b><u>PRELIMINARIES</u></b>  These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.  Note: This document is based on preliminary Engineers Drawing 60463-9 Sheet 3 Rev A, Engineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 11 May 2021  Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 190 for Haylett formula purposes  <u>Allow for preliminary and general items</u>				
1.1		Fixed	Sum	1		R
1.2		Time	Sum	1		R
1.3		Value	Sum	1		R
Total Carried Forward To Summary: Section 1						R

## BILL 2 BOQ 3: NEW GUARDHOUSES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<p><b>SECTION 2</b></p> <p><b>EARTHWORKS</b></p> <p>For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors</p> <p>These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.</p> <p>Note: This document is based on preliminary Engineers Drawing 60463-9 Sheet 3 Rev A, Engineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 11 May 2021</p> <p>Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 104 for Haylett formula purposes</p> <p><u>Nature of ground</u></p> <p>The nature of the ground is assumed to be loose sandy material, therefore "earth", but possibly interspersed with "soft rock" or "hard rock"</p> <p><u>Carting away of excavated material</u></p> <p>Descriptions of carting away of excavated material shall be deemed to include loading excavated material onto trucks directly from the excavations or, alternatively, from stock piles situated on the building site</p> <p><b>SITE CLEARANCE</b></p> <p><u>Site clearance</u></p>				
2.1		<p>Digging up and removing rubbish, debris, vegetation, hedges, shrubs, bush, etc and trees not exceeding 200mm girth</p> <p><b>EXCAVATION, FILLING, ETC OTHER THAN BULK</b></p> <p><b>EXCAVATIONS ETC</b></p> <p><u>Excavation in earth not exceeding 2m deep</u></p>	m <sup>2</sup>	133		R
2.2		<p>Trenches</p> <p><u>Extra over trench and hole excavations in earth for excavation in</u></p>	m <sup>3</sup>	12		R
2.3		Soft rock	m <sup>3</sup>	1		R
2.4		Hard rock	m <sup>3</sup>	0.1		R
2.5		<p><u>Extra over all excavations for carting away</u></p> <p>Surplus material from excavations and/or stock piles on site, to a dumping site to be located by the contractor</p> <p><u>Risk of collapse of excavations</u></p>	m <sup>3</sup>	7		R
2.6		<p>Sides of trench and hole excavations not exceeding 1,5m deep</p> <p><u>Keeping excavations free of water</u></p>	m <sup>2</sup>	33		R
2.7		Keeping excavations free of all water other than subterranean water	Sum	1		R
Total Carried Forward						R

## BILL 2 BOQ 3: NEW GUARDHOUSES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		<b>FILLING ETC</b>				
		<u>Earth filling obtained from the excavations and/or prescribed stock piles on site, compacted to 95% Mod AASHTO density</u>				
2.7		Backfilling to trenches, holes, etc	m <sup>3</sup>	5		R
2.9		Under floors, steps, pavings, etc	m <sup>3</sup>	1		R
		<u>Coarse river sand filling supplied by the contractor</u>				
2.1		Under floors etc	m <sup>3</sup>	0.5		R
		<u>Compaction of ground surfaces</u>				
2.11		Compaction of natural or excavated ground surface under floors etc, including scarifying for a depth of 150mm, breaking down oversize material, adding suitable material where necessary and compacting to 93% Mod AASHTO density	m <sup>2</sup>	15		R
		<b>WEED KILLERS, INSECTICIDES, ETC</b>				
		<u>Soil insecticide in accordance with SANS 5859</u>				
2.12		<u>Under floors etc, including forming and poisoning shallow furrows against foundation walls etc, filling in furrows and ramming</u>	m <sup>2</sup>	15		R
2.13		To bottoms and sides of trenches etc	m <sup>2</sup>	49		R
Total Carried Forward To Summary: Section 2						R

## BILL 2 BOQ 3: NEW GUARDHOUSES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<p><b>SECTION 3</b></p> <p><b>CONCRETE, FORMWORK AND REINFORCEMENT</b></p> <p>For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors</p> <p>These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.</p> <p>Note: This document is based on preliminary Engineers Drawing 60463-9 Sheet 3 Rev A, Engineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 11 May 2021</p> <p>Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 110 for Haylett formula purposes</p> <p><b>SUPPLEMENTARY PREAMBLES</b></p> <p><u>Cost of tests</u></p> <p>The costs of making, storing and testing of concrete test cubes as required under clause 7 "Tests" of SABS 1200 G shall include the cost of providing cube moulds necessary for the purpose, for testing costs and for submitting reports on the tests to the engineer. The testing shall be undertaken by an independent firm or institution nominated by the contractor to the approval of the architect. (Test cubes are measured separately)</p> <p><u>Formwork</u></p> <p>Descriptions of formwork shall be deemed to include use and waste only (except where described as "left in" or "permanent"), for fitting together in the required forms, wedging, plumbing and fixing to true angles and surfaces as necessary to ensure easy release during stripping and for reconditioning as necessary before re-use</p> <p>Formwork to soffits of solid slabs etc shall be deemed to be to slabs not exceeding 250mm thick unless otherwise described</p> <p><b>UNREINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES</b></p> <p><u>25MPa/19mm concrete</u></p> <p>3.1 Strip footings m<sup>3</sup> 4 R</p> <p><b>REINFORCED CONCRETE CAST ON/IN FORMWORK</b></p> <p><u>30MPa/19mm concrete</u></p> <p>3.2 Surface beds on waterproofing m<sup>3</sup> 2 R</p> <p>3.3 Slabs including beams and inverted beams m<sup>3</sup> 5 R</p> <p><b>TEST CUBES</b></p> <p>3.4 Making and testing 150 x 150 x 150mm concrete strength test cube No 6 R</p>				
Total Carried Forward						R

## BILL 2 BOQ 3: NEW GUARDHOUSES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		<b>CONCRETE SUNDRIES</b>				
		<u>Finishing top surfaces of concrete smooth with a wood float</u>				
3.5		Surface beds, slabs, etc	m <sup>2</sup>	15		R
3.6		Surface beds, slabs, etc to falls	m <sup>2</sup>	37		R
		<u>Finishing top surfaces of concrete smooth with a steel trowel</u>				
3.7		Tops of beams, walls, etc	m <sup>2</sup>	3		R
		<b>FORMWORK</b>				
		Haylett Formula Work Group No. 111				
		<b>SMOOTH FORMWORK (DEGREE OF ACCURACY I)</b>				
		<u>Smooth formwork to sides</u>				
3.8		Inverted beams	m <sup>2</sup>	7		R
3.9		Inverted beams above concrete	m <sup>2</sup>	3		R
3.10		Edges, risers, ends and reveals not exceeding 300mm high or wide	m	7		R
		<u>Smooth formwork to soffits</u>				
3.11		Slabs propped up exceeding 1.5m and not exceeding 3m high	m <sup>2</sup>	34		R
		<u>Boxing in smooth formwork to form</u>				
3.12		20 x 20mm Chamfer along top or bottom edge	m	85		R
3.13		20 x 20mm Vertical chamfer at corner	m	4		R
3.14		15mm Diameter half round drip groove in soffit	m	31		R
		<b>MOVEMENT JOINTS ETC</b>				
		<u>"Kilcher bearing" slip joints between horizontal concrete and brick surfaces including cement mortar bed</u>				
3.15		Not exceeding 300mm wide	m	22		R
		<b>REINFORCEMENT</b>				
		Haylett Formula Work Group No. 114				
		<u>Mild steel reinforcement to structural concrete work</u>				
3.16		8mm Diameter bars	t	0.02		R
		<u>High tensile steel reinforcement to structural concrete work</u>				
3.17		10mm Diameter bars	t	0.01		R
		<u>Fabric reinforcement</u>				
3.18		Type ref 395 fabric reinforcement in concrete surface beds, slabs, etc	m <sup>2</sup>	93		R
Total Carried Forward To Summary: Section 3						R

## BILL 2 BOQ 3: NEW GUARDHOUSES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 4</b>  <b>MASONRY</b>  For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors  These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.  Note: This document is based on preliminary Engineers Drawing 60463-9 Sheet 3 Rev A, Engineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 11 May 2021  Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 116 for Haylett formula purposes  <b>SUPPLEMENTARY PREAMBLES</b>  <b>BRICKWORK</b>  <u>Sizes in descriptions</u>  Where sizes in descriptions are given in brick units, "one brick" shall represent the length and "half brick" the width of a brick  <u>Face bricks</u>  Bricks shall be ordered timeously to obtain uniformity in size and colour  <b>FOUNDATIONS</b>  <u>Brickwork of NFX bricks (14 MPa nominal compressive strength) in class I mortar</u>  4.1 Half brick walls m <sup>2</sup> 1 R  4.2 One brick walls m <sup>2</sup> 13 R  <u>Brickwork reinforcement</u>  4.3 75mm Wide reinforcement built in horizontally m 3 R  4.4 150mm Wide reinforcement built in horizontally m 39 R  <b>SUPERSTRUCTURE</b>  <u>Brickwork of NFP bricks in class II mortar</u>  4.5 Half brick walls m <sup>2</sup> 8 R  <u>Brickwork of NFX bricks (14 MPa nominal compressive strength) in class I mortar</u>  4.6 One brick walls m <sup>2</sup> 44 R				
Total Carried Forward						R



## BILL 2 BOQ 3: NEW GUARDHOUSES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		<b>BRICKWORK SUNDRIES</b>				
4.7		<u>Chip off projections, fill up crevices, cement wash with 1:6 cement and sand slurry and apply two coats "Brixeal" bitumen emulsion waterproofing coating:</u>  On outer face of inner skin of brick walls including any additional labour required in raising wall in two separate skins and working around wire ties and/or brick reinforcing fabric.	m <sup>2</sup>	44		R
		<u>Brickwork reinforcement</u>				
4.8		75mm Wide reinforcement built in horizontally	m	22		R
4.9		150mm Wide reinforcement built in horizontally	m	169		R
		<u>Prestressed fabricated lintels</u>				
4.10		100 x 70mm Lintels in lengths not exceeding 3m	m	2		R
		<u>Turning pieces</u>				
4.11		220mm Wide turning piece to lintels etc	m	10		R
		<b>FACE BRICKWORK</b>				
		<u>"Corobrik Firelight Satin" face bricks pointed with ruled horizontal and vertical joints</u>				
4.12		Extra over brickwork for face brickwork	m <sup>2</sup>	51		R
4.13		Extra over brickwork for face brickwork in foundations	m <sup>2</sup>	2		R
4.14		Extra over brickwork for brick-on-flat header course band	m	24		R
4.15		Extra over brickwork for brick-on-edge header course lintel	m	10		R
		<u>Brick-on-edge header course copings, sills, etc of "Corobrik Firelight Satin" face bricks pointed with recessed joints on all exposed faces</u>				
4.16		220mm Wide sill set sloping and slightly projecting	m	8		R
		<b>NUTEC-CEMENT/FIBRE-CEMENT WINDOW SILLS</b>				
		<u>Natural grey sills in single lengths bedded in class I mortar including metal fixing lugs etc</u>				
4.17		15 x 150mm Wide sills set flat and slightly projecting	m	8		R
Total Carried Forward To Summary: Section 4						R

## BILL 2 BOQ 3: NEW GUARDHOUSES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 5</b>  <b>WATERPROOFING</b>  For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors  These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.  Note: This document is based on preliminary Engineers Drawing 60463-9 Sheet 3 Rev A, Engineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 11 May 2021  Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 120 for Haylett formula purposes  <b>SUPPLEMENTARY PREAMBLES</b>  <u>Waterproofing</u>  Waterproofing of roofs, basements, etc shall be laid under a ten year guarantee. Waterproofing to roofs shall be laid to even falls to outlets etc with necessary ridges, hips and valleys. Descriptions of sheet or membrane waterproofing shall be deemed to include additional labour to turn-ups and turn-downs  <b>DAMP-PROOFING OF WALLS AND FLOORS</b>  <u>One layer of 375 micron "Consol Plastics Brikrip DPC" embossed damp proof course</u>				
5.1		In walls	m <sup>2</sup>	12		R
		<u>One layer 375 micron orange polyethylene waterproof sheeting (SANS 952-1985 type A) sealed at laps with PVC self-adhesive tape</u>				
5.2		Under surface beds	m <sup>2</sup>	15		R
		<b>WATERPROOFING TO ROOFS, BASEMENTS, ETC</b>  <u>4mm "Derbigum SP" fully bonded waterproofing</u>				
5.3		On flat roofs	m <sup>2</sup>	43		R
		<b>PROTECTIVE ROOFING PAINT</b>  <u>Two coats "Silvakote" bituminous aluminium paint</u>				
5.4		On waterproofing to roofs	m <sup>2</sup>	43		R
		<b>JOINT SEALANTS ETC</b>  <u>Silicone sealing compound</u>				
5.5		Sealing between sanitary fitting and wall tiling	m	1		R
		<u>Approved tinted silicone sealing compound</u>				
5.6		Sealing around aluminium windows / doors and face brick wall.	m	44		R
Total Carried Forward To Summary: Section 5						R

## BILL 2 BOQ 3: NEW GUARDHOUSES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b><u>SECTION 6</u></b>  <b><u>CARPENTRY AND JOINERY</u></b>  For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors  These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.  Note: This document is based on preliminary Engineers Drawing 60463-9 Sheet 3 Rev A, Engineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 11 May 2021  Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 126 for Haylett formula purposes  <b><u>DOORS ETC</u></b>  <u>Semi-solid flush doors with commercial veneer</u>  40mm Door 813 x 2032mm high  <b><u>FRAMED FRAMES ETC</u></b>  <u>Wrought meranti</u>  68 x 68mm Rebated frames plugged				
6.1			No	2		R
6.2			m	10		R
Total Carried Forward To Summary: Section 6						R

## BILL 2 BOQ 3: NEW GUARDHOUSES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b><u>SECTION 7</u></b>  <b><u>IRONMONGERY</u></b>  For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors  These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.  Note: This document is based on preliminary Engineers Drawing 60463-9 Sheet 3 Rev A, Engineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 11 May 2021  Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 132 for Haylett formula purposes  <b>HINGES, BOLTS, ETC</b>  100mm Brass hinge	No	4		R
7.1						
		<b>LOCKS</b>  <u>"Union"</u>  2247-78 Four lever lockset with pair of "Swallow - AL 681" handles or similar approved with striking plate fixed to timber frame	No	2		R
7.2						
		<b>BATHROOM FITTINGS</b>  19mm Diameter chromium plated towel rail 600mm long including end brackets	No	2		R
7.3						
		Vitraflex TR3 stainless steel lockable toilet paper dispenser	No	2		R
7.4						
		<b>SUNDRIES</b>  <u>"Union"</u>  CZ 8731SC door stop plugged	No	2		R
7.5						
Total Carried Forward To Summary: Section 7						R

## BILL 2 BOQ 3: NEW GUARDHOUSES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 8</b>  <b>METALWORK</b>  For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors  These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.  Note: This document is based on preliminary Engineers Drawing 60463-9 Sheet 3 Rev A, Engineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 11 May 2021  Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 149 for Haylett formula purposes  <b>ALUMINIUM WINDOWS, DOORS, ETC</b>  <u>"Wispeco type - 36 Casement Window System" Natural anodised aluminium windows glazed with 4mm obscure glass and plugged to brickwork or concrete</u>  8.1 Window 600 x 600mm high with one top hung opening out light No 2 R  <u>"Wispeco type - 36 Casement Window System" Natural anodised aluminium windows glazed with 6,38mm toughened safety glass with silver reflective solar tint and plugged to brickwork or concrete</u>  8.2 Window 640 x 1200mm high with one fixed light No 2 R  <u>"Wispeco type - Palace Window System" Natural anodised aluminium windows glazed with 6,38mm toughened safety glass with silver reflective solar tint and plugged to brickwork or concrete</u>  8.3 Window 1500 x 1200mm high with one horizontal sliding light and one fixed light of equal sizes No 4 R  <u>"Wispeco type - CLIP44 Shopfront System" Natural anodised aluminium doors, sidelights and fanlights glazed with 6,38mm toughened clear safety glass with silver reflective solar film tint and plugged to brickwork or concrete</u>  8.4 Door 900 x 2100mm high with one transome and two glazed panels, suitable approved four lever lockset and three suitable hinges No 2 R				
Total Carried Forward To Summary: Section 8						R

## BILL 2 BOQ 3: NEW GUARDHOUSES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b><u>SECTION 9</u></b>  <b><u>PLASTERING</u></b>  For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors  These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.  Note: This document is based on preliminary Engineers Drawing 60463-9 Sheet 3 Rev A, Engineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 11 May 2021  Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 142 for Haylett formula purposes  <b><u>SCREEDS</u></b>  <u>Non-shrink grout on concrete</u>  9.1      75 x 75mm Triangular fillet in angle      m      26      R  <b><u>INTERNAL PLASTER</u></b>  <u>Cement plaster on brickwork</u>  9.2      On walls      m <sup>2</sup> 58      R  9.3      On narrow widths      m <sup>2</sup> 2      R				
Total Carried Forward To Summary: Section 9						R

## BILL 2 BOQ 3: NEW GUARDHOUSES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 10</b>  <b>TILING</b>  For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors  These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.  Note: This document is based on preliminary Engineers Drawing 60463-9 Sheet 3 Rev A, Engineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 11 May 2021  Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 144 for Haylett formula purposes  <b>WALL TILING</b>  <u>300 x 200mm Johnson ceramic</u>  10.1 On walls in isolated panels, splashbacks, etc m <sup>2</sup> 1 R  <u>Trim, edging, etc</u>  10.2 uPVC Corner trim m 4 R  <b>FLOOR TILING</b>  <u>330 x 330mm "Johnson" ceramic floor tiles fixed with adhesive and flush pointed with tinted waterproof jointing compound</u>  10.3 On floors and landings m <sup>2</sup> 13 R  10.4 Skirting 100mm high of cut tiles m 29 R  <u>Trim, edging, etc</u>  10.5 Natural anodised aluminium tile edge strip m 31 R				
Total Carried Forward To Summary: Section 10						R

## BILL 2 BOQ 3: NEW GUARDHOUSES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<p><b>SECTION 11</b></p> <p><b>PLUMBING AND DRAINAGE</b></p> <p>For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors</p> <p>These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.</p> <p>Note: This document is based on preliminary Engineers Drawing 60463-9 Sheet 3 Rev A, Engineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 11 May 2021</p> <p>Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 148 for Haylett formula purposes</p> <p><b>SUPPLEMENTARY PREAMBLES</b></p> <p><u>uPVC pipes and fittings:</u></p> <p>Soil, waste and vent pipes and fittings shall be solvent weld jointed</p> <p><u>Copper pipes:</u></p> <p>Pipes shall be hard drawn and half-hard pipes of the class stated. Class 0 (thin walled hard drawn) pipes shall not be bent. Class 1 (thin walled half-hard), class 2 (half-hard) and class 3 (heavy walled half-hard) pipes shall only be bent with benders with inner and outer formers. Fittings to copper waste, vent and anti-syphon pipes, capillary solder fittings and compression fittings shall be "Cobra Watertech" type. Capillary solder fittings shall comply with ISO 2016. Only compression fittings shall be used in walls or in ground</p> <p><u>Fixing of pipes</u></p> <p>Unless specifically otherwise stated, descriptions of pipes shall be deemed to include fixing to walls etc, casting in, building in or suspending not exceeding 1m below suspension level</p> <p><b>SANITARY FITTINGS</b></p> <p>Work Group No 148 for Haylett formula purposes</p> <p><u>"Vaal"</u></p>				
11.1		455 x 290mm "Bantam" or similar approved cloakroom basin	No	2		R
11.2		Low level wc suite comprising "Afsan" low level pan (code 750100) with double flap plastic seat and "Aguasave" low level cistern (code 7120LL) with flush pipe	No	2		R
11.3		<p><b>WASTE UNIONS ETC</b></p> <p>32mm Basin waste union</p> <p><b>TRAPS ETC</b></p> <p><u>Chromium plated</u></p>	No	2		R
11.4		75 x 40mm Bottle trap	No	2		R
Total Carried Forward						R



## BILL 2 BOQ 3: NEW GUARDHOUSES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		<b>TAPS, VALVES, ETC</b>				
		<u>"Cobra Watertech"</u>				
11.5		15mm "Ball-o-stop" valve	No	4		R
11.6		15mm Cobra "Star" pillar tap 111-15	No	2		R
		<b>SANITARY PLUMBING</b>				
		<u>uPVC pipes</u>				
11.7		50mm Pipes	m	4		R
11.8		110mm Pipes	m	6		R
		<u>Extra over uPVC pipes for fittings</u>				
11.9		50mm BSP adaptor	No	2		R
11.10		50mm Bend	No	2		R
11.11		50mm IE bend	No	2		R
11.12		110mm Reducer	No	2		R
11.13		110mm IE junction	No	2		R
11.14		110mm Pan connector	No	2		R
11.15		110mm "GI Two-way" vent valve	No	2		R
		<u>Sundries</u>				
11.16		Testing waste pipe system	Sum	1		R
		<b>WATER SUPPLIES</b>				
		Note: Pipes described as "chased" shall include for chasing into brick walls, wrapping with densyl tape or similar expansion protection, and patching with mesh scrim				
		<u>Class II copper pipes</u>				
11.17		15mm Pipes chased into brick walls	m	10		R
		<u>Extra over class II copper pipes for brass compression fittings</u>				
11.18		15mm Fittings	No	18		R
		<u>Service pipes</u>				
11.19		15mm Braided stainless service pipe not exceeding 400mm long including connections	No	4		R
		<u>Sundries</u>				
11.20		Testing water pipe system	Sum	1		R
Total Carried Forward To Summary: Section 11						R

## BILL 2 BOQ 3: NEW GUARDHOUSES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 12</b>  <b>PAINTWORK</b>  For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors  These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.  Note: This document is based on preliminary Engineers Drawing 60463-9 Sheet 3 Rev A, Engineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 11 May 2021  Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 152 for Haylett formula purposes  <b>PAINTWORK ETC TO NEW WORK</b>  <b>ON FLOATED PLASTER OR CONCRETE</b>  <u>Prepare, prime with Plaster Primer and two coats Plascon "wall and all"</u>				
12.1		On internal walls	m <sup>2</sup>	58		R
12.2		On ceilings	m <sup>2</sup>	12		R
		<b>ON WOOD</b>  <u>Two coats wood primer</u>				
12.3		On backs of frames, linings, etc not exceeding 300mm wide	m <sup>2</sup>	1		R
		<u>One coat wood primer, one undercoat and two coats alkyd enamel paint</u>				
12.4		On doors	m <sup>2</sup>	7		R
12.5		On door frames etc	m <sup>2</sup>	2		R
Total Carried Forward To Summary: Section 12						R

## BILL 2 BOQ 3: NEW GUARDHOUSES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 13</b>  <b>EXTERNAL WORKS</b>  For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors  These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.  Note: This document is based on preliminary Engineers Drawing 60463-9 Sheet 3 Rev A, Engineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 11 May 2021  Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 154 for Haylett formula purposes  <b>ROADWORK, PARKING AREAS AND PAVING</b>  <u>Excavation in earth</u>  13.1 100mm Deep over site to remove top soil and dispose in prescribed stock piles on site  <u>Compaction of surfaces</u>  13.2 Compaction of ground surfaces under pavings etc, including scarifying for a depth of 100mm, breaking down oversize material, adding suitable material where necessary and compacting to 95% Mod AASHTO density  <u>Filling supplied by the contractor under parking areas, roadways, etc</u>  13.3 Subbase course of natural gravel material, compacted to 95% Mod AASHTO density  <u>Soil insecticide in accordance with SANS 5859</u>  13.4 Under interlocking pavings  <u>60mm Thick precast concrete interlocking block paving of grey or other approved colour paving blocks in accordance with SANS 1058, laid to falls on and including 20mm thick sand layer with joints filled in with sand, compacted with a vibration compactor</u>  13.5 Paving to sidewalks etc to falls, including necessary straight edge blocks  <u>Precast concrete finished smooth on exposed surfaces, including bedding, jointing and pointing</u>  13.6 75 x 110mm High kerbs (SANS 927 "Bester Mini") on 20mm thick mortar bedding with 75 x 75 x 300mm unreinforced concrete haunching at front of each joint, 150 x 75mm thick 20mPa footing including excavation, backfilling, etc  13.7 125 x 230mm High kerbs (SANS 927 fig 6) on 20mm thick mortar bedding with 150 x 150 x 300mm unreinforced concrete haunching at back of each joint, 275 x 75mm thick 20 mPa footing including excavation, backfilling, etc				
Total Carried Forward To Summary: Section 13						R

**BILL 2 BOQ 3: NEW GUARDHOUSES**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 14</b>  <b>PROVISIONAL SUMS</b>  <b>SUPPLEMENTARY PREAMBLES</b>  All provisional sums cover supply of material and equipment and installation. Provisional sums are nett and do not include builder's discount (excluding settlement discount) and Value-Added Tax but the Tenderer may allow under "Profit" items any profit he considers necessary  <b>JOINERY FITTINGS</b>				
14.1		Post-formed desk top installation, complete	Sum	1	R 3 000.00	R 3 000.00
14.2		Allow for profit if required	%	R 3 000.00		R
14.3		Allow for attendance if required	Sum	1		R
Total Carried Forward To Summary: Section 14						R

## BILL 2 BOQ 3: NEW GUARDHOUSES

## SUMMARY OF SECTIONS

SECTION	DESCRIPTION				AMOUNT R
1	PRELIMINARIES				R
2	EARTHWORKS				R
3	CONCRETE, FORMWORK AND REINFORCEMENT				R
4	MASONRY				R
5	WATERPROOFING				R
6	CARPENTRY AND JOINERY				R
7	IRONMONGERY				R
8	METALWORK				R
9	PLASTERING				R
10	TILING				R
11	PLUMBING AND DRAINAGE				R
12	PAINTWORK				R
13	EXTERNAL WORKS				R
14	PROVISIONAL SUMS				R
Total Carried Forward To Summary Of Bills					R

**BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b><u>SECTION 1</u></b>  <b><u>PRELIMINARIES</u></b>  These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.  Note: This document is based on preliminary Engineers Drawings: 5495-ST-A-02 to 13 Rev A5495-ST-CO-01 to 16 Rev A5495 -ST-SS-01 to 02 Rev AEngineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 14 June 2021  Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 190 for Haylett formula purposes  Allow for preliminary and general items				
1.1		Fixed	Sum	1		R
1.2		Time	Sum	1		R
1.3		Value	Sum	1		R
Total Carried Forward To Summary: Section 1						R

## BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
2.1		<p><b>SECTION 2</b></p> <p><b><u>EARTHWORKS</u></b></p> <p>For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors</p> <p>These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.</p> <p>Note: This document is based on preliminary Engineers Drawings: 5495-ST-A-02 to 13 Rev A5495-ST-CO-01 to 16 Rev A5495 -ST-SS-01 to 02 Rev AEngineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 14 June 2021</p> <p>Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 104 for Haylett formula purposes</p> <p><u>Nature of ground</u></p> <p>The nature of the ground is assumed to be loose sandy material, therefore "earth", but possibly interspersed with "soft rock" or "hard rock"</p> <p><u>Carting away of excavated material</u></p> <p>Descriptions of carting away of excavated material shall be deemed to include loading excavated material onto trucks directly from the excavations or, alternatively, from stock piles situated on the building site</p> <p><b>SITE CLEARANCE</b></p> <p><u>Site clearance</u></p> <p>Digging up and removing rubbish, debris, vegetation, hedges, shrubs, bush, etc and trees not exceeding 200mm girth</p>	m <sup>2</sup>	1094		R
Total Carried Forward						R

## BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		<b>EXCAVATION, FILLING, ETC OTHER THAN BULK</b>				
		<b>EXCAVATIONS ETC</b>				
		<u>Excavation in earth not exceeding 2m deep</u>				
2.2		Trenches	m <sup>3</sup>	62		R
2.3		Holes	m <sup>3</sup>	349		R
		<u>Excavation in earth exceeding 2m and not exceeding 4m deep</u>				
2.4		Holes	m <sup>3</sup>	48		R
		<u>Excavation in earth exceeding 4m and not exceeding 6m deep</u>				
2.5		Holes	m <sup>3</sup>	1		R
		<u>Back excavation of vertical sides of excavation in earth for working space including backfilling compacted to 95% Mod AASHTO density</u>				
2.6		Exceeding 500mm and not exceeding 1.5m deep for placing and removing formwork to walls etc 525mm away from excavated face	m <sup>2</sup>	14		R
2.7		Exceeding 1.5m and not exceeding 3m deep for placing and removing formwork to walls etc 450mm away from excavated face	m <sup>2</sup>	12		R
2.8		Exceeding 1.5m and not exceeding 3m deep for placing and removing formwork to walls etc 525mm away from excavated face	m <sup>2</sup>	25		R
2.9		Exceeding 3m and not exceeding 4.5m deep for placing and removing formwork to walls etc 450mm away from excavated face	m <sup>2</sup>	16		R
2.10		Exceeding 3m and not exceeding 4.5m deep for placing and removing formwork to walls etc 525mm away from excavated face	m <sup>2</sup>	32		R
		<u>Extra over trench and hole excavations in earth for excavation in</u>				
2.11		Soft rock	m <sup>3</sup>	42		R
2.12		Hard rock	m <sup>3</sup>	21		R
		<u>Extra over all excavations for carting away</u>				
2.13		Surplus material from excavations and/or stock piles on site, to a dumping site to be located by the contractor	m <sup>3</sup>	228		R
		<u>Risk of collapse of excavations</u>				
2.14		Sides of trench and hole excavations not exceeding 1,5m deep	m <sup>2</sup>	350		R
2.15		Sides of trench and hole excavations exceeding 1,5m deep	m <sup>2</sup>	459		R
		<u>Keeping excavations free of water</u>				
2.16		Keeping excavations free of all water other than subterranean water	Sum	1		R
Total Carried Forward						R



## BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
2.17		<b>FILLING ETC</b> <u>Earth filling obtained from the excavations and/or prescribed stock piles on site, compacted to 95% Mod AASHTO density</u> Backfilling to trenches, holes, etc	m <sup>3</sup>	225		R
2.18		<u>Filling of gravel-soil material G7 supplied by the contractor, compacted to 95% Mod AASHTO density</u> Under floors, steps, pavings, etc	m <sup>3</sup>	83		R
2.19		<u>Compaction of ground surfaces</u> Compaction of natural or excavated ground surface under floors etc, including scarifying for a depth of 150mm, breaking down oversize material, adding suitable material where necessary and compacting to 93% Mod AASHTO density	m <sup>2</sup>	833		R
2.20		<b>WEED KILLERS, INSECTICIDES, ETC</b> <u>Soil insecticide in accordance with SANS 5859</u> Under floors etc, including forming and poisoning shallow furrows against foundation walls etc, filling in furrows and ramming	m <sup>2</sup>	833		R
2.21		To bottoms and sides of trenches etc	m <sup>2</sup>	954		R
2.22		<b>SHORING</b> Allow for shoring up deep foundation excavations and remove on completion of foundation work	Sum	1		R
Total Carried Forward To Summary: Section 2						R

## BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 3</b> <b>MASONRY</b> <p>For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors</p> <p>These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.</p> <p>Note: This document is based on preliminary Engineers Drawings: 5495-ST-A-02 to 13 Rev A5495-ST-CO-01 to 16 Rev A5495 -ST-SS-01 to 02 Rev AEngineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 14 June 2021</p> <p>Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 116 for Haylett formula purposes</p> <b>SUPPLEMENTARY PREAMBLES</b> <b>BRICKWORK</b> <u>Sizes in descriptions</u> <p>Where sizes in descriptions are given in brick units, "one brick" shall represent the length and "half brick" the width of a brick</p> <u>Face bricks</u> <p>Bricks shall be ordered timeously to obtain uniformity in size and colour</p> <b>FOUNDATIONS</b> <u>Brickwork of NFX bricks (14 MPa nominal compressive strength) in class I mortar</u>				
3.1		Half brick walls in sides of floor drains	m <sup>2</sup>	42		R
3.2		One brick walls in sides of floor drains	m <sup>2</sup>	3		R
3.3		One brick walls	m <sup>2</sup>	56		R
		<u>Brickwork reinforcement</u>				
3.4		75mm Wide reinforcement built in horizontally	m	121		R
3.5		150mm Wide reinforcement built in horizontally	m	667		R
		<b>SUPERSTRUCTURE</b> <u>Brickwork of NFP bricks in class II mortar</u>				
3.6		Half brick walls	m <sup>2</sup>	2		R
3.7		One brick walls	m <sup>2</sup>	845		R
		<u>Brickwork of NFX bricks (14 MPa nominal compressive strength) in class I mortar</u>				
3.8		One brick walls	m <sup>2</sup>	8		R
Total Carried Forward						R

## BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		<b>BRICKWORK SUNDRIES</b>				
3.9		<u>Chip off projections, fill up crevices, cement wash with 1:6 cement and sand slurry and apply two coats 'Brixeal' bitumen emulsion waterproofing coating.</u> On outer face of inner skin of brick walls including any additional labour required in raising wall in two separate skins and working around wire ties and/or brick reinforcing fabric.	m²	518		R
3.1		<u>Fair face to brickwork in horizontal stretcher bond pointed with flush horizontal and vertical joints</u> Extra for fair face	m²	1082		R
3.11		<u>Joint forming material in movement joints</u> 10mm Cross linked closed cell expanded polyethylene joint former built in vertically between brick and concrete columns	m²	69		R
3.12		<u>Brickwork reinforcement</u> 75mm Wide reinforcement built in horizontally	m	6		R
3.13		150mm Wide reinforcement built in horizontally	m	2621		R
3.14		<u>Prestressed fabricated lintels</u> 100 x 70mm Lintels in lengths not exceeding 3m	m	32		R
3.15		<u>Turning pieces</u> 220mm Wide turning piece to lintels etc	m	27		R
3.16		<u>Galvanised hoop iron cramps, ties, etc</u> 40 x 1,5mm Wall tie 550mm long with one end shot pinned to concrete and other end built into brickwork	No	1224		R
		<b>FACE BRICKWORK</b>				
3.17		<u>"Calci" face bricks pointed with ruled horizontal and vertical joints</u> Extra over brickwork for face brickwork	m²	520		R
3.18		Extra over brickwork for face brickwork in foundations	m²	19		R
3.19		Extra over brickwork for brick-on-edge header course lintel	m	5		R
3.2		Fair raking cutting	m	32		R
3.21		<u>Brick-on-edge header course copings, sills, etc of "Calci" face bricks pointed with recessed joints on all exposed faces</u> 220mm Wide sill set sloping and slightly projecting	m	59		R
Total Carried Forward To Summary: Section 3						R

## BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 4</b> <b>WATERPROOFING</b> <p>For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors</p> <p>These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.</p> <p>Note: This document is based on preliminary Engineers Drawings: 5495-ST-A-02 to 13 Rev A5495-ST-CO-01 to 16 Rev A5495 -ST-SS-01 to 02 Rev AEngineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 14 June 2021</p> <p>Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 120 for Haylett formula purposes</p> <b>SUPPLEMENTARY PREAMBLES</b> <u>Waterproofing</u> <p>Waterproofing of roofs, basements, etc shall be laid under a ten year guarantee. Waterproofing to roofs shall be laid to even falls to outlets etc with necessary ridges, hips and valleys. Descriptions of sheet or membrane waterproofing shall be deemed to include additional labour to turn-ups and turn-downs</p> <b>DAMP-PROOFING OF WALLS AND FLOORS</b> <u>One layer of 375 micron "Consol Plastics Brikgrip DPC" embossed damp proof course</u> 4.1 In walls m <sup>2</sup> 73 R <u>One layer of 250 micron "Consol Plastics Gunplas USB Green" waterproof sheeting sealed at laps with "Gunplas Pressure Sensitive Tape"</u> 4.2 Under surface beds m <sup>2</sup> 833 R <b>WATERPROOFING TO ROOFS, BASEMENTS, ETC</b> <u>4mm "Derbigum SP" fully bonded waterproofing</u> 4.3 On flat roofs m <sup>2</sup> 42 R <b>PROTECTIVE ROOFING PAINT</b> <u>Two coats "Silvakote" bituminous aluminium paint</u> 4.4 On waterproofing to roofs m <sup>2</sup> 42 R				
Total Carried Forward						R

## BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		<b>JOINT SEALANTS ETC</b>				
		<u>Two-part grey polysulphide sealing compound including backing cord, bond breaker, primer, etc</u>				
4.5		6 x 10mm In expansion joints in floors including raking out expansion joint filler as necessary	m	189		R
4.6		10 x 10mm In vertical expansion joints including raking out expansion joint filler as necessary	m	624		R
		<u>Silicone sealing compound</u>				
4.7		Sealing between sanitary fitting and wall tiling	m	2		R
		<u>Approved tinted silicone sealing compound</u>				
4.8		Sealing around aluminium windows / doors and face brick wall.	m	139		R
Total Carried Forward To Summary: Section 4						R

## BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 5</b> <b>ROOF COVERINGS</b> <p>For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors</p> <p>These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.</p> <p>Note: This document is based on preliminary Engineers Drawings: 5495-ST-A-02 to 13 Rev A5495-ST-CO-01 to 16 Rev A5495 -ST-SS-01 to 02 Rev AEngineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 14 June 2021</p> <p>Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 124 for Haylett formula purposes</p> <b>PROFIED METAL SHEETING AND ACCESSORIES</b> <p><u>Global Roofing Solutions 762mm cover Nu-Rib profile roll-formed in continuous lengths from 0.8mm thick Galvanised steel, Z200 spelter ISQ550 Chromadek® approved colour finish top coat and Pebble Grey backing coat roof sheeting, fixed to steel Hex Flange Head + EPDM Seal self drilling No. 3 drill point, No. 12-14 x 65mm long fasteners. Purlin fixed to second, fourth and sixth crest of each sheet and at all crests at sheet ends, all in accordance with the manufacturer's specifications by a GRS approved contractor</u></p>				
5.1		Roof covering with pitch not exceeding 25 degrees	m²	520		R
5.2		Radius sheet ridge	m	31		R
5.3		Gable trim 462mm girth once bent	m	34		R
5.4		Narrow and broad flute closers	m	61		R
5.5		Moulded narrow and broad rib polyethelene filler blocks	m	61		R
5.6		Bullnose eaves as detailed on drawing 60325-C-SD-726 including provision of bird proofing	m	61		R
		<b>ROOF VENTILATORS</b> <p><u>"Windmaster"</u></p>				
5.7		<p>"Tornado" 350mm diameter aluminium turbine roof ventilator fixed in accordance with the manufacturer's instructions including hole through roof sheeting and all necessary flashings, etc</p>	No	7		R
		<b>ROOF AND WALL INSULATION</b> <p><u>"Sisalation FA 405" fire retardant heavy industrial grade aluminium foil based insulation</u></p>				
5.8		Insulation laid taut over purlins (at approximately 1500mm centres) and fixed concurrent with roof covering including galvanised steel straining wires	m²	510		R
Total Carried Forward To Summary: Section 5						R

## BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 6</b> <b>CARPENTRY AND JOINERY</b> <p>For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors</p> <p>These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.</p> <p>Note: This document is based on preliminary Engineers Drawings: 5495-ST-A-02 to 13 Rev A5495-ST-CO-01 to 16 Rev A5495 -ST-SS-01 to 02 Rev AEngineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 14 June 2021</p> <p>Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 126 for Haylett formula purposes</p> <b>DOORS ETC</b> <u>Wrought meranti doors hung to steel frames</u>				
6.1		40mm Framed and ledged and braced batten door 813 x 2 032mm high of 40 x 144mm top rail, 20 x 104mm middle ledge, braces and stiles and 40 x 220mm bottom rail filled in with 20 x 75mm tongue and groove battens V jointed one side	No	8		R
6.2		40mm Framed and ledged and braced batten double door 1 610 x 2 032mm high of 40 x 144mm top rails, 20 x 104mm middle ledges, braces and stiles and 40 x 220mm bottom rails filled in with 20 x 75mm tongue and groove battens V jointed one side in two equal leaves with rebated meeting stiles	No	1		R
6.3		<u>Semi-solid flush doors with commercial veneer hung to steel frames</u> 40mm Door 813 x 2032mm high	No	1		R
Total Carried Forward To Summary: Section 6						R

## BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 7</b> <b>CEILINGS, PARTITIONS AND ACCESS FLOORING</b> <p>For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors</p> <p>These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.</p> <p>Note: This document is based on preliminary Engineers Drawings: 5495-ST-A-02 to 13 Rev A5495-ST-CO-01 to 16 Rev A5495 -ST-SS-01 to 02 Rev AEngineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 14 June 2021</p> <p>Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 129 for Haylett formula purposes</p> <b>SUSPENDED CEILINGS</b> <u>Proprietary suspended ceilings</u> <p>Note:</p> <p>Electrical light fittings, diffusers, panels, etc generally are "lay in" units of the same dimensions as the suspension grid described and allowance must be made accordingly for their support inclusive of any flexibility in setting out that may be required (ceiling panels have not been deducted and pricing is to take cognisance thereof)</p> <u>Glasswool vinyl faced 1195 x 595 x 25mm "Isover Soundlite" acoustic panels on "Donn" pre-painted exposed tee suspension system including main and cross tees, necessary hangers, grids, etc</u>				
7.1		Ceilings suspended exceeding 2m and not exceeding 3m below steel purlins at 1656mm centres (trusses at 5m centres)	m <sup>2</sup>	40		R
7.2		<u>"Donn" cornices to suspended ceilings</u> "Donn SM25" shadowline pre-painted cornices plugged	m	26		R
Total Carried Forward To Summary: Section 7						R



## BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 8</b> <b>IRONMONGERY</b> <p>For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors</p> <p>These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.</p> <p>Note: This document is based on preliminary Engineers Drawings: 5495-ST-A-02 to 13 Rev A5495-ST-CO-01 to 16 Rev A5495 -ST-SS-01 to 02 Rev AEngineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 14 June 2021</p> <p>Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 132 for Haylett formula purposes</p> <b>HINGES, BOLTS, ETC</b> <u>"Union"</u> 8.1 150mm Type 8052 flush bolt with keep fixed to metal No 1 R 8.2 150mm Type 8052 flush bolt with keep let into concrete No 1 R <b>LOCKS</b> <u>"Union"</u> 8.3 "Gower CZ6822495" three lever lockset with striking plate fixed to metal No 1 R 8.4 "Gower CZ6833452" three lever lockset with striking plate fixed to metal No 8 R 8.5 "Gower CZ6833452" three lever rebated lockset with and including rebate conversion set No 1 R <b>BATHROOM FITTINGS</b> 8.6 Vitraflex TR3 stainless steel lockable toilet paper dispensator No 1 R <u>"Franke"</u> 8.7 "Rodan RODX618" stainless steel soap dispenser plugged and screwed to wall No 1 R 8.8 "Rodan RODX600" stainless steel paper towel dispenser plugged and screwed to wall No 1 R 8.9 "Rodan RODX607" stainless steel wall mounted bin plugged and screwed to wall No 1 R <b>SUNDRIES</b> <u>"Union"</u> 8.1 CZ 8731SC door stop plugged No 5 R 8.11 8025SS Hat and coat hook with rubber buffer No 1 R				
Total Carried Forward To Summary: Section 8						R

## BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 9</b> <b>STRUCTURAL STEELWORK</b> <p>For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors</p> <p>These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.</p> <p>Note: This document is based on preliminary Engineers Drawings: 5495-ST-A-02 to 13 Rev A5495-ST-CO-01 to 16 Rev A5495 -ST-SS-01 to 02 Rev AEngineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 14 June 2021</p> <p>Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 134 for Haylett formula purposes</p> <b>SUPPLEMENTARY PREAMBLES</b> <u>Descriptions</u> <p>Descriptions including bolts shall be deemed to be Grade 8.8 bolts.</p> <p>Descriptions of bolts shall be deemed to include nuts and washers</p> <p>Descriptions of L-shaped and U-shaped anchor bolts shall be deemed to include bending, threading, nuts and washers and embedding in concrete</p> <b>GALVANIZED STEEL TRUSSES, ETC</b> <p><u>Bolted roof trusses of angle section rails, struts, braces, cleats, etc and flat section bearer, gusset and connection plates bolted to steel</u></p>				
9.1		7 No double pitched trusses 16.85 x 1.7m high extreme	t	7.76		R
		<b>GALVANIZED PURLINS, GIRTS, BRACING, ETC</b> <u>Purlins and girts bolted to steel</u>				
9.2		Lipped channel section purlins	t	2.93		R
		<u>Welded bracing etc with flat section connection plates bolted to steel</u>				
9.3		Angle section bracing	t	4.99		R
Total Carried Forward						R

## BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		<b>THE FOLLOWING IN STEEL CRAWL-BEAM GIRDER</b>				
		<u>Welded girder with connection plates and L-section cleats bolted to concrete</u>				
9.4		Two (2No) crawl-beams of 533 x 210mm x 122kg/m I-section parallel flange girders and angle section cleats.	t	4.99		R
9.5		88kg/m Heavy crane rail	t	3.55		R
9.6		230 x 130 x 10mm Thick backing plate with two (2No) 24mm diameter holes and machined recess 100 x 80 x 2.5mm deep in face for and including 5mm thick PTFE pad of same size bonded into recess using a bonding agent approved by the PTFE supplier.	No	10		R
9.7		120 x 100 x 3mm Thick stainless steel plate welded to underside of girder, polished to semi-reflective B finish on sliding surface face, welded to underside of girder	No	10		R
		<u>Bolts to girder beams, etc</u>				
9.8		20mm Diameter U-shaped anchor bolt 900mm girth embedded in top of concrete.	No	20		R
9.9		100mm M20 expansion bolt	No	40		R
Total Carried Forward To Summary: Section 9						R

## BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 10</b> <b>METALWORK</b> <p>For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors</p> <p>These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.</p> <p>Note: This document is based on preliminary Engineers Drawings: 5495-ST-A-02 to 13 Rev A5495-ST-CO-01 to 16 Rev A5495 -ST-SS-01 to 02 Rev AEngineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 14 June 2021</p> <p>Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 149 for Haylett formula purposes</p> <b>GALVANIZED STEEL HANDRAILS, BALUSTRADES, ETC</b> <u>"Matlock" patent handrailing and balustrading to concrete</u>				
10.1		Type HS two rail tubular series complete with equal sized hand, kneerails and bends to suit both	m	12		R
10.2		Extra over hand & kneerail for 90 degree bend	No	8		R
10.3		Type G90 stanchion 1150mm long	No	12		R
		<b>SUNDRY GALVANIZED STEELWORK</b> <u>Floor duct gratings, etc</u>				
10.4		40 x 3mm "Rectagrid by Andrew Mentis" or similar approved fully banded duct gratings in approximately 380mm widths and suitable lengths laid loose in framing	m <sup>2</sup>	49		R
10.5		40 x 3mm "Rectagrid by Andrew Mentis" or similar approved fully banded sump gratings in approximately 1000mm widths and suitable lengths laid loose in framing	m <sup>2</sup>	1		R
10.6		45 x 45 x 5mm Angle section framing with 50 x 3mm flat section lugs with fishtailed end each 200mm girth welded on at 500mm centres including embedding in concrete	m	262		R
10.7		Extra over 45 x 45 x 5mm angle section for mitred L-intersection	No	54		R
10.8		Extra over 45 x 45 x 5mm angle section for T-intersection	No	6		R
		<b>GALVANIZED PRESSED STEEL DOOR FRAMES</b> <u>1.6mm Rebated frames suitable for one brick walls</u>				
10.9		Frame for door 813 x 2032mm high	No	9		R
10.1		Frame for double door 1610 x 2032mm high	No	1		R
Total Carried Forward						R

## BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
10.11		<b>GALVANIZED PRESSED STEEL TRANSFORMER ROOM DOORS AND FRAMES</b>  <u>"Amdoor" or other approved doors</u>  Type YV double door 1626 x 2450mm high with rebated frame suitable for one brick wall	No	1		R
10.12		<b>NATURAL ANODISED ALUMINIUM LOUVRE UNITS</b>  <u>"Trox" type AGS-T louvre units fixed through timber door including forming opening through door</u>  Louvre unit size 300 x 350mm high	No	8		R
10.13		<u>"Trox" weather resistant louvre units fixed into brickwork openings including all necessary fixings and sealing all round in accordance with the manufacturer's instructions</u>  Louvre unit for 1200 x 1100mm high opening	No	19		R
10.14		<b>ALUMINIUM WINDOWS, DOORS, ETC</b>  <u>"Wispeco type - 36 Casement Window System" Natural anodised aluminium windows glazed with 4mm obscure glass and plugged to brickwork or concrete</u>  Window 600 x 900mm high with one top hung opening out light and one fixed light	No	1		R
10.15		Window 2000 x 1200mm high with two top hung opening out lights and one fixed light	No	2		R
10.16		<u>"Wispeco type - 36 Casement Window System" Natural anodised aluminium windows glazed with 6.38mm toughened safety glass with silver reflective solar tint and plugged to brickwork or concrete</u>  Window 4550 x 600mm high with four equal fixed lights	No	12		R
10.17		<b>STEEL ROLLER SHUTTERS ETC</b>  <u>"Xpanda" galvanised roller shutters fixed to brickwork or concrete</u>  Chain operated slatted roller shutter for 3000 x 3400mm high opening	No	1		R
10.18		Chain operated slatted roller shutter for 4000 x 3400mm high opening	No	2		R
Total Carried Forward To Summary: Section 10						R

## BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 11</b>  <b>PLASTERING</b>  For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors  These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.  Note: This document is based on preliminary Engineers Drawings: 5495-ST-A-02 to 13 Rev A5495-ST-CO-01 to 16 Rev A5495 -ST-SS-01 to 02 Rev AEngineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 14 June 2021  Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 142 for Haylett formula purposes  <b>SCREEDS</b>  <u>Screeds wood floated on concrete</u>  11.1 30mm Thick on floors and landings m <sup>2</sup> 45 R 11.2 Average 60mm thick on floors to falls and currents m <sup>2</sup> 734 R 11.3 Average 60mm thick on roofs to falls and currents to receive waterproofing membrane (elsewhere measured) m <sup>2</sup> 42 R 11.4 30mm Thick on treads and risers of stairs including reedings m <sup>2</sup> 11 R 11.5 50 x 50mm Triangular fillet in angle with upstand m 10 R 11.6 50 x 50mm Triangular fillet in angle with upstand circular on plan m 29 R  <b>INTERNAL PLASTER</b>  <u>Cement plaster on brickwork</u>  11.7 On walls m <sup>2</sup> 116 R 11.8 On narrow widths m <sup>2</sup> 2 R 11.9 On narrow widths to walls of floor drains m <sup>2</sup> 42 R  <u>Cement plaster on concrete</u>  11.10 On soffits of slabs m <sup>2</sup> 2 R				
Total Carried Forward						R

## BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		<b>SPECIALIST APPLIED WALL COVERINGS</b>				
		<u>25mm Thick "Sewpercoat PG25" wall lining applied in accordance with the manufacturers instructions on smooth concrete</u>				
11.11		On internal circular walls of silos	m <sup>2</sup>	251		R
11.12		On concrete ceilings of silos	m <sup>2</sup>	33		R
		<b>SPECIALIST SCREED FLOOR COVERINGS</b>				
		All specialist screed floor coverings are to be executed in strict accordance with the manufacturer's instructions				
		<u>6-9mm Thick "Flowfresh RT" heavy duty chemical resistant antimicrobial treated polyurethane resin floor coating manufactured by "Flowcrete" on screed</u>				
11.13		On floors	m <sup>2</sup>	734		R
Total Carried Forward To Summary: Section 11						R

## BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 12</b>				
		<b>TILING</b>				
		For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors				
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		Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 144 for Haylett formula purposes				
		<b>WALL TILING</b>				
		<u>300 x 200mm Johnson ceramic</u>				
12.1		On walls	m <sup>2</sup>	14		R
12.2		On narrow widths	m <sup>2</sup>	1		R
		<b>FLOOR TILING</b>				
		<u>330 x 330mm "Johnson" ceramic floor tiles fixed with adhesive and flush pointed with tinted waterproof jointing compound</u>				
12.3		On floors and landings	m <sup>2</sup>	40		R
12.4		Skirting 75mm high of cut tiles	m	32		R
		<u>Trim, edging, etc</u>				
12.5		Natural anodised aluminium tile edge strip	m	43		R
Total Carried Forward To Summary: Section 12						R



## BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<p><b>SECTION 13</b></p> <p><b>PLUMBING AND DRAINAGE</b></p> <p>For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors</p> <p>These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.</p> <p>Note: This document is based on preliminary Engineers Drawings: 5495-ST-A-02 to 13 Rev A5495-ST-CO-01 to 16 Rev A5495 -ST-SS-01 to 02 Rev AEngineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 14 June 2021</p> <p>Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 148 for Haylett formula purposes</p> <p><b>SUPPLEMENTARY PREAMBLES</b></p> <p><u>uPVC pipes and fittings:</u></p> <p>Soil, waste and vent pipes and fittings shall be solvent weld jointed</p> <p><u>Copper pipes:</u></p> <p>Pipes shall be hard drawn and half-hard pipes of the class stated. Class 0 (thin walled hard drawn) pipes shall not be bent. Class 1 (thin walled half-hard), class 2 (half-hard) and class 3 (heavy walled half-hard) pipes shall only be bent with benders with inner and outer formers. Fittings to copper waste, vent and anti-syphon pipes, capillary solder fittings and compression fittings shall be "Cobra Watertech" type. Capillary solder fittings shall comply with ISO 2016. Only compression fittings shall be used in walls or in ground</p> <p><u>Fixing of pipes</u></p> <p>Unless specifically otherwise stated, descriptions of pipes shall be deemed to include fixing to walls etc, casting in, building in or suspending not exceeding 1m below suspension level</p>				

## BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<u>Reducing fittings</u>  Where fittings have reducing ends or branches they are described as "reducing". In the case of pipes with diameters not exceeding 60mm only the largest end or branch size is given. Should the contractor wish to use other fittings and bushes or reducers he may do so on the understanding that no claim in this regard will be entertained. In the case of pipes with diameters exceeding 60mm all sizes are given and no claim for extra bushes, reducers, etc will be entertained  <u>Excavations</u>  No claim for rock excavation will be entertained unless the contractor has timeously notified the engineer/quantity surveyor thereof prior to backfilling  "Soft rock" and "hard rock" shall be as defined in "Earthworks"  <u>Laying, backfilling, bedding, etc. of pipes</u>  Pipes shall be laid and bedded and trenches shall be carefully backfilled in accordance with manufacturers' instructions  <b>STORMWATER DRAINAGE</b>  <u>uPVC pipes</u>  110mm Pipes laid in and including trenches not exceeding 1m deep  150mm Pipes laid in and including trenches not exceeding 1m deep  Extra over uPVC pipes for fittings  110mm Bend  110mm Junction  150mm Bend  150mm Junction  <u>Sumps, catchpits, inspection chambers, etc (gratings and covers elsewhere)</u>  Rainwater sump 450 x 450mm and not exceeding 500mm deep internally  <u>Gratings, covers, etc</u>  300 x 300mm x 9kg Type LD cast iron dished grating and frame  <u>Sundries</u>  110mm Cleaning eye				
13.1		110mm Pipes laid in and including trenches not exceeding 1m deep	m	97		R
13.2		150mm Pipes laid in and including trenches not exceeding 1m deep	m	30		R
13.3		110mm Bend	No	13		R
13.4		110mm Junction	No	13		R
13.5		150mm Bend	No	4		R
13.6		150mm Junction	No	4		R
13.7		Rainwater sump 450 x 450mm and not exceeding 500mm deep internally	No	16		R
13.8		300 x 300mm x 9kg Type LD cast iron dished grating and frame	No	16		R
13.9		110mm Cleaning eye	No	3		R
Total Carried Forward						R

## BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		<b>SOIL DRAINAGE</b>				
		Work Group No 146 for Haylett formula purposes				
		<u>uPVC pipes</u>				
13.1		110mm Pipes vertically or ramped to cleaning eyes etc (no excavation)	m	2		R
13.11		110mm Pipes laid in and including trenches not exceeding 1m deep	m	17		R
		<u>Extra over uPVC pipes for fittings</u>				
13.12		110mm Bend	No	4		R
13.13		110 mm Access bend	No	1		R
13.14		110mm Access junction	No	1		R
		<u>Sundries</u>				
13.15		110mm Cleaning eye	No	1		R
		<b>RAINWATER DISPOSAL</b>				
		Work Group No 146 for Haylett formula purposes				
		<u>"Long Span" aluminium with baked enamel finish</u>				
13.16		150 x 125 x 150mm VHV ogee eaves gutters	m	61		R
13.17		Extra over eaves gutter for stopped end	No	4		R
13.18		Extra over eaves gutter for outlet for 100 x 75mm pipe	No	12		R
13.19		100 x 75mm Rainwater pipes	m	107		R
13.2		Extra over 100 x 75mm rainwater pipe for shoe	No	12		R
13.21		Extra over 100 x 75mm rainwater pipe for eaves offset 500mm projection	No	12		R
13.22		75mm Diameter rainwater pipes	m	35		R
13.23		Extra over 75mm diameter rainwater pipe for bend	No	6		R
13.24		Extra over 75mm diameter rainwater pipe for shoe	No	2		R
		<b>SANITARY FITTINGS</b>				
		Work Group No 148 for Haylett formula purposes				
		<u>"Vaal"</u>				
13.25		455 x 290mm "Bantam 7030" or similar approved single hole cloakroom basin	No	1		R
13.26		"Orchid 439100" top inlet wall hung wc pan with double flap "Jazz Thermoset 8531Z0" seat and "8082Z0" floor bracket (flushing valve elsewhere)	No	1		R
Total Carried Forward						R

## BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		<b>WASTE UNIONS ETC</b>				
		<u>"Cobra Watertech"</u>				
13.27		32mm "301" Basin waste union	No	1		R
		<b>TRAPS ETC</b>				
		<u>"Cobra Watertech"</u>				
13.28		32mm "345/50" CP bottle trap	No	1		R
		<b>TAPS, VALVES, ETC</b>				
		<u>"Cobra Watertech"</u>				
13.29		15mm "Ball-o-stop" valve	No	1		R
13.3		15mm Cobra "Star" pillar tap 111-15	No	1		R
13.31		20mm 121RB stopcock	No	1		R
13.32		FJ2.210CP "Flushmaster Junior" toilet flush valve	No	1		R
		<b>SANITARY PLUMBING</b>				
		<u>uPVC pipes</u>				
13.33		50mm Pipes	m	2		R
13.34		110mm Pipes	m	8		R
		<u>Extra over uPVC pipes for fittings</u>				
13.35		50mm BSP adaptor	No	1		R
13.36		50mm Bend	No	1		R
13.37		50mm IE bend	No	1		R
13.38		110mm Reducer	No	1		R
13.39		110mm Bend	No	2		R
13.4		110mm IE junction	No	2		R
13.41		110mm Pan connector	No	1		R
13.42		110mm "GI Two-way" vent valve	No	1		R
		<u>Sundries</u>				
13.43		Testing waste pipe system	Sum	1		R
Total Carried Forward						R

**BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		<b>WATER SUPPLIES</b>				
		Note: Pipes described as "chased" shall include for chasing into brick walls, wrapping with densyl tape or similar expansion protection, and patching with mesh scrim				
		<u>Class II copper pipes</u>				
13.44		15mm Pipes chased into brick walls	m	8		R
13.45		20mm Pipes chased into brick walls	m	8		R
13.46		20mm Pipes laid in and including trenches	m	5		R
		<u>Extra over class II copper pipes for brass compression fittings</u>				
13.47		15mm Fittings	No	8		R
13.48		20mm Fittings	No	8		R
		<u>Service pipes</u>				
13.49		15mm Braided stainless service pipe not exceeding 400mm long including connections	No	1		R
		<u>Sundries</u>				
13.5		Testing water pipe system	Sum	1		R
		<b>FIRE APPLIANCES ETC</b>				
		<u>"Chubb"</u>				
13.51		9kg Foam fire extinguisher	No	2		R
13.52		4,5kg Dry carbon powder fire extinguisher	No	9		R
Total Carried Forward To Summary: Section 13						R

## BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 14</b>  <b>PAINTWORK</b>  For preambles see "Model Preambles for Trades 2008" as published by The Association of South African Quantity Surveyors  These Bills of Quantities are prepared in accordance with the Standard System of Measuring Building Work 6th edition (Rev2 - 2013) as published by The Association of South African Quantity Surveyors.  Note: This document is based on preliminary Engineers Drawings: 5495-ST-A-02 to 13 Rev A5495-ST-CO-01 to 16 Rev A5495 -ST-SS-01 to 02 Rev AEngineer's sketches, project specifications by engineer and query/assumption lists, being the state of all information available as at 14 June 2021  Note: Unless otherwise stated herein, all items in this Bill shall be deemed to fall into Work Group No 152 for Haylett formula purposes  <b>PAINTWORK ETC TO NEW WORK</b>  <b>ON FLOATED PLASTER OR CONCRETE</b>  <u>Prepare, one universal undercoat and and two coats Plascon acrylic PVA</u>  14.1 On ceilings m <sup>2</sup> 2 R  <u>Prepare, prime with Plaster Primer and two coats Plascon "Double Velvet"</u>  14.2 On internal walls m <sup>2</sup> 103 R  <b>ON METAL</b>  <u>One coat universal undercoat and two coats "Plascon" non-drip enamel on galvanised steel</u>  14.3 On door frames m <sup>2</sup> 17 R 14.4 On transformer room doors and frames m <sup>2</sup> 10 R  <u>Two coats calcium plumbate chromate primer, one coat universal undercoat and two coats gloss enamel structural paint on galvanised steel</u>  14.5 On members of roof trusses m <sup>2</sup> 213 R 14.6 On members of roof truss bracing m <sup>2</sup> 136 R 14.7 On lipped channel purlins m <sup>2</sup> 231 R 14.8 On I-section girders m <sup>2</sup> 79 R  <b>ON WOOD</b>  <u>Two coats "Plascon" clear polyurethane varnish</u>  14.9 On doors m <sup>2</sup> 35 R  <u>One coat wood primer, one undercoat and two coats alkyd enamel paint</u>  14.10 On doors m <sup>2</sup> 4 R				
Total Carried Forward To Summary: Section 14						R

## BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b>SECTION 15</b>				
		<b>PROVISIONAL SUMS</b>				
		<b>SUPPLEMENTARY PREAMBLES</b>				
		All provisional sums cover supply of material and equipment and installation. Provisional sums are nett and do not include builder's discount (excluding settlement discount) and Value-Added Tax but the Tenderer may allow under "Profit" items any profit he considers necessary				
		<b>JOINERY FITTINGS</b>				
15.7		Post-formed desk top installation complete	Sum	1	R 2 500.00	R 2 500.00
15.8		Allow for profit if required	%	R 2 500.00		R
15.9		Allow for attendance if required	Sum	1		R
		<b>GALVANISED STEEL CATWALK, CATLADDERS, PLATFORMS, ETC.</b>				
15.1		Provide for supply and installation of catwalk banded gratings, platforms including support steelwork below, catladders, hand-railing, balustrades, stairs. etc installation, complete	Sum	1	R 560 000.00	R 560 000.00
15.11		Allow for profit if required	%	R 560 000.00		R
15.12		Allow for attendance if required	Sum	1		R
Total Carried Forward To Summary: Section 15						R

## BILL 2 BOQ 4: NEW SLUDGE DEWATERING BUILDING

SUMMARY OF SECTIONS					
SECTION	DESCRIPTION				AMOUNT R
1	PRELIMINARIES				R
2	EARTHWORKS				R
3	MASONRY				R
4	WATERPROOFING				R
5	ROOF COVERINGS				R
6	CARPENTRY AND JOINERY				R
7	CEILINGS, PARTITIONS AND ACCESS FLOORING				R
8	IRONMONGERY				R
9	STRUCTURAL STEEL				R
10	METALWORK				R
11	PLASTERING				R
12	TILING				R
13	PLUMBING AND DRAINAGE				R
14	PAINTWORK				R
15	PROVISIONAL SUMS				R
Total Carried Forward To Summary Of Bills					R



## BILL 3 BOQ 1: PRELIMINARY AND GENERAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>1</b>		<b>SCHEDULE NO. 1</b> <b>General Requirements and Conditions</b>				
1.1		<i>Allow for all costs and expenses in connection with the following:-</i> <u>Fixed Charged Items</u>				
1.1.1	4.2	Providing Performance Security (Demand Guarantee under URDG 758).	Sum	1		R
1.1.2	19	Providing Insurances including professional indemnity	Sum	1		R
1.1.3	14.2	Providing advance payment guarantee's as per the contract document.	Sum	1		R
1.1.4	13.7.1	Providing for the cost of forward cover as per the requirements of C1.2 Contract Data	Sum	1		R
1.1.5	5	Design of the Works and submission of Contractor's Documents	Sum	1		R
1.1.6		Establishment on site (M&E) including setting up of office space, storage space, ablution/canteen facilities and any another amenities deemed fit by the Contractor. Item to include costs associated with vacating the Site at the end of the contract	Sum	1		R
1.1.7		Chairing and minuting a HAZOP	Sum	1		R
1.1.8		Site security including any fencing	Sum	1		R
1.1.9	T1.2	General expenses incurred in complying with the requirements of T1.2 Tender Data, not included above.	Sum	1		R
1.1.10	C1.2	General expenses incurred in complying with the requirements of C1.2 Contract Data, not included above.	Sum	1		R
1.1.11		All costs associated with the design, procurement, erection and maintenance of a project signboard at the entrance to the works, details as to be specified by the Engineer	Sum	1		R
1.1.12		Other General expenses incurred in complying with the requirements of the Scope of Work not included above (Specify):-				
1.1.12.1		1) .....	Sum	1		R
1.1.12.2		2) .....	Sum	1		R
1.1.12.3		3) .....	Sum	1		R
1.2		<u>Time Related Items</u>				
1.2.1	4.2	Providing Performance Security (Demand Guarantee under URDG 758).	Sum	1		R
1.2.2	19	Providing Insurances including professional indemnity	Sum	1		R
1.2.3	14.2	Providing advance payment guarantee's as per the contract document.	Sum	1		R
1.2.4		Establishment on site (M&E) including setting up of office space, storage space, ablution/canteen facilities and any another amenities deemed fit by the Contractor. Item to include costs associated with vacating the Site at the end of the contract	Sum	1		R
1.2.5		Site security including any fencing	Sum	1		R
Total Carried Forward						R

## BILL 3 BOQ 1: GENERAL REQUIREMENTS AND CONDITIONS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.2.6	T1.2	General expenses incurred in complying with the requirements of T1.2 Tender Data, not included above.	Sum	1		R
1.2.7	C1.2	General expenses incurred in complying with the requirements of C1.2 Contract Data, not included above.	Sum	1		R
1.2.8		Other General expenses incurred in complying with the requirements of the Scope of Work not included above (Specify):				
1.2.8.1		1) .....	Sum	1		R
1.2.8.2		2) .....	Sum	1		R
1.2.8.3		3) .....	Sum	1		R
Total Carried Forward To Summary Of Bills						R

## BILL 3 BOQ 2: COARSE AND FINE SCREENING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>2</b>		<b>SCHEDULE NO. 2 - INLET WORKS</b>  <b>COARSE AND FINE SCREENING</b>  <b>P&amp;ID Ref:</b> W1859-45003  <i>Allow for all costs and expenses in connection with the design, manufacture, quality management, painting, testing, supply, delivery, offloading and storage of the following materials and equipment, including quality assurance, setting out of the works and checking work carried out by others:-</i>				
<b>2.1</b>		<b><u>Screens</u></b>  Bar screen rack with 25 mm bar spacing (MSR01A/B) complete with frame, sole plate, automatic rake mechanism, motor operating on variable speed drive (VSD), gearbox, scraper mechanism and discharge chute all contained within an enclosure				
2.1.1	M5	Bar screen rack with 25 mm bar spacing (MSR01A/B) complete with frame, sole plate, automatic rake mechanism, motor operating on variable speed drive (VSD), gearbox, scraper mechanism and discharge chute all contained within an enclosure	No.	2		R
2.1.2	M5	Bar screen rack with 6 mm bar spacing (MSR02A/B) complete with frame, sole plate, automatic rake mechanism, motor operating on variable speed drive (VSD), gearbox, scraper mechanism and discharge chute all contained within an enclosure	No.	2		R
2.1.3	M5	Bar screen with 25 mm bar spacing (MSR04) complete with manual rake, lifting device, cable and winch system, supports and fasteners	No.	1		R
2.1.4	M5	<b><u>Piping</u></b>  2nd class water supply piping, fittings, isolation and pressure reducing valves, supports and fasteners from the 2nd class water bulk supply manifold to each point of the hydraulic launder and hose connection points	Sum	1		R
	M5	DN65, butterfly valve with motorized actuator (XV01, XV37, XV38)	No.	3		R
2.1.5	M11	<b><u>Hydraulic Launderers</u></b>  Hydraulic launder conveyor (HLC01) network, fittings, supports and fasteners, and outlet chute for conveying coarse and fine screenings from automated screens to each washer/compactor	Sum	1		R
2.1.6	M5.8	<b><u>Penstocks</u></b>  Rising spindle penstock complete with gate, handwheel, shaft, seals, supports and fasteners at the inlet to the 25 mm coarse screens	No.	3		R
2.1.7	M5.8	Rising spindle penstock complete with gate, handwheel, shaft, seals, supports and fasteners at the outlet of the 6 mm fine screens	No.	3		R
Total Carried Forward						R

## BILL 3 BOQ 2: COARSE AND FINE SCREENING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
<b>2.2</b>		<b><u>Washer/Compactors</u></b>				
2.2.1	M6	Washer/compactor (WHC01/02) hopper body with screenings washing system complete with agitator, motor, gearbox, shaft, supports and fasteners	No.	2		R
2.2.2	M6	Washer/compactor (WHC01/02) screw press body complete with screw, motor, gearbox, shaft, outlet chute, supports and fasteners	No.	2		R
		<b><u>Piping</u></b>				
2.2.3	M6	2nd class water supply piping, fittings, isolation and pressure reducing valves, supports and fasteners from the tie-in to the 2nd class water bulk supply manifold to each washer/compactor body, screw, and hose connection points	Sum	1		R
2.2.4	M6	Overflow and drain water piping, fittings, isolation valves, supports and fasteners from each washer/compactor to upstream of the screens	Sum	1		R
2.2.5	M6	DN300, knifegate valve with motorized actuator (XV02, XV03)	No.	2		R
2.2.6	M6	DN25, diaphragm valve with solenoid actuator (XV04, XV05)	No.	2		R
2.2.7	M6	DN100, ball valve with motorized actuator (XV06, XV07)	No.	2		R
2.2.8	M6	DN25, diaphragm valve with solenoid actuator (XV35, XV36)	No.	2		R
2.2.9	M10	Skip Dolly (DO01A/B) suitable for three skips complete with gear motor and cable drum system	Sum	1		R
2.3		All other plant and equipment items not included above which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify): -				
2.3.1		1).....	Sum	1		R
2.3.2		2).....	Sum	1		R
2.3.3		3).....	Sum	1		R
2.3.4		4).....	Sum	1		R
2.40		<i>Allow for all costs and expenses, including double handling (if stored) and final painting (if applicable), in connection with the Site installation, testing, relocation, commissioning and upholding during the Trial Operation Period and Defects Notification Period of the following :-</i>				
2.4.1		All Screening equipment and ancillaries as described under items 2.1 and 2.3	Sum	1		R
2.4.2		All Washer/Compactors equipment and ancillaries as described in under items 2.2 and 2.3	Sum	1		R
2.4.3		Carrying out and documenting the results of performance tests on the installed equipment	Sum	1		R
Total Carried Forward						R

**BILL 3 BOQ 2: COARSE AND FINE SCREENING**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
2.5		All other site installation and general items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-				
2.5.1		1).....	Sum	1		R
2.5.2		2).....	Sum	1		R
2.5.3		3).....	Sum	1		R
2.5.4		4).....	Sum	1		R
Total Carried Forward To Summary Of Bills						R

## BILL 3 BOQ 3: DEGRITTING SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>3</b>		<b><u>SCHEDULE NO. 3 - INLET WORKS</u></b>  <b>DEGRITTING SYSTEM</b>  <b><u>P&amp;ID Ref:</u></b> W1859-45004  <i>Allow for all costs and expenses in connection with the design, manufacture, quality management, painting, testing, supply, delivery, offloading and storage of the following materials and equipment, including quality assurance, setting out of the works and checking work carried out by others:-</i>				
<b>3.1</b>		<b><u>Induced Vortex Grit Traps (GTR01/GTR02)</u></b>				
3.1.1	M8	Fixed speed stirrer complete with motor, gearbox, shaft, paddles, supports and fasteners	No.	2		R
3.1.2	M8	Upper chamber floor plate complete with supports and fasteners	No.	2		R
3.1.3	M8	Self priming centrifugal pump (abrasion resistant) complete with motor, shaft, impeller, baseplate, supports and fasteners (PMP05A/B)	No.	2		R
		<b><u>Piping</u></b>				
3.1.4	M8	2nd class water supply piping, fittings, isolation and pressure reducing valves, supports and fasteners from the bulk supply manifold to each grit trap and grit slurry line respectively	Sum	1		R
3.1.5	M8	Grit slurry piping, fittings, isolation valves, supports and fasteners from each induced vortex grit trap to each grit classifier inlet flange	Sum	1		R
3.1.6	M8	DN50, butterfly valve with motorized actuator (XV19, XV20)	No.	2		R
3.1.7	M8	DN25, butterfly valve with solenoid actuator (XV21, XV22)	No.	2		R
3.1.8	M8	DN100, knifegate valve with motorized actuator (XV23, XV24)	No.	2		R
		<b><u>Penstocks</u></b>				
3.1.9	M8.5	Rising spindle stem penstock complete with gate, handwheel, shaft, seals, supports and fasteners at the inlet to the grit traps	No.	3		R
<b>3.2</b>		<b><u>Grit Classifiers (GWR01/GWR02)</u></b>				
3.2.1	M9	Grit classifier body with grit washing system complete with stirrer, motor, gearbox, shaft, supports and fasteners	No.	2		R
Total Carried Forward						R

## BILL 3 BOQ 3: DEGRITTING SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
3.2.2	M9	Grit classifier inclined grit removal screw conveyor complete with enclosed trough, motor, gearbox, shaft, discharge chute, supports and fasteners	No.	2		R
		<u>Piping</u>				
3.2.3	M9	Overflow and organics discharge piping, fittings, isolation valves, supports and fasteners from each grit classifier to the grit traps' combined inlet channel. Include drain valves, piping fittings, supports and fasteners from each grit classifier to drain point	Sum	1		R
3.2.4	M9	2nd class water supply piping, fittings, isolation and check valves, supports and fasteners from the degritting system 2nd class water supply manifold to each grit classifier body, screw conveyor and hose connection points	Sum	1		R
3.2.5	M9	DN100, knife gate valve with motorized actuator (XV25, XV26)	No.	2		R
3.2.6	M9	DN100, knife gate valve with motorized actuator (XV29, XV30)	No.	2		R
3.3	M10	Skip Dolly (DO02A/B) suitable for three skips complete with gear motor and cable drum system	Sum	1		R
3.4		All other plant and equipment items not included above which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify): -				
3.4.1		1).....	Sum	1		R
3.4.2		2).....	Sum	1		R
3.4.3		3).....	Sum	1		R
3.4.4		4).....	Sum	1		R
3.5		<i>Allow for all costs and expenses, including double handling (if stored) and final painting (if applicable), in connection with the Site installation, testing, relocation, commissioning and upholding during the Trial Operation Period and Defects Notification Period of the following :-</i>				
3.5.1		All Induced Vortex Grit Traps equipment and ancillaries as described under items 3.1 and 3.4	Sum	1		R
3.5.2		All Grit Classifiers equipment and ancillaries as described in under items 3.2 and 3.4	Sum	1		R
3.5.3		All Combined Grit/Screenings Conveyors equipment and ancillaries as described in under items 3.3 and 3.4	Sum	1		R
3.5.4		Carrying out and documenting the results of performance tests on the installed equipment	Sum	1		R
Total Carried Forward						R

**BILL 3 BOQ 3: DEGRITTING SYSTEM**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
3.6		All other site installation and general items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-				
3.6.1		1).....	Sum	1		R
3.6.2		2).....	Sum	1		R
3.6.3		3).....	Sum	1		R
3.6.4		4).....	Sum	1		R
Total Carried Forward To Summary Of Bills						R



## BILL 3 BOQ 4: PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>4</b>		<b>SCHEDULE NO. 4 - INLET WORKS</b>  <b>REACTOR FEED PUMP STATION</b>  <b>P&amp;ID Ref:</b> W1859-45005  <i>Allow for all costs and expenses in connection with the design, manufacture, quality management, painting, testing, supply, delivery, offloading and storage of the following materials and equipment, including quality assurance, setting out of the works and checking work carried out by others:-</i>				
<b>4.1</b>		<b><u>Dry Well Sump Pump</u></b>				
4.1.1	M12	Immersible sump pump (PMP04) complete with motor, supports and fasteners	No.	1		R
		<u>Piping</u>				
4.1.2	M12	Screened wastewater piping, fittings, isolation and check valves, supports and fasteners from the dry well sump to the screened wastewater sump	Sum	1		R
		<u>Penstocks</u>				
4.1.3	M5.8	Rising spindle stem penstock complete with gate, handwheel, shaft, seals, supports and fasteners at the inlet to the screened wastewater sump	No.	3		R
<b>4.2</b>		<b><u>Bioreactor Feed Pumps</u></b>				
4.2.1	M12	Centrifugal pump (vertical dry pit installation) operating on variable speed drive (VSD) complete with motor, baseplate, shaft, impeller, supports, fasteners and intergral hardwired monitoring of bearing temperature, motor housing leak detection, thermal winding and mechanical seal integrity (PMP01A/B/C/D)	No.	4		R
		<u>Piping</u>				
4.2.2	M12	Screened wastewater piping, fittings, isolation valves, supports and fasteners from the screened wastewater sump to the tie-in at the existing rising main supplying the existing bioreactors. Refer to layout drawing W1859-85002. This must include the suction piping, valves and blank flanges for the future pumps as indicated on P&ID W1859-45005	Sum	1		R
4.2.3	M12	Rising main drain piping, fittings, isolation valves, supports and fasteners from the rising main back to the screened wastewater sump	Sum	1		R
4.2.4	M12	2nd class water piping fittings, isolation valves, nozzles, supports and fasteners from the main 2nd class water supply header to the bottom of the Screened Wastewater Sump	Sum	1		R
Total Carried Forward						R

## BILL 3 BOQ 4: PUMP STATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
4.2.5	M12	DN25, diaphragm valve with solenoid actuator (XV31, XV32, XV33, XV34)	No.	4		R
		<u>Lifting Gear</u>				
4.2.6	M12	Bioreactor feed pump gantry and lifting gear	Sum	1		R
4.3		All other plant and equipment items not included above which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify): -				
4.3.1		1).....	Sum	1		R
4.3.2		2).....	Sum	1		R
4.3.3		3).....	Sum	1		R
4.3.4		4).....	Sum	1		R
4.40		<i>Allow for all costs and expenses, including double handling (if stored) and final painting (if applicable), in connection with the Site installation, testing, relocation, commissioning and upholding during the Trial Operation Period and Defects Notification Period of the following:-</i>				
4.4.1		All Dry Well Sump Pump equipment and ancillaries as described in under items 4.1 and 4.3	Sum	1		R
4.4.2		All Bioreactor Feed Pumps equipment and ancillaries as described in under items 4.2 and 4.3	Sum	1		R
4.4.3		Carrying out and documenting the results of performance tests on the installed equipment	Sum	1		R
4.5		All other site installation and general items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-				
4.5.1		1).....	Sum	1		R
4.5.2		2).....	Sum	1		R
4.5.3		3).....	Sum	1		R
4.5.4		4).....	Sum	1		R
Total Carried Forward To Summary Of Bills						R

## BILL 3 BOQ 5: DEWATERING FACILITY

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
5		<b>SCHEDULE NO. 5</b>  <b>DEWATERING FACILITY</b>  <b>P&amp;ID Ref:</b> W1859-45001 and W1859-45002  <i>Allow for all costs and expenses in connection with the design, manufacture, quality management, painting, testing, supply, delivery, offloading and storage of the following materials and equipment, including quality assurance, setting out of the works and checking work carried out by others:-</i>				
5.1		<b><u>WAS Transfer Pumps (PMP04A/B)</u></b>				
5.1.1	M13	Self priming centrifugal pump operating on variable speed drive (VSD) complete with motor, shaft, impeller, baseplate, cover plate, wear plate, supports and fasteners	No.	2		R
		<i>Piping</i>				
5.1.2	M13	WAS transfer and spillback piping, fittings, isolation and check valves, supports and fasteners from the existing WAS sump to the new inline macerator and heavy solids separator	Sum	1		R
5.1.3		Removal of existing valve on the inlet line of the supply to the WAS sump	Sum	1		R
5.1.4	M13	New WAS sump inlet knife gate valve with motorized actuator (XV33)	No.	1		R
5.2		<b><u>WAS Macerator (MAC01A/B)</u></b>				
5.2.1	M13	Inline macerator and heavy solids separator complete with motor operating on variable speed drive (VSD), gearbox, inlet and outlet flange connection, shaft, cutting screen, blades, baseplate, supports and fasteners. Supplied with control panel as a package unit.	No.	2		R
		<i>Spares</i>				
5.2.2	M13	Full set of knife blades for each macerator and heavy solids separator	No.	2		R
5.2.3	M13	Cutting screen	No.	1		R
		<i>Piping</i>				
5.2.2	M13	WAS transfer piping, fittings, isolation valves, supports and fasteners from the inline macerator and heavy solids separator to the centrifuge feed tank inlet	Sum	1		R
5.3		<b><u>Centrifuge Feed Tank Mixers (MIX01/02)</u></b>				
5.3.1	M14	Submersible mixer complete with motor, shaft, non clogging impeller, lifting davit, cable and winch system, baseplate, supports and fasteners	No.	2		R
Total Carried Forward						R

## BILL 3 BOQ 5: DEWATERING FACILITY

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
<b>5.4</b>		<b><u>Centrifuge Feed Pumps (PMP01A/B)</u></b>				
5.4.1	M15	Progressive cavity pump operating on variable speed drive (VSD) complete with motor, drive shaft, baseplate, supports and fasteners	No.	2		R
		<u>Piping</u>				
5.4.2	M15	WAS feed piping, fittings, isolation, pressure safety and check valves, supports and fasteners from the centrifuge feed tank outlet to each centrifuge centrifuge unit	Sum	1		R
5.4.3	M15	DN100, knifegate valve with motorized actuator (XV28, XV29)	No.	2		R
5.4.4	M15	DN50, butterfly valve with motorized actuator (XV01, XV02, XV04, XV05)	No.	4		R
<b>5.5</b>		<b><u>Centrifuge Feed Tank (TNK01)</u></b>				
		<u>Piping</u>				
5.5.1	M14	WAS overflow and drain piping, fittings, isolation valves, supports and fasteners from the centrifuge feed tank to new underground drain lines back to the existing detritus tank	Sum	1		R
5.5.2	M14	2nd class water supply piping, fittings, isolation valves, supports and fasteners from the bulk supply manifold up to the the supply puddle flange on the centrifuge tank	Sum	1		R
5.5.3	M14	Steel cat ladders, platforms, handrailing, supports and fasteners around the centrifuge feed tank	Sum	1		R
<b>5.6</b>		<b><u>Centrifuges</u></b>				
5.6.1	M15	High efficiency horizontal decanter centrifuge (CEN01/CEN02) complete with feed pipe, cylindrical bowl, scroll conveyor, base frame, scroll and bowl drive systems supplied as a package unit, with local control panel and PLC	No.	2		R
5.6.2	M15	Discharge chute complete with compensator	No.	2		R
		<u>Accessories</u>				
5.6.3	M15	Initial fill of scroll conveyor drive and bearings lubricant	No.	2		R
5.6.4	M15	Spray can of touch up paint	No.	2		R
		<u>Piping</u>				
5.6.5	M15	Centrate discharge piping, fittings, supports and fasteners from each centrifuge feed end to the drain sump	Sum	1		R
5.6.6	M15	Sludge cake discharge piping fittings, isolation valves, supports and fasteners from each centrifuge to each centrifuge cake conveyor	Sum	1		R
Total Carried Forward						R

## BILL 3 BOQ 5: DEWATERING FACILITY

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
5.6.7	M15	2nd class water supply piping, fittings, isolation valves, pressure regulating devices, supports and fasteners from the bulk supply manifold up to the flushing points (feed line and cake chute) and poly dilution points of each centrifuge. Include all valves and connections to hose connection points	Sum	1		R
5.6.8	M15	DN600, knifgate valve with motorized actuator (XV03, XV06)	No.	2		R
5.6.9	M15	DN250, knifgate valve with motorized actuator (XV10, XV11, XV12, XV13)	No.	4		R
5.6.10	M15	DN50, knifgate valve with motorized actuator (XV14, XV15)	No.	2		R
5.6.11	M15	DN50, butterfly valve with motorized actuator (XV16, XV17)	No.	2		R
		<u>Lifting equipment</u>				
5.6.12	M15	Traveling gantry crane in centrifuge hall	Sum	1		R
<b>5.7</b>		<b><u>Poly Make Up Systems</u></b>				
5.7.1	M16	Powder polyelectrolyte make-up system (PMT01/02) complete with hopper, agitators, heated metering screw, screw motor, two-chamber mixing system, all supplied as a package unit with local control panel and PLC	No.	2		R
		<u>Piping</u>				
5.7.2	M16	Poly solution discharge piping, fittings, isolation valves, supports and fasteners from each polymer make-up system outlet to the common manifold supplying each poly dosing and lubrication pump	Sum	1		R
5.7.3	M16	Poly overflow and drain piping, fittings, isolation valves, supports and fasteners from each make-up/dosing tank to contained floor drains	Sum	1		R
5.7.4	M16	Potable water piping, fittings, isolation valves, pressure reducing valve, supports and fasteners from the main potable water supply point to the inlet of each polymer make up system	Sum	1		R
5.7.5	M16	Poly make up system access staircase, platforms, handrailing and fasteners	Sum	1		R
<b>5.8</b>		<b><u>Poly Dosing System</u></b>				
5.8.1	M15	Progressive cavity pump (PMP02A/B) operating on variable speed drive (VSD) complete with motor, drive shaft, baseplate, supports and fasteners	No.	2		R
		<u>Piping</u>				
5.8.2	M15, M16	Poly dosing piping, fittings, isolation, pressure safety and check valves, supports and fasteners from the polymer make-up system outlet to the poly injection point of each centrifuge unit	Sum	1		R
Total Carried Forward						R

## BILL 3 BOQ 5: DEWATERING FACILITY

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
5.8.3	M15	DN25, Diaphragm valve with modulating motorized actuator (FCV01, FCV02)	No.	2		R
5.8.4	M15	Inline static mixer (MIX03, MIX04)	No.	2		R
5.8.5	M15	2nd class water supply piping, fittings, isolation valves, pressure relief devices, supports and fasteners from the bulk supply manifold up to the flushing point of each of the poly dosing pumps	Sum	1		R
5.9		<b><u>Poly Lubrication System</u></b>				
5.9.1	M17	Progressive cavity pump (PMP06A/B) operating on variable speed drive (VSD) complete with motor, drive shaft, baseplate, supports and fasteners	No.	2		R
		<b><u>Piping</u></b>				
5.9.2	M16, M17	Poly lubrication piping, fittings, isolation, pressure safety and check valves, supports and fasteners from the polymer make-up system outlet to the poly lubrication injection point at the discharge of each cake pump	Sum	1		R
5.9.3	M17	2nd class water supply piping, fittings, isolation valves, pressure regulating devices, supports and fasteners from the bulk supply manifold up to the flushing point of each of the poly lubrication pumps	Sum	1		R
5.9.4	M17	DN20, diaphragm valve with solenoid actuator (XV26, XV27)	No.	2		R
5.10		<b><u>Centrifuge Cake Conveyors</u></b>				
5.10.1	M17	Horizontal centreless spiral screw conveyor (SCC01A/B) complete with motor, gearbox, enclosed trough, discharge chute, supports and fasteners	No.	2		R
		<b><u>Spares</u></b>				
5.10.2	M17	Trough liner	No.	2		R
5.10.3	M17	Complete set screw bearings	No.	2		R
5.11		All other plant and equipment items not included above which				
5.11.1		Submersible domestic sewage sump pump	Sum	1		R
5.11.2		1).....	Sum	1		R
5.11.3		2).....	Sum	1		R
5.11.4		3).....	Sum	1		R
Total Carried Forward						R

## BILL 3 BOQ 5: DEWATERING FACILITY

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
5.12		<i>Allow for all costs and expenses, including double handling (if stored) and final painting (if applicable), in connection with the Site installation, testing, relocation, commissioning and upholding during the Trial Operation Period and Defects Notification Period of the following :-</i>				
5.12.1		All WAS Transfer Pumps equipment and ancillaries as described under items 5.1 and 5.11	Sum	1		R
5.12.2		All Macerator and Heavy Solids Separators equipment and ancillaries as described under items 5.2 and 5.11	Sum	1		R
5.12.3		All Centrifuge Feed Tank Mixers equipment and ancillaries as described under items 5.3 and 5.11	Sum	1		R
5.12.4		All Centrifuge Feed Pumps equipment and ancillaries as described under items 5.4 and 5.11	Sum	1		R
5.12.5		All Centrifuge Feed Tank equipment and ancillaries as described under items 5.5 and 5.11	Sum	1		R
5.12.6		All Centrifuge equipment and ancillaries as described under items 5.6 and 5.11	Sum	1		R
5.12.7		All Poly Make-up Systems equipment and ancillaries as described under items 5.7 and 5.11	Sum	1		R
5.12.8		All Poly Dosing Pumps equipment and ancillaries as described under items 5.8 and 5.11	Sum	1		R
5.12.9		All Poly Lubrication Pump equipment and ancillaries as described under items 5.9 and 5.11				R
5.12.10		All Centrifuge Cake Conveyors equipment and ancillaries as described under items 5.10 and 5.11	Sum	1		R
5.12.11		Carrying out and documenting the results of performance tests on the installed equipment	Sum	1		R
5.13		All other site installation and general items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-				
5.13.1		1).....	Sum	1		R
5.13.2		2).....	Sum	1		R
5.13.3		3).....	Sum	1		R
5.13.4		4).....	Sum	1		R
Total Carried Forward To Summary Of Bills						R

## BILL 3 BOQ 6: CAKE TRANSFER AND STORAGE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>6</b>		<b>SCHEDULE NO. 6</b>  <b>SLUDGE CAKE TRANSFER AND STORAGE</b>  <b>P&amp;ID Ref:</b> W1859-45002  <i>Allow for all costs and expenses in connection with the design, manufacture, quality management, painting, testing, supply, delivery, offloading and storage of the following materials and equipment, including quality assurance, setting out of the works and checking work carried out by others:-</i>				
<b>6.1</b>		<b><u>Cake Hopper</u></b>  Common hopper (HP01) complete with manual diverting flap, motorized bridge breaker, supports and fasteners, two-compartment system each flanged directly onto each cake pump feed screw	Sum	1		R
6.1.1	M17					
		<b><u>Piping</u></b>  2nd class water supply piping, fittings, isolation valves, pressure regulating devices, supports and fasteners from the bulk supply manifold up to the flushing point of each compartment of the cake hopper. Include all valves and connections to hose connection points	Sum	1		R
6.1.2	M17					
<b>6.2</b>		<b><u>Cake Pumps</u></b>  Progressive cavity cake pump (PMP03A/B) operating on variable speed drive (VSD) complete with motor, gearbox, feed screw, baseplate, supports and fasteners	No.	2		R
6.2.1	M17					
		<b><u>Piping</u></b>  Cake discharge piping, fittings, isolation valves, pressure safety devices, supports and fasteners from each cake pump to the inlet of each sludge cake silo. Including water drain/dumping piping	Sum	1		R
6.2.2	M17					
<b>6.3</b>		<b><u>Cake Silos</u></b>  2nd class water supply piping, fittings, isolation, pressure regulating devices, supports and fasteners from the bulk supply manifold up to each cake silo	Sum	1		R
6.3.1	M18					
		DN350, Knifegate valve with modulating motorized actuator (FCV04, FCV05)	No.	2		R
6.3.2	M18					
		DN250, Knifegate valve with motorized actuator (XV10, XV11, XV12, XV13)	No.	4		R
6.3.3	M18					
		DN50, Knifegate valve with motorized actuator (XV14, XV15)	No.	2		R
6.3.4	M18					
Total Carried Forward						R



## BILL 3 BOQ 6: CAKE TRANSFER AND STORAGE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
6.3.5	M18	DN50, butterfly valves with motorized actuator (XV16, XV17)	No.	2		R
6.4		All other plant and equipment items not included above which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify): -				
6.4.1		1).....	Sum	1		R
6.4.2		2).....	Sum	1		R
6.4.3		3).....	Sum	1		R
6.4.4		4).....	Sum	1		R
6.5		<i>Allow for all costs and expenses, including double handling (if stored) and final painting (if applicable), in connection with the Site installation, testing, relocation, commissioning and upholding during the Trial Operation Period and Defects Notification Period of the following :-</i>				
6.5.1		All Cake Hopper equipment and ancillaries as described under items 6.1 and 6.4	Sum	1		R
6.5.2		All Cake Pumps equipment and ancillaries as described under items 6.2 and 6.4	Sum	1		R
6.5.3		All cake silo equipment and ancillaries as described under items 6.3 and 6.4	Sum	1		R
6.5.4		Carrying out and documenting the results of performance tests on the installed equipment	Sum	1		R
6.6		All other site installation and general items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-				
6.6.1		1).....	Sum	1		R
6.6.2		2).....	Sum	1		R
6.6.3		3).....	Sum	1		R
6.6.4		4).....	Sum	1		R
Total Carried Forward To Summary Of Bills						R

## BILL 3 BOQ 7: BIOLOGICAL REACTORS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
7		<b>SCHEDULE NO. 7</b>  <b>BIOLOGICAL REACTORS</b>  <b>P&amp;ID Ref:</b> W1859-45006  <i>Allow for all costs and expenses in connection with the design, manufacture, quality management, painting, testing, supply, delivery, offloading and storage of the following materials and equipment, including quality assurance, setting out of the works and checking work carried out by others:-</i>				
7.1		<b><u>Surface Aerators</u></b>				
7.1.1	M20	11 kW low speed turbine surface aerator operating on variable speed drive (VSD) complete with motor, gearbox, impeller, shaft, draft tube, supports and anchors mounted to the existing concrete platform of the re-aeration zone of bioreactor 1 to 6	No.	6		R
7.1.2	M20	37 kW low speed turbine surface aerator operating on variable speed drive (VSD) complete with motor, gearbox, impeller, shaft, draft tube, supports and anchors mounted to the existing concrete platform of aerobic zone of bioreactor 1 and 3 to 6	No.	20		R
		<b><u>Spares</u></b>				
7.1.3	M20	Complete set of mechanical seals (11 kW)	No.	1		R
7.1.4	M20	Complete set of mechanical seals (37 kW)	No.	3		R
7.1.5	M20	Complete set of bearing seals (11 kW)	No.	1		R
7.1.6	M20	Complete set of bearing seals (37 kW)	No.	3		R
7.2		<b><u>DO Probe Accessories</u></b>				
7.2.1	M20	DO probe mounting arms (12 + 1 spare)	No.	13		R
		<i>Allow for all costs and expenses in connection with the preparation of the site for the design, supply and installaion of the new equipment, and transport of exisiting equipment to designated store on site.:-</i>				
7.3		<b><u>Surface Aerators</u></b>				
7.3.1	M20	Removal of the 11 kW low speed turbine surface aerator complete with cabling and switchgear mounted to the existing concrete platform of the re-aeration zone of bioreactor 1 to 6	No.	6		R
7.3.2	M20	Removal of the 37 kW low speed turbine surface aerator complete with cabling and switchgear mounted to the existing concrete platform of the aerobic zone of bioreactor 1 and 3 to 6	No.	10		R
7.3.3	M20	Removal of the 30 kW low speed turbine surface aerator complete with cabling and switchgear mounted to the existing concrete platform of the aerobic zone of bioreactor 1 and 3 to 6	No.	10		R
Total Carried Forward						R

## BILL 3 BOQ 7: BIOLOGICAL REACTORS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
<b>7.4</b>		<b><u>Anoxic Mixers</u></b>				
7.4.1	M21	Removal of the submersible mixers, guiderails and supports from the anoxic zone of bioreactor 1 and 3 to 6	No.	10		R
7.5	M21	Conduct a detailed dimensional survey of existing reactor civil infrastructure before finalising the design of the aerator and mixers	Sum	1		R
7.6	M21	Minor civil repair work (make good) to concrete structures around the supports of the surface aerators and mixers as required.	Sum	1		R
7.7		All other plant and equipment items not included above which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-				
7.7.1		1).....	Sum	1		R
7.7.2		2).....	Sum	1		R
7.7.3		3).....	Sum	1		R
7.7.4		4).....	Sum	1		R
7.8		<i>Allow for all costs and expenses, including double handling (if stored) and final painting (if applicable), in connection with the Site installation, testing, relocation, commissioning and upholding during the Trial Operation Period and Defects Notification Period of the following :-</i>				
7.8.1		All surface aerators equipment and ancillaries as described under items 7.1 and 7.7	Sum	1		R
7.8.2		All DO probe accessories as described under items 7.2 and 7.7	Sum	1		R
7.8.3		Submersible mixer (free issue) complete with motor, gearbox, impeller, lifting davit arm, guiderail, supports and fasteners in the primary anoxic zone of bioreactor 1 and 3 to 6	Sum	1		R
7.8.4		Submersible mixer (free issue) complete with motor, gearbox, impeller, lifting davit arm, guiderail, supports and fasteners in the secondary anoxic zone of bioreactor 1 and 3 to 6	Sum	1		R
7.8.5		Carrying out and documenting the results of performance tests on the installed equipment	Sum	1		R
Total Carried Forward						R

**BILL 3 BOQ 7: BIOLOGICAL REACTORS**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
7.9		All other site installation and general items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-				
7.9.1		1).....	Sum	1		R
7.9.2		2).....	Sum	1		R
7.9.3		3).....	Sum	1		R
7.9.4		4).....	Sum	1		R
Total Carried Forward To Summary Of Bills						R

## BILL 3 BOQ 8: HVAC AND UTILITIES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
8		<b>SCHEDULE NO. 8</b> <b>HVAC AND UTILITIES</b> <i>Allow for all costs and expenses in connection with the design, manufacture, quality management, painting, testing, supply, delivery, offloading and storage of the following materials and equipment, including quality assurance, setting out of the works and checking work carried out by others:-</i>  <u><b>Dewatering Building HVAC</b></u>  8.1 M19 Air conditioning wall mounted split unit for the office Sum 1 R  <u><b>Inlet Works HVAC</b></u>  8.2 M19 Air conditioning wall mounted split unit for the office Sum 1 R  8.3 All spares and tools necessary to meet the Scope of Work and/or required for the proper, safe and effective operation of the plant (Specify):- 8.3.1 1)..... Sum 1 R 8.3.2 2)..... Sum 1 R 8.3.3 3)..... Sum 1 R 8.3.4 4)..... Sum 1 R  8.4 All other plant and equipment items not included above which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify): - 8.4.1 1)..... Sum 1 R 8.4.2 2)..... Sum 1 R 8.4.3 3)..... Sum 1 R 8.4.4 4)..... Sum 1 R  8.5 <i>Allow for all costs and expenses, including double handling (if stored) and final painting (if applicable), in connection with the Site installation, testing, commissioning and upholding during the Trial Operation Period and Defects Notification Period of the following :-</i>  8.5.1 All office air conditioning equipment and ancillaries as described in the items under 8.1 and 8.2 Sum 1 R  8.5.2 Carrying out and documenting the results of performance tests on the installed equipment Sum 1 R				
Total Carried Forward						R

**BILL 3 BOQ 8: HVAC AND UTILITIES**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
8.6		All other plant and equipment items not included above which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify): -				
8.6.1		1).....	Sum	1		R
8.6.2		2).....	Sum	1		R
8.6.3		3).....	Sum	1		R
8.6.4		4).....	Sum	1		R
Total Carried Forward To Summary Of Bills						R

## BILL 3 BOQ 9: MECHANICAL SUNDRIES

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
9		<b><u>SCHEDULE NO. 9</u></b>  <b><u>SUNDRIES</u></b>  <i>Allow for all costs and expenses in connection with the following:-</i>				
9.1		Providing "as built" drawings	Sum	1		R
9.2		Providing 3 draft copies of the Installation, Operation and Maintenance Manual prior to commissioning of the Works	Sum	1		R
9.3		Providing 3 final hard copies & 1 soft copy (in Ebook format) of the Installation, Operation and Maintenance Manual prior to the issue of the Taking -Over Certificate.	Sum	1		R
9.4		Standard Operating Procedures, Signage and training manuals as stated in contract document and specifications	Sum	1		R
9.5	M23	Witnessing of Inspections, tests, FAT etc. of equipment by the employers representatives and engineering team representatives outside of the eThekweni Metropolitan Area but within the Republic of South Africa as specified in the particular specifications	Sum	1		R
9.6	M23	Witnessing of Inspections, tests, FAT etc. of equipment by the employers representatives and engineering team representatives outside of the eThekweni Metropolitan Area and outside Republic of South Africa as specified in the detailed specifications	Sum	1		R
9.7		Trial Operation Period obligations. Allow for all costs, including labour, chemicals, all consumables, spare parts and the like for running the operations 24/7 for 28 days as defined in the particular specification	Sum	1		R
9.8	M24	Operational and maintenance training of the Employer's staff as defined in the particular specification. (Training over multiple shifts for running the operations 24/7)	Sum	1		R
9.9	M26	Contractor's obligations to O&M during the defects notification period.	Provisional Sum		R 4 400 000.00	R 4 400 000.00
9.10		Sufficient provision to cover all costs associated with extending the manufacturer's warranty, for all equipment, until the end of the Defects Notification Period.	Sum	1		R
Total Carried Forward						R

**BILL 3 BOQ 9: MECHANICAL SUNDRIES**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		All other items required for the completion of the Contract as specified but not specifically mentioned above. Specify:-				
9.11		1).....	Sum	1		R
9.12		2).....	Sum	1		R
9.13		3).....	Sum	1		R
9.14		4).....	Sum	1		R
Total Carried Forward To Summary Of Bills						R



## BILL 3 BOQ 10: SECOND CLASS WATER

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
10.1		<b><u>SCHEDULE NO. 10</u></b>  <b><u>NEW SECOND CLASS WATER FILTER SYSTEM</u></b>  <b><u>Allow for all costs and expenses in connection with the design, manufacture, corrosion protection, testing, supply, delivery, offloading and storage of the following materials and equipment:-</u></b>				
10.1.1	M22	150mm NB self cleaning filter with 250micron diameter filtration	No.	2		R
10.1.2		Pressure vessel	No.	1		R
10.1.3	M22	Associated Pipework	Sum	1		R
10.1.4		Design & Drawings	Sum	1		R
10.1.5		Quality Management	Sum	1		R
10.1.6		All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant ( <u>Specify</u> ):-  <b><u>Allow for all costs and expenses in connection with the Site installation of the following:-</u></b>				R
10.1.7		Self-cleaning filter system	Sum	1		R
10.1.8		Pressure vessel	Sum	1		R
		<b><u>Allow for all costs and expenses in connection with checking, starting up, testing and commissioning of the following:-</u></b>				
10.1.9		Self-cleaning filter system	Sum	1		R
10.1.10		Pressure vessel	Sum	1		R
Total Carried Forward						R

## BILL 3 BOQ 10: SECOND CLASS WATER

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
10.2		<b><u>SCHEDULE NO. 10.2</u></b>  <b><u>FLOWMETER AND MISCELLANEOUS ITEMS</u></b>  <b><u>Allow for all costs and expenses in connection with the design, manufacture, corrosion protection, testing, supply, delivery, offloading and storage of the following materials and equipment:-</u></b>				
10.2.1		Electromagnetic flowmeter DN 65mm	No.	1		R
10.2.2		Electromagnetic flowmeter DN 150mm	No.	1		R
10.2.3		Design & Drawings	Sum	1		R
10.2.4		Quality Management	Sum	1		R
10.2.5		All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-	Sum	1		R
		<b><u>Allow for all costs and expenses in connection with the Site installation of the following:-</u></b>				
10.2.6		Electromagnetic flowmeter DN 65mm	No.	1		R
10.2.7		Electromagnetic flowmeter DN 150mm	No.	1		R
		<b><u>Allow for all costs and expenses in connection with checking, starting up, testing and commissioning of the following:-</u></b>				
10.2.8		Electromagnetic flowmeter DN 65mm	No.	1		R
10.2.9		Electromagnetic flowmeter DN 150mm	No.	1		R
Total Carried Forward						R

## BILL 3 BOQ 10: SECOND CLASS WATER

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
10.3		<b><u>SCHEDULE NO. 10.3</u></b>  <b><u>VALVES</u></b>  <b><u>Allow for all costs and expenses in connection with the design, manufacture, corrosion protection, testing, supply, delivery, offloading and storage of the following materials and equipment:-</u></b>				
10.3.1		65mm DN 304 S/S Resilient Seal Gate valve flanged	No.	2		R
10.3.2		65mm DN Ball valve flanged	No.	2		R
10.3.3		65mm Swing check valve flanged	No.	1		R
10.3.4		150mm Swing check valve flanged	No.	6		R
10.3.5		PN16 Flanged Air release Valve	No.	4		R
10.3.6		150mm DN 304 S/S Resilient Seal Gate valve flanged	No.	15		R
10.3.7		All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant ( <u>Specify</u> ):-	Sum	1		R
10.3.8		Design & Drawings	Sum	1		R
10.3.9		Quality Management	Sum	1		R
		<b><u>Allow for all costs and expenses in connection with the Site installation of the following:-</u></b>				
10.3.10		65mm DN 304 S/S Resilient Seal Gate valve flanged	No.	2		R
10.3.11		65mm DN Ball valve flanged	No.	2		R
10.3.12		65mm Swing check valve flanged	No.	1		R
10.3.13		150mm Swing check valve flanged	No.	6		R
10.3.14		PN16 Flanged Air release Valve	No.	4		R
10.3.15		150mm DN 304 S/S Resilient Seal Gate valve flanged	No.	15		R
Total Carried Forward						R

## BILL 3 BOQ 10: SECOND CLASS WATER

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		<u>Allow for all costs and expenses in connection with checking, starting up, testing and commissioning of the following:-</u>				
10.3.16		65mm DN 304 S/S Resilient Seal Gate valve flanged	No.	2		R
10.3.17		65mm DN Ball valve flanged	No.	2		R
10.3.18		65mm Swing check valve flanged	No.	1		R
10.3.19		150mm Swing check valve flanged	No.	6		R
10.3.20		PN16 Flanged Air release Valve	No.	4		R
10.3.21		150mm DN 304 S/S Resilient Seal Gate valve flanged	No.	15		R
Total Carried Forward						R

## BILL 3 BOQ 10: SECOND CLASS WATER

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
10.4		<b><u>SCHEDULE NO. 10.4</u></b>				
		<b><u>PUMPS</u></b>				
10.4.1	M22	Second class water Centrifugal Pumps 22kW	No.	4		R
10.4.2		Quality Management	Sum	1		R
10.4.3		Design & Drawings	Sum	1		R
10.4.4		All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-	Sum	1		R
		<b><u>Allow for all costs and expenses in connection with the site installation of the following:-</u></b>				
10.4.5		Second class water Centrifugal Pumps 22kW	Sum	1		R
		<b><u>Allow for all costs and expenses in connection with checking, starting up, testing and commissioning of the following:-</u></b>				
10.4.6		Second class water Centrifugal Pumps 22kW	Sum	1		R
Total Carried Forward						R

## BILL 3 BOQ 10: SECOND CLASS WATER

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
10.5		<b><u>SCHEDULE NO. 10.5</u></b>  <b><u>MISCELLANEOUS WORK</u></b>  <b><u>Allow for all costs and expenses in connection with the design, manufacture, corrosion protection, testing, supply, delivery, offloading and storage of the following materials and equipment:-</u></b>				
10.5.1		New PN16 65mm Y Strainer	No,	1		R
10.5.2		Reducers: 150mm- 80mm (stainless steel to HDPE)	No,	2		R
10.5.3		Associated 150mm ss 304 pipe in the second water pump station	No,	1		R
10.5.4		Design & Drawings	Sum	1		R
10.5.5		Quality Management	Sum	1		R
10.5.6		All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant ( <u>Specify</u> ):-  <b><u>Allow for all costs and expenses in connection with the Site Installation of the following:-</u></b>	Sum	1		R
10.5.7		New PN16 65mm Y Strainer	No,	1		R
10.5.8		Reducers: 150mm- 80mm (stainless steel to HDPE)	No,	2		R
10.5.9		Associated 150mm ss 304 pipe in the second water pump station	No,	1		R
		<b><u>Allow for all costs and expenses in connection with checking, starting up, testing and commissioning of the following:-</u></b>				
10.5.10		New PN16 65mm Y Strainer	No,	1		R
10.5.11		Reducers: 150mm- 80mm (stainless steel to HDPE)	No,	2		R
10.5.12		Associated 150mm ss 304 pipe in the second water pump station	No,	1		R
Total Carried Forward To Summary Of Bills						R

## BILL 3 BOQ 11: ULTRAFINE SCREENINGS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
11		<b>SCHEDULE NO. 11</b>  <b>ULTRAFINE SCREENINGS</b>  <b>P&amp;ID Ref:</b> W1859-45005  <i>Allow for all costs and expenses in connection with the design, manufacture, quality management, painting, testing, supply, delivery, offloading and storage of the following materials and equipment, including quality assurance, setting out of the works and checking work carried out by others:-</i>				
11.1		<b><u>Ultrafine Screens</u></b>  Automatically cleaned band screen with a 1 mm perforated plate screening element (MSR03A/B) complete with frame, sole plate, automatic high and low pressure sprayball cleaning manifold (drive unit included), main drive motor operating on variable speed drive (VSD), gearbox, bursh cleaning mechanism (drive unit included) and discharge chute all contained within an enclosure				
11.1.1	M5		No.	2		R
11.1.2	M5	High pressure booster pump (PMP03A/B) including motor, baseplate and supports	No.	2		R
11.1.3	M22	<b><u>Piping</u></b>  2nd class water supply piping, fittings, isolation and pressure reducing valves, supports and fasteners from the 2nd class water bulk supply manifold to each Uultrafine screen LP washwater manifold and to the hydraulic launder	Sum	1		R
11.1.4	M22	2nd class water supply piping, fittings, isolation and pressure reducing valves, supports and fasteners from the 2nd class water bulk supply manifold to HP booster pump suction and from the discharge of each HP booster pump up to the HP washwater manifold on each ultrafine screen	Sum	1		R
11.1.5		DN25, diaphragm valve with solenoid actuator (XV08, XV09)	No.	2		R
11.1.6		DN15, diaphragm valve with solenoid actuator (XV10, XV11)	No.	2		R
11.1.7	M11	<b><u>Hydraulic Launder</u></b>  Hydraulic launder conveyor (HLC02) network, fittings, supports and fasteners, and outlet chute for conveying ultrafine screenings from automated band screens to each microstrainer.	Sum	1		R
Total Carried Forward						R

## BILL 3 BOQ 11: ULTRAFINE SCREENINGS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
11.2		<b><u>Ultrafine screenings microstrainer and compactor</u></b>				
11.2.1	M7	Microstrainer and compactor unit (WHC03/WHC04) consisting of a perforated plate basket strainer, screw compactor, gearbox, shaft and motor, steel hopper body with an integrated screenings washing system and all supports and fasteners	No.	2		R
11.2.2	M7	<b><u>Piping</u></b> 2nd class water supply piping, fittings, isolation and pressure reducing valves, supports and fasteners from the tie-in to the 2nd class water bulk supply manifold to each microstrainer unit	Sum	1		R
11.2.3	M7	Microstrainer discharge piping, fittings, supports and fasteners from each washer/compactor up to the connection to the underground drain pipe back upstream of the degritters	Sum	1		R
11.2.4	M7	DN25, diaphragm valve with solenoid actuator (XV14, XV15, XV17, XV18)	No.	4		R
11.2.5	M7	DN300, knifgate valve with motorized actuator (XV16, XV13)	No.	2		R
11.3		<b><u>Screenings Conveyor</u></b>				
11.3.1	M7	Screenings divert flap including chute and connecting flange to each ultrafine screenings conveyor	No.	2		R
11.3.2	M7	Horizontal centreless spiral screw conveyor complete with motor, gearbox, enclosed trough, discharge chute, supports and fasteners	No.	2		R
11.3.3		<b><u>Spares</u></b> Trough liner	No.	2		R
11.3.4		Complete set screw bearings	No.	2		R
11.4		All other plant and equipment items not included above which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify): -				
11.4.1		1).....	Sum	1		R
11.4.2		2).....	Sum	1		R
11.4.3		3).....	Sum	1		R
Total Carried Forward						R



## BILL 3 BOQ 11: ULTRAFINE SCREENINGS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
11.5		<i>Allow for all costs and expenses, including double handling (if stored) and final painting (if applicable), in connection with the Site installation, testing, relocation, commissioning and upholding during the Trial Operation Period and Defects Notification Period of the following :-</i>				
11.5.1		All Screening equipment and ancillaries as described under items 11.1 and 11.4	Sum	1		R
11.5.2		All Strainer/Compacting equipment and ancillaries as described under items 11.2 and 11.4	Sum	1		R
11.5.3		All screenings conveying equipment and ancillaries as described under items 11.3 and 11.4				R
11.5.4		Carrying out and documenting the results of performance tests on the installed equipment	Sum	1		R
11.6		All other site installation and general items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-				
11.6.1		1).....	Sum	1		R
11.6.2		2).....	Sum	1		R
11.6.3		3).....	Sum	1		R
11.6.4		4).....	Sum	1		R
Total Carried Forward To Summary Of Bills						R

## BILL 4 BOQ 1: PRELIMINARY AND GENERAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b><u>SECTION 1</u></b>				
		<b><u>PRELIMINARIES</u></b>				
		Allow for preliminary and general items				
1.1		Fixed	Sum	1		R
1.2		Time	Sum	1		R
1.3		Value	Sum	1		R
Total Carried Forward To Summary of Bills						R

## BILL 4 BOQ 2: EMERGENCY GENERATOR SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<i>(Refer to Electrical Specification: Annexure E)</i>				
1	Pl. 1.1.	<b>COPPER XLPE/SWA/PVC CABLES</b>				
		<b>Supply and installation of copper XLPE/SWA/PVC/ECC cables laid in ducts, trenches, horizontal racks or vertical ducts. Rates shall include the supply and fixing of supports with regard to installation of cables. Rates shall include the PVC cable ties as required. All cables are Copper XLPE/SWA/PVC/ECC cables per SANS 1507.</b>				
1.1		185sq mm 4-C XLPE/SWA/PVC/ECC				
1.1.1		Supply	m	1800		R
1.1.2		Install	m	1800		R
1.2		25sq mm 4-C XLPE/SWA/PVC/ECC				
1.2.1		Supply	m	15		R
1.2.2		Install	m	15		R
1.3		6sq mm 4-C XLPE/SWA/PVC/ECC				
1.3.1		Supply	m	80		R
1.3.2		Install	m	80		R
1.4		4sq mm 2-C XLPE/SWA/PVC/ECC				
1.4.1		Supply	m	100		R
1.4.2		Install	m	100		R
1.5		4 mm² 12-C + Earth (Generator Control Cabling)				
1.5.1		Supply	m	100		R
1.5.2		Install	m	100		R
	Pl. 1.2.	<b>Termination of copper XLPE/SWA/PVC/ECC cables in DB's, Kiosks and metering panel. Rates shall include the supply and installation of glands, shrouds, lugs, nuts, bolts and washers as required.</b>				
1.6		185sq mm 4-C XLPE/SWA/PVC/ECC				
1.6.1		Supply	No	36		R
1.6.2		Install	No	36		R
1.7		25sq mm 4-C XLPE/SWA/PVC/ECC				
1.7.1		Supply	No	2		R
1.7.2		Install	No	2		R
1.8		6sq mm 4-C XLPE/SWA/PVC/ECC				
1.8.1		Supply	No	4		R
1.8.2		Install	No	4		R
1.9		4sq mm 2-C XLPE/SWA/PVC/ECC				
1.9.1		Supply	No	4		R
1.9.2		Install	No	4		R
1.10		4 mm² 12-C + Earth (Generator Control Cabling)				
1.10.1		Supply	No	12		R
1.10.2		Install	No	12		R
Total Carried Forward						R

## BILL 4 BOQ 2: EMERGENCY GENERATOR SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
2	Pl. 2.1.	<b>DISTRIBUTION BOARDS</b> <i>(Refer to Schematic for layout and equipment requirements)</i>				
		<b>Supply and Install Distribution boards complete with doors, frames, sub-frames, chassis fixtures, switchgear, terminations, bus-bars and wiring, labelling and line diagrams as specified. Minimum 30% spare space to be allowed in each DB.</b>				
2.1		GENERATOR SYNC PANEL Local floor standing Distribution board complete with all wiring and circuit breakers per specifications and Generator schematic				
2.1.1		Supply	No	1		R
2.1.2		Install	No	1		R
2.2		EMERGENCY DISTRIBUTION PANEL Local floor standing Distribution board complete with all wiring and circuit breakers per specifications and Generator schematic				
2.2.1		Supply	No	1		R
2.2.2		Install	No	1		R
2.3		Change over Panels - Pump Station 1 C/O 1, Pump Station 1 C/O 2, Pump Station 2 C/O Panel, Dewatering Building C/O Panel, Inlet Works C/O Panel. Local surface mounted change-over panels complete with all wiring and circuit breakers per specifications and Generator schematic				
2.3.1		Supply	No	5		R
2.3.2		Install	No	5		R
2.4		Generator Auxillary Main DB. Local surface mounted distribution panel complete with all wiring and circuit breakers per specifications and Generator schematic				
2.4.1		Supply	No	1		R
2.4.2		Install	No	1		R
2.5		BULK TANK CONTROL PANEL. Local surface mounted distribution panel complete with all wiring and circuit breakers per specifications and Generator schematic				
2.5.1		Supply	No	1		R
2.5.2		Install	No	1		R
2.6		MANUAL BULK FILL CONTROL PANEL. Local surface mounted distribution panel complete with all wiring and circuit breakers per specifications and Generator schematic				
2.6.1		Supply	No	1		R
2.6.2		Install	No	1		R
Total Carried Forward						R

## BILL 4 BOQ 2: EMERGENCY GENERATOR SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
3	PI. 5.1.	<b>STANDBY GENERATOR SYSTEM</b> Supply and install outdoor generator set including all equipment and materials as specified and as indicated on the drawings.				
3.1		<b>OUTDOOR STANDBY GENERATOR</b> 1100 kVA Outdoor standby generator in sound proof enclosure, complete with smart controller, exhaust, 1000L day fuel tank and accessories. <i>As per technical data sheet EB1, included in the Volume C3.6.1 - Annex 1.</i>				
3.1.1						
3.1.1.1		Supply	No	2		R
3.1.1.2		Install	No	2		R
3.1.2		3000L Bulk Diesel Self-Bunded Tank <i>As per technical data sheet EB2, included in the Volume C3.6.1 - Annex 1.</i>				
3.1.2.1		Supply	No	1		R
3.1.2.2		Install	No	1		R
3.1.3		Pump System for Bulk Diesel Tank				
3.1.3.1		Supply	No	1		R
3.1.3.2		Install	No	1		R
3.2		<b>GENERAL:</b>				
3.2.1		Supply, Deliver, Install & Fill Diesel Fuel for full 5000L tank at time of handover:	Sum	1		R
3.2.2		Fill Diesel Fuel for maintenance period:	Ltrs	20000		R
3.2.3		Site acceptance tests (SAT's) of full system. Attendance by Contract, Client and Engineering team	Item	1		R
3.2.4		Generator load test be conducted over a 6 hour period on site using the correct load bank and results documented. All diesel and load bank costs to be included.	Item	1		R
Total Carried Forward						R

## BILL 4 BOQ 2: EMERGENCY GENERATOR SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
4	Pl. 6.1.	<b>SLEEVES</b>  Supply and installation of HDPE sleeves buried in ground as specified for Electrical, & data services, including couplings in accordance with non-metallic sleeves and accessories as per SANS 61386-24. Tenderers to note that all sleeves under buildings will be encased in concrete by the building contractor.				
4.1		110mm Flexible double walled black corrugated sleeves including 6mm pilot string as draw wire in each sleeve				
4.1.1		Supply	m	878		R
4.1.2		Install	m	878		R
4.2		50mm Flexible double walled black corrugated sleeves including 6mm pilot string as draw wire in each sleeve				
4.2.1		Supply	m	100		R
4.2.2		Install	m	100		R
5	Pl. 6.2.	<b>MANHOLES</b>  Construction of watertight manholes in ground as specified for Electrical & data services, including, lockable cover, seals, bushes, sleeve entries and end caps. Inclusive of cover and frame (Cover and frame - colour: GREY) including engraving on cover to read : "DATA" for data manholes and "ELECTRICAL" for electrical manholes To include: - 300 x 300mm bidem bag with 19mm stone for soak away.  - Plinth, brickwork, frame cover, waterproofing, drainage, sleeve stubs and end caps for spare pipes.  - All sleeves to be foam sealed after cable installation to prevent water ingress into manholes.				
5.1		800mm x800 x 800mm deep (Internal dimensions) manhole - Electrical / (15kg) - Lockable				
5.1.1		Supply	No	14		R
5.1.2		Install	No	14		R
Total Carried Forward						R

## BILL 4 BOQ 2: EMERGENCY GENERATOR SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
6	Pl. 6.3.	<b>EXCAVATIONS &amp; BACKFILL</b>				
		<b>Excavate for cables and sleeves including temporary support of sides, keeping excavation dry, bedding material, backfilling, compacting and testing as specified. All backfill material to be suitable as per SANS codes and engineers approval. Backfill material to be imported if necessary.</b>				
6.1		In soft or pickable soil (60%)				
6.1.1		Supply	m <sup>3</sup>	327		R
6.1.2		Install	m <sup>3</sup>	327		R
6.2		In medium rock (20%)				
6.2.1		Supply	m <sup>3</sup>	115		R
6.2.2		Install	m <sup>3</sup>	115		R
6.3		In hard rock (20%)				
6.3.1		Supply	m <sup>3</sup>	115		R
6.3.2		Install	m <sup>3</sup>	115		R
Total Carried Forward To Summary Of Bills						R

## BILL 4 BOQ 3: DOMESTIC POWER &amp; LIGHTING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
1	PI. 1.1.	(Refer to Electrical Specification: Annexure E) <b>COPPER XLPE/SWA/PVC CABLES</b>  Supply and installation of copper XLPE/SWA/PVC/ECC cables laid in ducts, trenches, horizontal racks or vertical ducts. Rates shall include the supply and fixing of supports with regard to installation of cables. Rates shall include the PVC cable ties as required. All cables are Copper XLPE/SWA/PVC/ECC cables per SANS 1507.				
1.1		25sq mm 4-C XLPE/SWA/PVC/ECC				
1.1.1		Supply	m	90		R
1.1.2		Install	m	90		R
1.2		10sq mm 4-C XLPE/SWA/PVC/ECC				
1.2.1		Supply	m	420		R
1.2.2		Install	m	420		R
1.3		16sq mm 2-C XLPE/SWA/PVC/ECC				
1.3.1		Supply	m	100		R
1.3.2		Install	m	100		R
1.4		4sq mm 2-C XLPE/SWA/PVC/ECC				
1.4.1		Supply	m	710		R
1.4.2		Install	m	710		R
	PI. 1.2.	<b>Termination of copper XLPE/SWA/PVC/ECC cables in DB's, Kiosks and metering panel. Rates shall include the supply and installation of glands, shrouds, lugs, nuts, bolts and washers as required.</b>				
1.5		25sq mm 4-C XLPE/SWA/PVC/ECC				
1.5.1		Supply	No	6		R
1.5.2		Install	No	6		R
1.6		10sq mm 4-C XLPE/SWA/PVC/ECC				
1.6.1		Supply	No	25		R
1.6.2		Install	No	25		R
1.7		16sq mm 2-C XLPE/SWA/PVC/ECC				
1.7.1		Supply	No	5		R
1.7.2		Install	No	5		R
1.8		4sq mm 2-C XLPE/SWA/PVC/ECC				
1.8.1		Supply	No	25		R
1.8.2		Install	No	25		R
Total Carried Forward						R



## BILL 4 BOQ 3: DOMESTIC POWER &amp; LIGHTING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
2	PI. 2.1.	<b>DISTRIBUTION BOARDS</b> <i>(Refer to Schematic for layout and equipment requirements)</i>				
		<b>Supply and Install Distribution boards complete with doors, frames, sub-frames, chassis fixtures, switchgear, terminations, bus-bars and wiring, labelling and line diagrams as specified. Minimum 30% spare space to be allowed in each DB.</b>				
2.1		DB-10 Local flush mounted Distribution board complete with all wiring and circuit breakers per specifications and Admin Building schematic				
2.1.1		Supply	No	1		R
2.1.2		Install	No	1		R
2.2		DB-DW Local flush mounted Distribution board complete with all wiring and circuit breakers per specifications and DEWATERING LOCAL DB schematic				
2.2.1		Supply	No	1		R
2.2.2		Install	No	1		R
2.3		DB-Inlet Works Local Surface mounted Distribution board complete with all wiring and circuit breakers per specifications and Inlet Works LOCAL DB schematic				
2.3.1		Supply	No	1		R
2.3.2		Install	No	1		R
2.40		DB-O. Local Surface mounted Distribution board complete with all wiring and circuit breakers per specifications and Inlet Works LOCAL DB schematic				
2.4.1		Supply	No	1		R
2.4.2		Install	No	1		R
2.5		DB-SCPS. Local Surface mounted Distribution board complete with all wiring and circuit breakers per specifications and SECOND CLASS WATER PUMP STATION ELECTRICAL LAYOUT				
2.5.1		Supply	No	1		R
2.5.2		Install	No	1		R
2.6		DB-GH. Local Surface mounted Distribution board complete with all wiring and circuit breakers per specifications and GUARD HOUSE ELECTRICAL LAYOUT				
2.6.1		Supply	No	2		R
2.6.2		Install	No	2		R
Total Carried Forward						R

## BILL 4 BOQ 3: DOMESTIC POWER &amp; LIGHTING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
3	Pl. 2.2.	<b>CONDUITS &amp; CONDUIT BOXES</b>				
		Supply and installation of conduit and boxes as specified for lighting, power and auxiliary outlets, including couplings, bushes, locknuts, bending, drawboxes and fixing, etc in accordance with metallic conduit and accessories as per SANS 60614 and non-metallic conduit and accessories as per SANS 950				
3.1		<b>PLAIN ENDED METALLIC GALVANISED BOSAL CONDUIT</b>				
3.1.1		20 mm on surface of brickwork or concrete				
3.1.1.1		Supply	m	170		R
3.1.1.2		Install	m	170		R
3.1.2		20mm Round boxes surface mounted.				
3.1.2.1		Supply	No	70		R
3.1.2.2		Install	No	70		R
3.2		<b>NON-METALLIC PVC CONDUIT</b>				
		<b>Built into brickwork or laid in concrete</b>				
3.2.1		20mm				
3.2.1.1		Supply	m	1730		R
3.2.1.2		Install	m	1730		R
3.2.2		25mm				
3.2.2.1		Supply	m	2260		R
3.2.2.2		Install	m	2260		R
3.2.3		50mm Diam x 20mm Round boxes				
3.2.3.1		Supply	No	240		R
3.2.3.2		Install	No	240		R
3.2.4		50mm Diam x 25mm Round boxes				
3.2.4.1		Supply	No	155		R
3.2.4.2		Install	No	155		R
3.3		<b>PRESSED GALVANISED STEEL BOX</b>				
3.3.1		100 x 50 x 50mm deep galvanised boxes built into brick or concrete				
3.3.1.1		Supply	No	61		R
3.3.1.2		Install	No	61		R
3.3.2		100 x 100 x 50mm deep galvanised boxes built into brick or concrete				
3.3.2.1		Supply	No	69		R
3.3.2.2		Install	No	69		R
3.3.3		100 x 100 PVC blank covers for data/telephone outlets				
3.3.3.1		Supply	No	14		R
3.3.3.2		Install	No	14		R
Total Carried Forward						R

## BILL 4 BOQ 3: DOMESTIC POWER &amp; LIGHTING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
4	PI. 2.3.	<b>POWER SKIRTING</b> <b>Power skirting - Supply and installation of surface mounted power skirting as specified in the detail specification, complete with cover plates - plug assemblies not included.</b>				
4.1		2-Compartment power skirting (PVC, grey)				
4.1.1		Supply	m	75		R
4.1.2		Install	m	75		R
4.2		Supply and installation power skirting end caps				
4.2.1		Supply	No	28		R
4.2.2		Install	No	28		R
5	PI. 2.3.	<b>Trunking</b> <b>Trunking - Supply and installation of surface mounted Trunking as specified in the detail specification.</b>				
5.1		40mm X 16mm Cable Trunking (PVC, WHITE)				
5.1.1		Supply	m	150		R
5.1.2		Install	m	150		R
6		<b>CIRCUIT WIRING &amp; OUTLET POINTS</b>				
6.1	PI. 2.4.	<b>PVC CONDUCTORS</b> <b>Supply and drawn in of copper PVC insulated conductors in conduit or trunking system in floor or in roof space for lights, plugs and power points, including connection to switches and equipment. For Live, Neutral and Earth.</b>				
6.1.1		1,5 mm² Live				
6.1.1.1		Supply	m	1830		R
6.1.1.2		Install	m	1830		R
6.1.2		1,5 mm² Neutral				
6.1.2.1		Supply	m	1830		R
6.1.2.2		Install	m	1830		R
6.1.3		2,5 mm² Live				
6.1.3.1		Supply	m	1810		R
6.1.3.2		Install	m	1810		R
6.1.4		2,5 mm² Neutral				
6.1.4.1		Supply	m	1810		R
6.1.4.2		Install	m	1810		R
6.1.5		2,5 mm² Earth				
6.1.5.1		Supply	m	3640		R
6.1.5.2		Install	m	3640		R
Total Carried Forward						R

## BILL 4 BOQ 3: DOMESTIC POWER &amp; LIGHTING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
6.2	PI. 2.5.	<b>LIGHT SWITCHES</b>				
		<b>Supply, installation and connection of 16 Amp light switches in flush 50 x 100 x 50mm boxes, including white coloured cover plates.</b>				
6.2.1		Single lever				
6.2.1.1		Supply	No	31		R
6.2.1.2		Install	No	31		R
6.2.2		Two lever				
6.2.2.1		Supply	No	2		R
6.2.2.2		Install	No	2		R
6.2.3		Single lever, Two-way				
6.2.3.1		Supply	No	6		R
6.2.3.2		Install	No	6		R
6.2.4		Single lever, in IP65 Weather- Proof Enclosure				
6.2.4.1		Supply	No	4		R
6.2.4.2		Install	No	4		R
6.2.5		Occpancy Sensor				
6.2.5.1		Supply	No	2		R
6.2.5.2		Install	No	2		R
6.3	PI. 2.6.	<b>SWITCHED SOCKET OUTLETS</b>				
		<b>Supply, installation and connection of 16Amp switched socket outlets in 100 x 100 x 50mm boxes with white coloured cover plates</b>				
6.3.1		16A, 3-pin double SSO, with two type M wall mounted at 300mm AFFL Unless otherwise stated. (Type A)				
6.3.1.1		Supply	No	16		R
6.3.1.2		Install	No	16		R
6.3.2		16A, 3-pin double SSO with one type M and two Type N Sockets (ZA plug) wall mounted at 300mm AFFL Unless otherwise stated (Type B)				
6.3.2.1		Supply	No	12		R
6.3.2.2		Install	No	12		R
6.3.3		16A, 3-pin single SSO with one Type M and two Type N sockets (ZA Plug) and two USB outlets. Mounted ON WALL 300mm AFFL (Type E)				
6.3.3.1		Supply	No	22		R
6.3.3.2		Install	No	22		R
Total Carried Forward						R

## BILL 4 BOQ 3: DOMESTIC POWER &amp; LIGHTING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
6.3.4		16A, 3-pin single SSO in IP65 rated weather proof yolk box. Mounted ON WALL 1200mm AFFL. (Type F)				
6.3.4.1		Supply	No	24		R
6.3.4.2		Install	No	24		R
6.3.5		63A, 5-pin single industrial socket in IP65 rated weatherproof enclosure. Mounted ON WALL 1200mm AFFL. (Type G)				
6.3.5.1		Supply	No	17		R
6.3.5.2		Install	No	17		R
6.3.6		16A, 3-pin single SSO with one type M and one Type N sockets (ZA plug). Mounted in power skirting.				
6.3.6.1		Supply	No	39		R
6.3.6.2		Install	No	39		R
6.3.7		Telephone RJ45 outlet points				
6.3.7.1		Supply	No	10		R
6.3.7.2		Install	No	10		R
6.3.8		Data RJ11 outlet points				
6.3.8.1		Supply	No	27		R
6.3.8.2		Install	No	27		R
6.3.9		Cradles and Blank covers for telephone / data outlet points				
6.3.9.1		Supply	No	14		R
6.3.9.2		Install	No	14		R
6.3.10		5 Amp plugs in round boxes in ceilings or roof spaces				
6.3.10.1		Supply	No	189		R
6.3.10.2		Install	No	189		R
Total Carried Forward						R

## BILL 4 BOQ 3: DOMESTIC POWER &amp; LIGHTING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
6.4	PI. 2.7.	<b>ISOLATORS</b> <b>Supply, installation and connection of isolator in Polypropylene extension box</b>				
6.4.1		15 Amp, 2 Pole Isolator				
6.4.1.1		Supply	No	13		R
6.4.1.2		Install	No	13		R
6.4.2		20 Amp, 2 Pole Isolator				
6.4.2.1		Supply	No	19		R
		Install	No	19		R
6.4.3		30 Amp, 2 Pole Isolator				
6.4.3.1		Supply	No	3		R
6.4.3.2		Install	No	3		R
6.5	PI. 3.1.	<b>LIGHTING</b>  <b>Supply, Installation and Commissioning of Luminaires.</b> <b>Note that all luminaires are subject to approval by the Engineer prior to purchase.</b> <i>(Refer to Luminaire Schedule for Details)</i> <b>To provide specified, similar or equivalent fittings subject to approval by the Engineer.</b>  <b>Alternate fittings proposed will only be considered if cost saving, better quality and longer guarantee is provided and subject to approval by the engineer, architect and client.</b>				
6.5.1		Type L1 - 2x28W 1200mm Open channel Fluorescent Luminaires				
6.5.1.1		Supply	No	14		R
6.5.1.2		Install	No	14		R
6.5.2		Type L1 Emergency- 2x28W 1200mm Open channel Fluorescent Luminaires with 30 minutes emergency back-up battery				
6.5.2.1		Supply	No	3		R
6.5.2.2		Install	No	3		R
6.5.3		Type L2 - 2x28W 1200mm Fluorescent tube luminaires in IP65 rated Enclosure				
6.5.3.1		Supply	No	6		R
6.5.3.2		Install	No	6		R
Total Carried Forward						R

## BILL 4 BOQ 3: DOMESTIC POWER &amp; LIGHTING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
6.5.4		Type L2 Emergency- 2x28W 1200mm Flourescent tube luminaires in IP65 rated Enclosure with 30 minutes emergency back-up battery				
6.5.4.1		Supply	No	3		R
6.5.4.2		Install	No	3		R
6.5.5		Type L3 - 3 x 36W 1200x600mm recessed Flourescent tube panel Luminaire				
6.5.5.1		Supply	No	21		R
6.5.5.2		Install	No	21		R
6.5.6		Type L3 Emergency - 3 x 36W 1200x600mm recessed Flourescent tube panel Luminaire with 30 minutes emergency back-up battery				
6.5.6.1		Supply	No	10		R
6.5.6.2		Install	No	10		R
6.5.7		Type L4 2x26W CFL Round Recessed downlight luminaires				
6.5.7.1		Supply	No	13		R
6.5.7.2		Install	No	13		R
6.5.8		Type L4 Emergency - 2x26W CFL Round Recessed downlight luminaires with 30 minutes emergency back-up battery				
6.5.8.1		Supply	No	8		R
6.5.8.2		Install	No	8		R
6.5.9		Type L5 - 15W, IP65, wall mounted, bulkhead Flourescent Luminaire				
6.5.9.1		Supply	No	32		R
6.5.9.2		Install	No	32		R
6.5.10		Type L5 Emergency - 15W, IP65, wall mounted, bulkhead Flourescent Luminaire with 30 minutes emergency back-up battery				
6.5.10.1		Supply	No	6		R
6.5.10.2		Install	No	6		R
6.5.11		Type L6 - 2x36W 1200mm Flourescent tube luminaires in IP65 rated Enclosure				
6.5.11.1		Supply	No	89		R
6.5.11.2		Install	No	89		R
6.5.12		Type L6 Emergency- 2x36W 1200mm Flourescent tube luminaires in IP65 rated Enclosure with 30 minutes emergency back-up battery				
6.5.12.1		Supply	No	19		R
6.5.12.2		Install	No	19		R
6.5.13		1.2m Galvanised steel poles - for mounting of Type L7 to include all brackets as neccesary				
6.5.13.1		Supply	No	39		R
6.5.13.2		Install	No	39		R
Total Carried Forward						R

## BILL 4 BOQ 3: DOMESTIC POWER &amp; LIGHTING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
7	PI. 6.1.	<b>SLEEVES</b>				
		<b>Supply and installation of HDPE sleeves buried in ground as specified for Electrical,&amp; data services, including couplings in accordance with non-metallic sleeves and accessories as per SANS 61386-24. Tenderers to note that all sleeves under buildings will be encased in concrete by the building contractor.</b>				
7.1		50mm Flexible double walled black corrugated sleeves including 6mm pilot string as draw wire in each sleeve				
7.1.1		Supply	m	80		R
7.1.2		Install	m	80		R
8	PI. 6.3.	<b>EXCAVATIONS &amp; BACKFILL</b>				
		<b>Excavate for cables and sleeves including temporary support of sides, keeping excavation dry, bedding material, backfilling, compacting and testing as specified. All backfill material to be suitable as per SANS codes and engineers approval. Backfill material to be imported if necessary.</b>				
8.1		In soft or pickable soil (60%)				
8.1.1		Supply	m³	45		R
8.1.2		Install	m³	45		R
8.2		In medium rock (20%)				
8.2.1		Supply	m³	20		R
8.2.2		Install	m³	20		R
8.3		In hard rock (20%)				
8.3.1		Supply	m³	20		R
8.3.2		Install	m³	20		R
9.1	PI. 8.1.	<b>Removal of Existing Equipment</b>				
9.1.1		Disconnect and removal of existing infrastructure in the Administration Building as indicated on Demolishment Plan	Sum	1		R
9.1.2		Disconnect and removal of existing infrastructure in the Generator Room, Existing , Distribution Panel and Manual Change-over Panels.	Sum	1		R
9.2	PI. 8.2	<b>Air-conditioning</b>				
9.2.1		Provisional sum for Specialist Condition Assessment of all split-unit Air-conditioners in Administration Building	Sum	1		R
9.2.2		Provisional sum for replacement or repair of all existing Split-units in Administration Building.				
9.2.2.1		Supply	No.	11		R
9.2.2.2		Install	No.	11		R
9.2.3		Provisional sum for new Split-units to be installed.				
9.2.3.1		Supply	No.	4		R
9.2.3.2		Install	No.	4		R
Total Carried Forward To Summary Of Bills						R



## BILL 4 BOQ 4: EARTHING AND LIGHTNING PROTECTION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		(Refer to Electrical Specification: Annexure E)				
1		<b>EARTHING AND LIGHTNING PROTECTION</b> (Refer to Electrical Specification: Annexure Q) <b>Supply and Installation of Earthing &amp; Lightning Protection per SANS 10313, 62305 and 10142. To be undertaken by specialist earthing and lightning contractor.</b>				
1.1	PI. 4.1.	<b>SOIL RESISTIVITY TESTS</b>				
1.1.1		Conduct a complete soil resistivity survey for the Hammarisdale Waste Water Treatment Works area. Resistivity measurements shall be taken at, at least 5 locations and at the supply points. It shall include a certificate and recommendation regarding the soil conditions.	Sum	1		R
1.2	PI. 4.2.	<b>EARTH CONDUCTORS</b>				
1.2.1		Copper earth conductors installed in trenches, sleeves and in earth trench. Terminations to include drilling, bolting, connections, sealing and testing. Only cadweld joints will be allowed.				
1.2.1.1		70 mm <sup>2</sup> bare Copper Earth Wire (BCEW)	m	365		R
1.2.1.2		Supply	m	365		R
1.2.2		70 mm <sup>2</sup> PVC covered Copper Earth Wire (CEW)	m	Rate Only		Rate only
1.2.2.1		Supply	m	Rate Only		Rate only
1.2.2.2		Install	m	Rate Only		Rate only
1.2.3		50 mm <sup>2</sup> bare Copper Earth Wire (BCEW) for bonding of re-bar	m	130		R
1.2.3.1		Supply	m	130		R
1.2.3.2		Install	m	130		R
1.2.4		50 mm <sup>2</sup> covered Copper Earth Wire (CEW) for bond to columns, metal downpipes and roof sheeting	m	Rate Only		Rate only
1.2.4.1		Supply	m	Rate Only		Rate only
1.2.4.2		Install	m	Rate Only		Rate only
1.2.5		Terminate Earth Wire in test joint box using lugs and brass bolt.	No	22		R
1.2.5.1		Supply	No	22		R
1.2.5.2		Install	No	22		R
1.2.6		Terminate steel reinforcing using purpose made stainless steel terminals	No	22		R
1.2.6.1		Supply	No	22		R
1.2.6.2		Install	No	22		R
Total Carried Forward						R

## BILL 4 BOQ 4: EARTHING AND LIGHTNING PROTECTION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.2.7		Terminate steel roof structure to flush terminals at top of columns using 50mm <sup>2</sup> PVC conductor, including lugs and fixings	No	13		R
1.2.8		Bond metal roof and down pipes down with 50mm <sup>2</sup> insulated to earth loop in ground.				
1.2.8.1		Supply	No	11		R
1.2.8.2		Install	No	11		R
1.2.9		8mm Aerial conductor on roof for lightning protection. To include all holding down clamps, down conductors, bonding conductors and lightning Rods				
1.2.9.1		Supply	m	260		R
1.2.9.2		Install	m	260		R
1.3	PI. 4.3.	<b>EARTH BARS</b>				
1.3.1		Provide Copper earth bars as per drawings and specifications.				
1.3.1.1		Supply	No	6		R
1.3.1.2		Install	No	6		R
1.4	PI. 4.4.	<b>ENCLOSURES</b>				
1.4.1		173(w)x130(h)x88mm(d) PVC Allbro surface extension box (PSO-2). To be installed on surface in front of flush terminal.				
1.4.1.1		Supply	No	10		R
1.4.1.2		Install	No	10		R
1.4.2		Labels for test joint box				
1.4.2.1		Supply	No	10		R
1.4.2.2		Install	No	10		R
1.5	PI. 4.5.	<b>EARTH ELECTRODES</b>				
		<b>Supply and install 'Cadweld' 16 mm diameter copper earth electrodes driven in ground, including 'Cadweld' joining sleeves as required</b>				
1.5.1		1000 mm long electrodes				
1.5.1.1		Supply	No	40		R
1.5.1.2		Install	No	40		R
1.5.2		Bond 70mm <sup>2</sup> bare copper to earth rod				
1.5.2.1		Supply	No	40		R
1.5.2.2		Install	No	40		R
Total Carried Forward						R

## BILL 4 BOQ 4: EARTHING AND LIGHTNING PROTECTION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.6	PI. 4.6.	<b>EARTHING OF EQUIPMENT</b> <b>Earth equipment as per drawings and specification to achieve earth resistivity values as per SANS and NRS requirements</b>				
1.6.1		Earthing of indoor equipment (DB's, Server Racks)				
1.6.1.1		Supply	No	5		R
1.6.1.2		Install	No	5		R
1.7	PI. 4.7.	<b>TRENCH EXCAVATIONS:</b>  <b>Excavate for Earthing including temporary support of sides, keeping excavation dry, bedding material, backfilling, compacting and testing as specified. All backfill material to be suitable as per SANS codes and engineers approval. Backfill material to be imported if necessary.</b>				
1.7.1		In soft or pickable soil (60%)				
1.7.1.1		Supply	m³	175		R
1.7.1.2		Install	m³	175		R
1.7.2		In soft rock (40%)				
1.7.2.1		Supply	m³	115		R
1.7.2.2		Install	m³	115		R
1.7.3		PVC warning tape installed in cable trench				
1.7.3.1		Supply	m	385		R
1.7.3.2		Install	m	385		R
Total Carried Forward To Summary Of Bills						R

## BILL 4 BOQ 5: MV WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<i>(Refer to Electrical Specification: Annexure E)</i>				
1		<b>MAIN SUBSTATION UPGRADE</b>				
1.1		Manufacture, supply, off loading, installation, testing and commissioning of 12kV Metal-clad MV Switchgear Boards. 1 x Incomers, 2 Txf Feeder, 25kA, 400A, as detailed in the specifications. <i>As per technical data sheet EB3, included in the Volume C3.6.1 - Annex 1.</i>				
1.1.1		Supply	Sum	1		R
1.1.2		Install	Sum	1		R
1.2		Manufacture, supply, off loading, installation, testing and commissioning of 110VDC Battery Tripping unit as detailed in specifications. Includes the LV cabling required for the power supply and connection to the MV switchgear. <i>As per technical data sheet EB5, included in the Volume C3.6.1 - Annex 1</i>				
1.2.1		Supply	No	1		R
1.2.2		Install	No	1		R
1.3		Supply of Tools as required for Switchgear Operation	Set	1		R
1.4		Tool storage rack, mounted on substation wall	No	1		R
1.5		Disconnection and removal of the existing oil filled MV switchgear, transport to site laydown area.	Sum	1		R
1.6		Disconnection and removal of the existing MV Supply cable installed from the Eskom metering point to the incomer, transport to site laydown area.	Sum	1		R
1.7		MV Cabling MV Cable				
1.7.1		Supply and installation of copper XLPE/PVC/SWA/PVC 6.35/11kV Type A cable as per SANS 1339, laid in ducts, trenches, horizontal racks or vertical ducts. Rates shall include the supply and fixing of supports with regard to installation of cables. Rates shall include the stainless steel cable strapping as required. 3 Core 50mm <sup>2</sup>				
1.7.1.1		Supply	m	20		R
1.7.1.2		Install	m	20		R
1.7.2		Termination of copper XLPE/PVC/SWA/PVC 6.35/11kV Type A cable. 3 Core 50mm <sup>2</sup>				
1.7.2.1		Supply	No	2		R
1.7.2.2		Install	No	2		R
1.7.3		Jointing of copper XLPE/PVC/SWA/PVC 6.35/11kV Type A cable. 3 Core 50mm <sup>2</sup>				
1.7.2.1		Supply	No	1		R
1.7.2.2		Install	No	1		R
Total Carried Forward						R

## BILL 4 BOQ 5: MV WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
2		MINI-SUBSTATION UPGRADE				
2.1		Manufacture, supply, off loading, installation, testing and commissioning of 500kVA Mini-Substation Units, as detailed in the specifications. <i>As per technical data sheet EB4, included in the Volume C3.6.1 - Annex 1.</i>				
2.1.1		Supply	No	5		R
2.1.2		Install	No	5		R
2.2		MV Cabling				
2.2.1		Supply and installation of copper XLPE/PVC/SWA/PVC 6.35/11kV Type A cable as per SANS 1339, laid in ducts, trenches, horizontal racks or vertical ducts. Rates shall include the supply and fixing of supports with regard to installation of cables. Rates shall include the stainless steel cable strapping as required. 3 Core 35mm <sup>2</sup>				
2.2.1.1		Supply	m	100		R
2.2.1.2		Install	m	100		R
2.2.2		Termination of copper XLPE/PVC/SWA/PVC 6.35/11kV Type A cable. 3 Core 35mm <sup>2</sup>				
2.2.2.1		Supply	No	5		R
2.2.2.2		Install	No	5		R
2.2.3		Joint of copper XLPE/PVC/SWA/PVC 6.35/11kV Type A cable. 3 Core 35mm <sup>2</sup>				
2.2.3.1		Supply	No	5		R
2.2.3.2		Install	No	5		R
2.2.4		Removal of Existing Equipment Disconnection and removal of the existing 500kVA MSU's, transport to site laydown area.	No	5		R
2.3		LV CABLE				
		Supply and installation of copper PVC/PVC/SWA/PVC cables laid in ducts, trenches, horizontal racks or vertical ducts. Rates shall include the supply and fixing of supports with regard to installation of cables. Rates shall include the PVC cable ties as required. All cables are Copper PVC/PVC/SWA/PVC cables per SANS 1507.				
2.3.1		185 mm <sup>2</sup> x 4 core				
2.3.1.1		Supply	m	50		R
2.3.1.2		Install	m	50		R
2.3.2		150 mm <sup>2</sup> x 4 core				
2.3.2.1		Supply	m	50		R
2.3.2.2		Install	m	50		R
2.3.3		120 mm <sup>2</sup> x 4 core				
2.3.3.1		Supply	m	50		R
2.3.3.2		Install	m	50		R
2.3.4		95 mm <sup>2</sup> x 4 core				
2.3.4.1		Supply	m	50		R
2.3.4.2		Install	m	50		R
Total Carried Forward						R

## BILL 4 BOQ 5: MV WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
		Termination of copper PVC/PVC/SWA/PVC cables in Mini-substations. Rates shall include the supply and installation of glands, shrouds, lugs, nuts, bolts and washers as required.				
2.3.5		185 mm <sup>2</sup> x 4 core				
2.3.5.1		Supply	No	5		R
2.3.5.2		Install	No	5		R
2.3.6		150 mm <sup>2</sup> x 4 core				
2.3.6.1		Supply	No	5		R
2.3.6.2		Install	No	5		R
2.3.7		120 mm <sup>2</sup> x 4 core				
2.3.7.1		Supply	No	5		R
2.3.7.2		Install	No	5		R
2.3.8		95 mm <sup>2</sup> x 4 core				
2.3.8.1		Supply	No	5		R
2.3.8.2		Install	No	5		R
2.3.9		70 mm <sup>2</sup> BCEW				
2.3.9.1		Supply	m	5		R
2.3.9.2		Install	m	5		R
		Jointing of copper PVC/PVC/SWA/PVC cables.				
2.3.10		185 mm <sup>2</sup> x 4 core				
2.3.10.1		Supply	No	5		R
2.3.10.2		Install	No	5		R
2.3.11		150 mm <sup>2</sup> x 4 core				
2.3.11.1		Supply	No	5		R
2.3.11.2		Install	No	5		R
2.3.12		120 mm <sup>2</sup> x 4 core				
2.3.12.1		Supply	No	5		R
2.3.12.2		Install	No	5		R
2.3.13		95 mm <sup>2</sup> x 4 core				
2.3.13.1		Supply	No	5		R
2.3.13.2		Install	No	5		R
2.3.14		70 mm <sup>2</sup> BCEW				
2.3.14.1		Supply	No	5		R
2.3.14.2		Install	No	5		R
Total Carried Forward						R

## BILL 4 BOQ 5: MV WORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
3	PI. 6.1.	<b>SLEEVES</b>  Supply and installation of HDPE sleeves buried in ground as specified for Electrical, & data services, including couplings in accordance with non-metallic sleeves and accessories as per SANS 61386-24. Tenderers to note that all sleeves under buildings will be encased in concrete by the building contractor.				
3.1		110mm Flexible double walled black corrugated sleeves including 6mm pilot string as draw wire in each sleeve				
3.1.1		Supply	m	200		R
3.1.2		Install	m	200		R
4	PI. 6.3.	<b>EXCAVATIONS &amp; BACKFILL</b>  Excavate for cables and sleeves including temporary support of sides, keeping excavation dry, bedding material, backfilling, compacting and testing as specified. All backfill material to be suitable as per SANS codes and engineers approval. Backfill material to be imported if necessary.				
4.1		In soft or pickable soil (60%)				
4.1.1		Supply	m <sup>3</sup>	160		R
4.1.2		Install	m <sup>3</sup>	160		R
4.2		In medium rock (20%)				
4.2.1		Supply	m <sup>3</sup>	53		R
4.2.2		Install	m <sup>3</sup>	53		R
4.3		In hard rock (20%)				
4.3.1		Supply	m <sup>3</sup>	53		R
4.3.2		Install	m <sup>3</sup>	53		R
Total Carried Forward To Summary Of Bills						R

## BILL 4 BOQ 6: INLET WORKS ELECTRICAL SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>1</b>		<i>(Refer to Electrical Specification: Annexure E)</i> <b>Inlet Works Electrical System</b>				
1.1		MCC panel Manufacture, supply, off loading and installation of the Inlet Works MCC Panel, and commissioning as detailed in the specifications and drawings. <i>60325-E-LI-100: Single line diagram</i> <i>60325-E-LI-101: GA</i>				
1.1.1		Supply	No	1		R
1.1.2		Install	No	1		R
1.2		Manufacture, supply, off loading and installation of the Second Class Water MCC Panel, and commissioning as detailed in the specifications and drawings. <i>60325-E-LI-100: Single line diagram</i> <i>60325-E-LI-101: GA</i>				
1.2.1		Supply	No	1		R
1.2.2		Install	No	1		R
1.3		Local Control Stations				
1.3.1		Surface mounted IP65 emergency stop push buttons.				
1.3.1.1		Supply	No	27		R
1.3.1.2		Install	No	27		R
1.3.2		3CR12 support stands for the above item.				
1.3.2.1		Supply	No	27		R
1.3.2.2		Install	No	27		R
1.3.3		Screen & compactor forward/ reverse local control station IP65, complete with emergency stop push button.				
1.3.3.1		Supply	No	13		R
1.3.3.2		Install	No	13		R
1.3.4		3CR12 support stands for the above item.				
1.3.4.1		Supply	No	13		R
1.3.4.2		Install	No	13		R
1.4		LV Cabling LV CABLE Supply and installation of copper PVC/PVC/SWA/PVCcables laid in ducts, trenches, horizontal racks or vertical ducts. Rates shall include the supply and fixing of supports with regard to installation of cables. Rates shall include the PVC cable ties as required. All cables are Copper PVC/PVC/SWA/PVC cables per SANS 1507.				
1.4.1		185 mm <sup>2</sup> x 4 core				
1.4.1.1		Supply	m	300		R
1.4.1.2		Install	m	300		R
1.4.2		95 mm <sup>2</sup> x 4 core				
1.4.2.1		Supply	m	Rate Only		Rate only
1.4.2.2		Install	m	Rate Only		Rate only
Total Carried Forward						R



## BILL 4 BOQ 6: INLET WORKS ELECTRICAL SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.4.3		50 mm <sup>2</sup> x 4 core				
1.4.3.1		Supply	m	35		R
1.4.3.2		Install	m	35		R
1.4.4		25 mm <sup>2</sup> x 4 core				
1.4.4.1		Supply	m	40		R
1.4.4.2		Install	m	40		R
1.4.5		16 mm <sup>2</sup> x 4 core				
1.4.5.1		Supply	m	185		R
1.4.5.2		Install	m	185		R
1.4.6		10 mm <sup>2</sup> x 4 core				
1.4.6.1		Supply	m	40		R
1.4.6.2		Install	m	40		R
1.4.7		6 mm <sup>2</sup> x 4 core				
1.4.7.1		Supply	m	Rate Only		Rate only
1.4.7.2		Install	m	Rate Only		Rate only
1.4.8		4 mm <sup>2</sup> x 4 core				
1.4.8.1		Supply	m	80		R
1.4.8.2		Install	m	80		R
1.4.9		2.5 mm <sup>2</sup> x 4 core				
1.4.9.1		Supply	m	280		R
1.4.9.2		Install	m	280		R
1.4.10		1.5 mm <sup>2</sup> x 7 core				
1.4.10.1		Supply	m	400		R
1.4.10.2		Install	m	400		R
1.4.11		1.5 mm <sup>2</sup> x 4 core				
1.4.11.1		Supply	m	3140		R
1.4.11.2		Install	m	3140		R
1.4.12		70 mm <sup>2</sup> BCEW				
1.4.12.1		Supply	m	300		R
1.4.12.2		Install	m	300		R
1.4.13		95 mm <sup>2</sup> x 3 core (VFD Cable)				
1.4.13.1		Supply	m	100		R
1.4.13.2		Install	m	100		R
1.4.14		10 mm <sup>2</sup> x 3 core (VFD Cable)				
1.4.14.1		Supply	m	240		R
1.4.14.2		Install	m	240		R
1.4.15		1.5 mm <sup>2</sup> x 3 core (VFD Cable)				
1.4.15.1		Supply	m	400		R
1.4.15.2		Install	m	400		R
1.4.16		95 mm <sup>2</sup> ICEW				
1.4.16.1		Supply	m	100		R
1.4.16.2		Install	m	100		R
1.4.17		10 mm <sup>2</sup> ICEW				
1.4.17.1		Supply	m	240		R
1.4.17.2		Install	m	240		R
1.4.18		1.5 mm <sup>2</sup> ICEW				
1.4.18.1		Supply	m	400		R
1.4.18.2		Install	m	400		R
Total Carried Forward						R

## BILL 4 BOQ 6: INLET WORKS ELECTRICAL SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.5		Termination of copper PVC/PVC/SWA/PVC cables in MCC's, Field Isolators, Mini-substations, Motors and Junction Boxes. Rates shall include the supply and installation of glands, shrouds, lugs, nuts, bolts and washers as required.				
1.5.1		185 mm <sup>2</sup> x 4 core				
1.5.1.1		Supply	No	4		R
1.5.1.2		Install	No	4		R
1.5.2		95 mm <sup>2</sup> x 4 core				
1.5.2.1		Supply	No	Rate Only		Rate Only
1.5.2.2		Install	No	Rate Only		Rate Only
1.5.3		50 mm <sup>2</sup> x 4 core				
1.5.3.1		Supply	No	2		R
1.5.3.2		Install	No	2		R
1.5.4		25 mm <sup>2</sup> x 4 core				
1.5.4.1		Supply	No	4		R
1.5.4.2		Install	No	4		R
1.5.5		16 mm <sup>2</sup> x 4 core				
1.5.5.1		Supply	No	6		R
1.5.5.2		Install	No	6		R
1.5.6		10 mm <sup>2</sup> x 4 core				
1.5.6.1		Supply	No	2		R
1.5.6.2		Install	No	2		R
1.5.7		6 mm <sup>2</sup> x 4 core				
1.5.7.1		Supply	No	Rate Only		Rate only
1.5.7.2		Install	No	Rate Only		Rate only
1.5.8		4 mm <sup>2</sup> x 4 core				
1.5.8.1		Supply	No	4		R
1.5.8.2		Install	No	4		R
1.5.9		2.5 mm <sup>2</sup> x 4 core				
1.5.9.1		Supply	No	12		R
1.5.9.2		Install	No	12		R
1.5.10		1.5 mm <sup>2</sup> x 7 core				
1.5.10.1		Supply	No	10		R
1.5.10.2		Install	No	10		R
1.5.11		1.5 mm <sup>2</sup> x 4 core				
1.5.11.1		Supply	No	120		R
1.5.11.2		Install	No	120		R
1.5.12		70 mm <sup>2</sup> BCEW				
1.5.12.1		Supply	No	2		R
1.5.12.2		Install	No	2		R
1.5.13		95 mm <sup>2</sup> x 3 core (VFD Cable)				
1.5.13.1		Supply	No	16		R
1.5.13.1		Install	No	16		R
Total Carried Forward						R

## BILL 4 BOQ 6: INLET WORKS ELECTRICAL SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.5.14		10 mm <sup>2</sup> x 3 core (VFD Cable)	No			R
1.5.14.1		Supply	No	8		R
1.5.14.2		Install	No	8		R
1.5.15		1.5 mm <sup>2</sup> x 3 core (VFD Cable)				
1.5.15.1		Supply	No	8		R
1.5.15.2		Install	No	8		R
1.5.16		95 mm <sup>2</sup> ICEW				
1.5.16.1		Supply	No	Rate Only		Rate only
1.5.16.2		Install	No	Rate Only		Rate only
1.5.17		10 mm <sup>2</sup> ICEW				
1.5.17.1		Supply	No	8		R
1.5.17.2		Install	No	8		R
1.5.18		1.5 mm <sup>2</sup> ICEW				
1.5.18.1		Supply	No	8		R
1.5.18.2		Install	No	8		R
		CABLE LADDER AND TRAY				
1.6		3CR12 cable ladder including all accessories (Earth continuity jumpers 16mm <sup>2</sup> , 10mm <sup>2</sup> , P1000 3CR12 Unistrut, splice kits) mounted to concrete slabs / walls.				
1.6.1		1000 mm cable ladder				
1.6.1.1		Supply	m	47		R
1.6.1.2		Install	m	47		R
1.6.2		1000mm 90° bends				
1.6.2.1		Supply	No	3		R
1.6.2.2		Install	No	3		R
1.6.3		1000mm Riser/Dropper				
1.6.3.1		Supply	No	4		R
1.6.3.2		Install	No	4		R
1.6.4		1000mm Tee Piece				
1.6.4.1		Supply	No	Rate Only		Rate only
1.6.4.2		Install	No	Rate Only		Rate only
1.6.5		1000mm - 800mm Reducer				
1.6.5.1		Supply	No	1		R
1.6.5.2		Install	No	1		R
1.6.6		800 mm cable ladder				
1.6.6.1		Supply	m	Rate Only		Rate Only
1.6.6.2		Install	m	Rate Only		Rate Only
1.6.7		800mm 90° bends				
1.6.7.1		Supply	No	Rate Only		Rate Only
1.6.7.2		Install	No	Rate Only		Rate Only
1.6.8		800mm Riser/Dropper				
1.6.8.1		Supply	No	0		Rate Only
1.6.8.2		Install	No	Rate Only		Rate Only
1.6.9		800mm Tee Piece				
1.6.9.1		Supply	No	Rate Only		Rate Only
1.6.9.2		Install	No	Rate Only		Rate Only
Total Carried Forward						R

## BILL 4 BOQ 6: INLET WORKS ELECTRICAL SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.6.10		800mm - 500mm Reducer				
1.6.10.1		Supply	No	Rate Only		Rate Only
1.6.10.2		Install	No	Rate Only		Rate Only
1.6.11		500 mm cable ladder				
1.6.11.1		Supply	m	110		R
1.6.11.2		Install	m	110		R
1.6.12		500mm 90° bends				
1.6.12.1		Supply	No	4		R
1.6.12.2		Install	No	4		R
1.6.13		500mm Riser/Dropper				
1.6.13.1		Supply	No	8		R
1.6.13.2		Install	No	8		R
1.6.14		500mm Tee Piece				
1.6.14.1		Supply	No	Rate Only		Rate Only
1.6.14.2		Install	No	Rate Only		Rate Only
1.6.15		500mm - 300mm Reducer				
1.6.15.1		Supply	No	Rate Only		Rate Only
1.6.15.2		Install	No	Rate Only		Rate Only
1.6.16		300 mm cable ladder				
1.6.16.1		Supply	m	24		R
1.6.16.2		Install	m	24		R
1.6.17		300mm 90° bends				
1.6.17.1		Supply	No	2		R
1.6.17.2		Install	No	2		R
1.6.18		300mm Riser/Dropper				
1.6.18.1		Supply	No	2		R
1.6.18.2		Install	No	2		R
1.6.19		300mm Tee Piece				
1.6.19.1		Supply	No	Rate Only		Rate Only
1.6.19.2		Install	No	Rate Only		Rate Only
1.6.20		200 mm cable ladder				
1.6.20.1		Supply	m	60		R
1.6.20.2		Install	m	60		R
1.6.21		200mm 90° bends				
1.6.21.1		Supply	No	8		R
1.6.21.2		Install	No	8		R
1.6.22		200mm Riser/Dropper				
1.6.22.1		Supply	No	4		R
1.6.22.3		Install	No	4		R
1.6.23		200mm Tee Piece				
1.6.23.1		Supply	No	Rate Only		Rate Only
1.6.23.2		Install	No	Rate Only		Rate Only
1.6.24		100 mm cable ladder				
1.6.24.1		Supply	m	40		R
1.6.24.2		Install	m	40		R
Total Carried Forward						R

## BILL 4 BOQ 6: INLET WORKS ELECTRICAL SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.6.25		100mm 90° bends				
1.6.25.1		Supply	No	8		R
1.6.25.2		Install	No	8		R
1.6.26		100mm Riser/Dropper				
1.6.26.1		Supply	No	6		R
1.6.26.2		Install	No	6		R
1.6.27		100mm Tee Piece				
1.6.27.1		Supply	No	Rate Only		Rate Only
1.6.27.2		Install	No	Rate Only		Rate Only
1.7		Installation Accessories				
1.7.1		P1000 - 3CR12 Unistrut				
1.7.1.1		Supply	m	40		R
1.7.1.2		Install	m	40		R
1.7.2		Angle Steel 3CR12 30mmx30mmx3mm				
1.7.2.1		Supply	m	50		R
1.7.2.2		Install	m	50		R
1.7.3		Channel Steel 3CR12 100mmx50mmx6mm				
1.7.3.1		Supply	m	35		R
1.7.3.2		Install	m	35		R
1.7.4		Welding Plug Socket				
1.7.4.1		Supply	No	2		R
1.7.4.2		Install	No	2		R
1.8		Removal of Existing Equipment				
1.8.1		Disconnection and removal of the existing screened sewage pump station MCC panel, placement at the site laydown area.	Lot	1		R
Total Carried Forward To Summary Of Bills						R

## BILL 4 BOQ 7: DE-WATERING ELECTRICAL SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>1</b>		<i>(Refer to Electrical Specification: Annexure E)</i> <b>De-watering Electrical System</b>				
1.1		Manufacture, supply, off loading, installation, testing and commissioning of 500kVA Mini-Substation Units, as detailed in the specifications. <i>As per technical data sheet EB4, included in the Volume C3.6.1 - Annex 1.</i>				
1.1.1		Supply	No	1		R
1.1.2		Install	No	1		R
1.2		Manufacture, supply, off loading and installation of precast concrete plinth for the Mini-substation installation. Preparation of the ground including excavation and compaction to be included.				
1.2.1		Supply	No	1		R
1.2.2		Install	No	1		R
1.3		MV Cabling				
		Supply and installation of copper XLPE/PVC/SWA/PVC 6.35/11kV Type A cable as per SANS 1339, laid in ducts, trenches, horizontal racks or vertical ducts. Rates shall include the supply and fixing of supports with regard to installation of cables. Rates shall include the stainless steel cable strapping as required. 3 Core 35mm <sup>2</sup>				
1.3.1		Supply	m	185		R
1.3.2		Install	m	185		R
1.4		Termination of copper XLPE/PVC/SWA/PVC 6.35/11kV Type A cable. 3 Core 35mm <sup>2</sup>				
1.4.1		Supply	No	2		R
1.4.2		Install	No	2		R
		<b>MCC panels</b>				
1.5		Manufacture, supply, off loading and installation of the De-watering MCC Panel, and commissioning as detailed in the specifications and drawings. <i>60325-E-SD-700: Single line diagram</i> <i>60325-E-SD-702: GA</i>				
1.5.1		Supply	No	1		R
1.5.2		Install	No	1		R
1.6		Manufacture, supply, off loading and installation of the Sludge Transfer MCC Panel, and commissioning as detailed in the specifications and drawings. <i>60325-E-SD-701: Single line diagram</i> <i>60325-E-SD-703: GA</i>				
1.6.1		Supply	No	1		R
1.6.2		Install	No	1		R
1.7		Local Control Stations				
Total Carried Forward						R

## BILL 4 BOQ 7: DE-WATERING ELECTRICAL SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.7.1		Surface mounted IP65 emergency stop push buttons.				
1.7.1.1		Supply	No	21		R
1.7.1.2		Install	No	21		R
1.7.2		3CR12 support stands for the above item.				
1.7.2.1		Supply	No	21		R
1.7.2.2		Install	No	21		R
<b>LV CABLE</b>						
1.8		Supply and installation of copper PVC/PVC/SWA/PVC cables laid in ducts, trenches, horizontal racks or vertical ducts. Rates shall include the supply and fixing of supports with regard to installation of cables. Rates shall include the PVC cable ties as required. All cables are Copper PVC/PVC/SWA/PVC cables per SANS 1507.				
1.8.1		120 mm <sup>2</sup> x 4 core				
1.8.1.1		Supply	m	100		R
1.8.1.2		Install	m	100		R
1.8.2		50 mm <sup>2</sup> x 4 core				
1.8.2.1		Supply	m	126		R
1.8.2.2		Install	m	126		R
1.8.3		25 mm <sup>2</sup> x 4 core				
1.8.3.1		Supply	m	11		R
1.8.3.2		Install	m	11		R
1.8.4		16 mm <sup>2</sup> x 4 core				
1.8.4.1		Supply	m	98		R
1.8.4.2		Install	m	98		R
1.8.5		10 mm <sup>2</sup> x 4 core				
1.8.5.1		Supply	m	40		R
1.8.5.2		Install	m	40		R
1.8.6		2.5 mm <sup>2</sup> x 4 core				
1.8.6.1		Supply	m	85		R
1.8.6.2		Install	m	85		R
1.8.7		1.5 mm <sup>2</sup> x 4 core				
1.8.7.1		Supply	m	1143		R
1.8.7.2		Install	m	1143		R
1.8.8		70 mm <sup>2</sup> BCEW				
1.8.8.1		Supply	m	50		R
1.8.8.2		Install	m	50		R
1.8.9		50 mm <sup>2</sup> x 3 core (VFD Cable)				
1.8.9.1		Supply	m	72		R
1.8.9.2		Install	m	72		R
1.8.10		10 mm <sup>2</sup> x 3 core (VFD Cable)				
1.8.10.1		Supply	m	132		R
1.8.10.2		Install	m	132		R
Total Carried Forward						R

## BILL 4 BOQ 7: DE-WATERING ELECTRICAL SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.8.11		2.5 mm <sup>2</sup> x 3 core (VFD Cable)				
1.8.11.1		Supply	m	50		R
1.8.11.2		Install	m	50		R
1.8.12		1.5 mm <sup>2</sup> x 3 core (VFD Cable)				
1.8.12.1		Supply	m	96		R
1.8.12.2		Install	m	96		R
1.8.13		50 mm <sup>2</sup> ICEW				
1.8.13.1		Supply	m	Rate Only		Rate only
1.8.13.2		Install	m	Rate Only		Rate only
1.8.14		10 mm <sup>2</sup> ICEW				
1.8.14.1		Supply	m	Rate Only		Rate only
1.8.14.2		Install	m	Rate Only		Rate only
1.8.15		2.5 mm <sup>2</sup> ICEW				
1.8.15.1		Supply	m	Rate Only		Rate only
1.8.15.2		Install	m	Rate Only		Rate only
1.8.16		1.5 mm <sup>2</sup> ICEW				
1.8.16.1		Supply	m	Rate Only		Rate only
1.8.16.2		Install	m	Rate Only		Rate only
1.9		Termination of copper PVC/PVC/SWA/PVC cables in MCC's, Field Isolators, Mini-substations, Motors and Junction Boxes. Rates shall include the supply and installation of glands, shrouds, lugs, nuts, bolts and washers as required.				
1.9.1		120 mm <sup>2</sup> x 4 core				
1.9.1.1		Supply	No	4		R
1.9.1.2		Install	No	4		R
1.9.2		50 mm <sup>2</sup> x 4 core				
1.9.2.1		Supply	No	4		R
1.9.2.2		Install	No	4		R
1.9.3		25 mm <sup>2</sup> x 4 core				
1.9.3.1		Supply	No	2		R
1.9.3.2		Install	No	2		R
1.9.4		16 mm <sup>2</sup> x 4 core				
1.9.4.1		Supply	No	6		R
1.9.4.2		Install	No	6		R
1.9.5		10 mm <sup>2</sup> x 4 core				
1.9.5.1		Supply	No	2		R
1.9.5.2		Install	No	2		R
1.9.6		2.5 mm <sup>2</sup> x 4 core				
1.9.6.1		Supply	No	10		R
1.9.6.2		Install	No	10		R
1.9.7		1.5 mm <sup>2</sup> x 4 core				
1.9.7.1		Supply	No	76		R
1.9.7.2		Install	No	76		R
Total Carried Forward						R



## BILL 4 BOQ 7: DE-WATERING ELECTRICAL SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.9.8		70 mm <sup>2</sup> BCEW				
1.9.8.1		Supply	No	2		R
1.9.8.2		Install	No	2		R
1.9.9		50 mm <sup>2</sup> x 3 core (VFD Cable)				
1.9.9.1		Supply	No	4		R
1.9.9.2		Install	No	4		R
1.9.10		10 mm <sup>2</sup> x 3 core (VFD Cable)				
1.9.10.1		Supply	No	8		R
1.9.10.2		Install	No	8		R
1.9.11		2.5 mm <sup>2</sup> x 3 core (VFD Cable)				
1.9.11.1		Supply	No	2		R
1.9.11.1		Install	No	2		R
1.9.12		1.5 mm <sup>2</sup> x 3 core (VFD Cable)				
1.9.12.1		Supply	No	8		R
1.9.12.2		Install	No	8		R
1.9.13		50 mm <sup>2</sup> ICEW				
1.9.13.1		Supply	No	Rate Only		Rate only
1.9.13.2		Install	No	Rate Only		Rate only
1.9.14		10 mm <sup>2</sup> ICEW				
1.9.14.1		Supply	No	Rate Only		Rate only
1.9.14.2		Install	No	Rate Only		Rate only
1.9.15		1.2 mm <sup>2</sup> ICEW				
1.9.15.1		Supply	No	Rate Only		Rate only
1.9.15.2		Install	No	Rate Only		Rate only
1.9.16		1.5 mm <sup>2</sup> ICEW				
1.9.16.1		Supply	No	Rate Only		Rate only
1.9.16.2		Install	No	Rate Only		Rate only
<b>CABLE LADDER AND TRAY</b>						
1.10		3CR12 cable ladder including all accessories (Earth continuity jumpers 16mm <sup>2</sup> , 10mm <sup>2</sup> , P1000 3CR12 Unistrut, splice kits) mounted to concrete slabs / walls.				
1.10.1		1000 mm cable ladder				
1.10.1.1		Supply	m	18		R
1.10.1.2		Install	m	18		R
1.10.2		1000mm 90° bends				
1.10.2.1		Supply	No	1		R
1.10.2.2		Install	No	1		R
1.10.3		1000mm Riser/Dropper				
1.10.3.1		Supply	No	3		R
1.10.3.2		Install	No	3		R
1.10.4		1000mm Tee Piece				
1.10.4.1		Supply	No	Rate Only		Rate only
1.10.4.2		Install	No	Rate Only		Rate only
Total Carried Forward						R

## BILL 4 BOQ 7: DE-WATERING ELECTRICAL SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.10.5		1000mm - 800mm Reducer				
1.10.5.1		Supply	No	2		R
1.10.5.1		Install	No	2		R
1.10.6		800 mm cable ladder				
1.10.6.1		Supply	m	12		R
1.10.6.2		Install	m	12		R
1.10.7		800mm 90° bends				
1.10.7.1		Supply	No	Rate Only		Rate only
1.10.7.2		Install	No	Rate Only		Rate only
1.10.8		800mm Riser/Dropper				
1.10.8.1		Supply	No	2		R
1.10.8.2		Install	No	2		R
1.10.9		800mm Tee Piece				
1.10.9.1		Supply	No	Rate Only		Rate only
1.10.9.2		Install	No	Rate Only		Rate only
1.10.10		800mm - 500mm Reducer				
1.10.10.1		Supply	No	1		R
1.10.10.2		Install	No	1		R
1.10.11		500 mm cable ladder				
1.10.11.1		Supply	m	14		R
1.10.11.2		Install	m	14		R
1.10.12		500mm 90° bends				
1.10.12.1		Supply	No	1		R
1.10.12.2		Install	No	1		R
1.10.13		500mm Riser/Dropper				
1.10.13.1		Supply	No	2		R
1.10.13.2		Install	No	2		R
1.10.14		500mm Tee Piece				
1.10.14.1		Supply	No	Rate Only		Rate only
1.10.14.2		Install	No	Rate Only		Rate only
1.10.15		500mm - 300mm Reducer				
1.10.15.1		Supply	No	Rate Only		Rate only
1.10.15.2		Install	No	Rate Only		Rate only
1.10.16		300 mm cable ladder				
1.10.16.1		Supply	m	20		R
1.10.16.2		Install	m	20		R
1.10.17		300mm 90° bends				
1.10.17.1		Supply	No	2		R
1.10.17.2		Install	No	2		R
1.10.18		300mm Riser/Dropper				
1.10.18.1		Supply	No	2		R
1.10.18.2		Install	No	2		R
1.10.19		300mm Tee Piece				
1.10.19.1		Supply	No	Rate Only		Rate only
1.10.19.2		Install	No	Rate Only		Rate only
Total Carried Forward						R

## BILL 4 BOQ 7: DE-WATERING ELECTRICAL SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.10.20		200 mm cable ladder				
1.10.20.1		Supply	m	70		R
1.10.20.2		Install	m	70		R
1.10.21		200mm 90° bends				
1.10.21.1		Supply	No	6		R
1.10.21.2		Install	No	6		R
1.10.22		200mm Riser/Dropper				
1.10.22.1		Supply	No	6		R
1.10.22.2		Install	No	6		R
1.10.23		200mm Tee Piece				
1.10.23.1		Supply	No	Rate Only		Rate only
1.10.23.2		Install	No	Rate Only		Rate only
1.10.24		100 mm cable ladder				
1.10.24.1		Supply	No	100		R
1.10.24.2		Install	No	100		R
1.10.25		100mm 90° bends				
1.10.25.1		Supply	No	12		R
1.10.25.2		Install	No	12		R
1.10.26		100mm Riser/Dropper				
1.10.26.1		Supply	No	10		R
1.10.26.2		Install	No	10		R
1.10.27		100mm Tee Piece				
1.10.27.1		Supply	No	Rate Only		Rate only
		Install	No	Rate Only		Rate only
<b>1.11</b>		<b>Installation Accessories</b>				
1.11.1		P1000 - 3CR12 Unistrut				
1.11.1.1		Supply	m	35		R
1.11.1.2		Install	m	35		R
1.11.2		Angle Steel 3CR12 30mmx30mmx3mm				
1.11.2.1		Supply	m	40		R
1.11.2.2		Install	m	40		R
1.11.3		Channel Steel 3CR12 100mmx50mmx6mm				
1.11.3.1		Supply	m	30		R
1.11.3.2		Install	m	30		R
1.11.4		Welding Plug Socket				
1.11.4.1		Supply	No	2		R
1.11.4.2		Install	No	2		R
Total Carried Forward						R

## BILL 4 BOQ 7: DE-WATERING ELECTRICAL SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
2	PI. 6.1.	<b>SLEEVES</b>  Supply and installation of HDPE sleeves buried in ground as specified for Electrical,& data services, including couplings in accordance with non-metallic sleeves and accessories as per SANS 61386-24. Tenderers to note that all sleeves under buildings will be encased in concrete by the building contractor.				
2.1		110mm Flexible double walled black corrugated sleeves including 6mm pilot string as draw wire in each sleeve				
2.1.1		Supply	m	200		R
2.1.2		Install	m	200		R
3	PI. 6.3.	<b>EXCAVATIONS &amp; BACKFILL</b>  Excavate for cables and sleeves including temporary support of sides, keeping excavation dry, bedding material, backfilling, compacting and testing as specified. All backfill material to be suitable as per SANS codes and engineers approval. Backfill material to be imported if necessary.				
3.1		In soft or pickable soil (60%)				
3.1.1		Supply	m³	80		R
3.1.2		Install	m³	80		R
3.2		In medium rock (20%)				
3.2.1		Supply	m³	25		R
3.2.2		Install	m³	25		R
3.3		In hard rock (20%)				
3.3.1		Supply	m³	25		R
3.3.2		Install	m³	25		R
Total Carried Forward To Summary Of Bills						R

## BILL 4 BOQ 8: PUMP STATION ELECTRICAL SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<i>(Refer to Electrical Specification: Annexure E)</i>				
<b>1</b>		<b>Pump Station Electrical System</b>				
		MCC panel				
1.1		Manufacture, supply, off loading and installation of Pump Station No. 1 MCC Panel, and commissioning as detailed in the specifications and drawings. <i>60325-E-LS-300: Single line diagram</i> <i>60325-E-LS-304: GA</i>				
1.1.1		Supply	No	1		R
1.1.2		Install	No	1		R
1.2		Manufacture, supply, off loading and installation of Pump Station No. 2 MCC Panel, and commissioning as detailed in the specifications and drawings. <i>60325-E-LS-301: Single line diagram</i> <i>60325-E-LS-305: GA</i>				
1.2.1		Supply	No	1		R
1.2.2		Install	No	1		R
1.3		Manufacture, supply, off loading and installation of Pump Station No. 3 MCC Panel, and commissioning as detailed in the specifications and drawings. <i>60325-E-LS-302: Single line diagram</i> <i>60325-E-LS-306: GA</i>				
1.3.1		Supply	No	1		R
1.3.2		Install	No	1		R
1.4		Manufacture, supply, off loading and installation of Pump Station No. 4 MCC Panel, and commissioning as detailed in the specifications and drawings. <i>60325-E-LS-303: Single line diagram</i> <i>60325-E-LS-307: GA</i>				
1.4.1		Supply	No	1		R
1.4.2		Install	No	1		R
<b>1.5</b>		<b>Local Control Stations</b>				
1.5.1		Surface mounted IP65 emergency stop push buttons.				
1.5.1.1		Supply	No	54		R
1.5.1.2		Install	No	54		R
1.5.2		3CR12 support stands for the above item.				
1.5.2.1		Supply	No	54		R
1.5.2.2		Install	No	54		R
Total Carried Forward						R

## BILL 4 BOQ 8: PUMP STATION ELECTRICAL SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.6		<b>LV CABLE</b> Supply and installation of copper PVC/PVC/SWA/PVC cables laid in ducts, trenches, horizontal racks or vertical ducts. Rates shall include the supply and fixing of supports with regard to installation of cables. Rates shall include the PVC cable ties as required. All cables are Copper PVC/PVC/SWA/PVC cables per SANS 1507.				
1.6.1		150 mm <sup>2</sup> x 4 core				
1.6.1.1		Supply	m	800		R
1.6.1.2		Install	m	800		R
1.6.2		50 mm <sup>2</sup> x 4 core				
1.6.2.1		Supply	m	100		R
1.6.2.2		Install	m	100		R
1.6.3		25 mm <sup>2</sup> x 4 core				
1.6.3.1		Supply	m	Rate Only		Rate only
1.6.3.2		Install	m	Rate Only		Rate only
1.6.4		16 mm <sup>2</sup> x 4 core				
1.6.4.1		Supply	m	Rate Only		Rate only
1.6.4.2		Install	m	Rate Only		Rate only
1.6.5		10 mm <sup>2</sup> x 4 core				
1.6.5.1		Supply	m	480		R
1.6.5.2		Install	m	480		R
1.6.6		6 mm <sup>2</sup> x 4 core				
1.6.6.1		Supply	m	942		R
1.6.6.2		Install	m	942		R
1.6.7		4 mm <sup>2</sup> x 4 core				
1.6.7.1		Supply	m	Rate Only		Rate only
1.6.7.2		Install	m	Rate Only		Rate only
1.6.8		2.5 mm <sup>2</sup> x 4 core				
1.6.8.1		Supply	m	80		R
1.6.8.2		Install	m	80		R
1.6.9		1.5 mm <sup>2</sup> x 4 core				
1.6.9.1		Supply	m	4503		R
1.6.9.2		Install	m	4503		R
1.6.10		70 mm <sup>2</sup> BCEW				
1.6.10.1		Supply	m	320		R
1.6.10.2		Install	m	320		R
1.6.11		25 mm <sup>2</sup> x 3 core (VFD Cable)				
1.6.11.1		Supply	m	2658		R
1.6.11.2		Install	m	2658		R
1.6.12		4 mm <sup>2</sup> x 3 core (VFD Cable)				
1.6.12.1		Supply	m	423		R
1.6.12.2		Install	m	423		R
Total Carried Forward						R

## BILL 4 BOQ 8: PUMP STATION ELECTRICAL SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.6.13		25 mm <sup>2</sup> ICEW				
1.6.13.1		Supply	m	2658		R
1.6.13.2		Install	m	2658		R
1.6.14		4 mm <sup>2</sup> ICEW				
1.6.14.1		Supply	m	423		R
1.6.14.2		Install	m	423		R
1.7		Termination of copper PVC/PVC/SWA/PVC cables in MCC's, Field Isolators, Mini-substations, Motors and Junction Boxes. Rates shall include the supply and installation of glands, shrouds, lugs, nuts, bolts and washers as required.				
1.7.1		150 mm <sup>2</sup> x 4 core				
1.7.1.1		Supply	No	20		R
1.7.1.2		Install	No	20		R
1.7.2		50 mm <sup>2</sup> x 4 core				
1.7.2.1		Supply	No	2		R
1.7.2.2		Install	No	2		R
1.7.3		25 mm <sup>2</sup> x 4 core				
1.7.3.1		Supply	No	Rate Only		Rate only
1.7.3.2		Install	No	Rate Only		Rate only
1.7.4		16 mm <sup>2</sup> x 4 core				
1.7.4.1		Supply	No	8		R
1.7.4.2		Install	No	8		R
1.7.5		10 mm <sup>2</sup> x 4 core				
1.7.5.1		Supply	No	24		R
1.7.5.2		Install	No	24		R
1.7.6		6 mm <sup>2</sup> x 4 core				
1.7.6.1		Supply	No	24		R
1.7.6.2		Install	No	24		R
1.7.7		4 mm <sup>2</sup> x 4 core				
1.7.7.1		Supply	No	Rate Only		Rate only
1.7.7.2		Install	No	Rate Only		Rate only
1.7.8		2.5 mm <sup>2</sup> x 4 core				
1.7.8.1		Supply	No	8		R
1.7.8.2		Install	No	8		R
1.7.9		1.5 mm <sup>2</sup> x 4 core				
1.7.9.1		Supply	No	108		R
1.7.9.2		Install	No	108		R
1.7.10		70 mm <sup>2</sup> BCEW				
1.7.10.1		Supply	No	8		R
1.7.10.2		Install	No	8		R
1.7.11		25 mm <sup>2</sup> x 3 core (VFD Cable)				
1.7.11.1		Supply	m	48		R
1.7.11.2		Install	m	48		R
Total Carried Forward						R

**BILL 4 BOQ 8: PUMP STATION ELECTRICAL SYSTEM**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.7.12		4 mm <sup>2</sup> x 3 core (VFD Cable)				
1.7.12.1		Supply	m	12		R
1.7.12.2		Install	m	12		R
1.7.13		25 mm <sup>2</sup> ICEW				
1.7.13.1		Supply	m	48		R
1.7.13.2		Install	m	48		R
1.7.14		4 mm <sup>2</sup> ICEW				
1.7.14.1		Supply	m	12		R
1.7.14.2		Install	m	12		R
		<b>CABLE LADDER AND TRAY</b>				
1.8		3CR12 cable ladder including all accessories (Earth continuity jumpers 16mm <sup>2</sup> , 10mm <sup>2</sup> , P1000 3CR12 Unistrut, splice kits) mounted to concrete slabs / walls.				
1.8.1		300 mm cable ladder				
1.8.1.1		Supply	m	40		R
1.8.1.2		Install	m	40		R
1.8.2		300mm 90° bends				
1.8.2.1		Supply	No	8		R
1.8.2.2		Install	No	8		R
1.8.3		300mm Riser/Dropper				
1.8.3.1		Supply	No	8		R
1.8.3.2		Install	No	8		R
1.8.4		300mm Tee Piece				
1.8.4.1		Supply	No	Rate Only		Rate only
1.8.4.2		Install	No	Rate Only		Rate only
1.8.5		100 mm cable ladder				
1.8.5.1		Supply	m	80		R
1.8.5.2		Install	m	80		R
1.8.6		100mm 90° bends				
1.8.6.1		Supply	No	Rate Only		Rate only
1.8.6.2		Install	No	Rate Only		Rate only
1.8.7		100mm Riser/Dropper				
1.8.7.1		Supply	No	Rate Only		Rate only
1.8.7.2		Install	No	Rate Only		Rate only
1.8.8		100mm Tee Piece				
1.8.8.1		Supply	No	Rate Only		Rate only
1.8.8.2		Install	No	Rate Only		Rate only
1.9		Installation Accessories				
1.9.1		P1000 - 3CR12 Unistrut				
1.9.1.1		Supply	m	10		R
1.9.1.2		Install	m	10		R
1.9.2		Angle Steel 3CR12 30mmx30mmx3mm				
1.9.2.1		Supply	m	10		R
1.9.2.2		Install	m	10		R
Total Carried Forward						R



**BILL 4 BOQ 8: PUMP STATION ELECTRICAL SYSTEM**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.9.3		Channel Steel 3CR12 100mmx50mmx6mm				
1.9.3.1		Supply	m	20		R
1.9.3.2		Install	m	20		R
1.10		Removal of Existing Equipment				
1.10.1		Disconnection and removal of the existing Pump Station No. 1 MCC panel, placement at the site laydown area.	Lot	1		R
1.10.2		Disconnection and removal of the existing Pump Station No. 2 MCC panel, placement at the site laydown area.	Lot	1		R
1.10.3		Disconnection and removal of the existing Pump Station No. 3 MCC panel, placement at the site laydown area.	Lot	1		R
1.10.4		Disconnection and removal of the existing Pump Station No. 4 MCC panel, placement at the site laydown area.	Lot	1		R
Total Carried Forward To Summary Of Bills						R

**BILL 4 BOQ 9: OHS, TESTING, COMMISSIONING, TRAINING, GENERAL - ELECTRICAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<i>(Refer to Electrical Specification: Annexure E)</i>				
1	PI. 7.2.	<b>OHS Signage &amp; Labelling</b>				
1.1		Supply and install all signage as per OHS Act and Ethekwini Electricity requirements.	Sum	6		R
1.2		Labelling of all cables, switches, and equipment as specified.	Sum	6		R
2		<b>TESTING COMISSIONING &amp; HANDOVER</b>				
2.1	PI. 9.1.	<b>TESTING AND COMMISSIONING:</b>				
2.1.1		Test and commission complete installation per SANS 10142-1 and as specified.	Sum	6		R
2.2	PI. 9.2.	<b>DOCUMENTATION</b>				
2.2.1		Submit As-built drawings to the Engineers satisfaction. 1 x full set "red line" drawings (hard copy)	Sum	6		R
2.2.2		Submit Operation & Maintenance Manuals to the Engineers satisfaction 3 x sets manufacturers and supplier schedules, operation and maintenance manuals and drawings (hard copy + CD)	Sum	6		R
2.2.3		Issue Certificate of Compliance (CoC): - 1 for each DB - 1 overall CoC	Sum	6		R
Total Carried Forward						R

## BILL 4 BOQ 9: OHS, TESTING, COMMISSIONING, TRAINING, GENERAL - ELECTRICAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
2.2.4	Pl. 9.3.	Issue Earth certificate for the complete earth installation	Sum	6		R
2.3		<b>TRAINING</b>				
2.3.1		MV Switchgear, RMU's & Mini-substations (Training to cater for 5 operational and 5 engineering staff, unless noted otherwise)				
2.3.1.1		Detailed training on MV switchgear, operation to component level	Sum	1		R
2.3.1.2		Overview training on 11kV protection and switchgear settings, including RTU.	Sum	1		R
2.3.1.3		Comprehensive training on 11kV protection and switchgear settings (For 2 x engineers. 2 x technicians. All costs to be borne by the tenderer if training is offered out of Durban)	Sum	1		R
2.3.1.4		MV switchgear maintenance requirements	Sum	1		R
2.3.1.5		MV switchgear safety in operation and maintenance	Sum	1		R
2.3.2		Generator Systems (Training to cater for 5 operational and 5 engineering staff, unless noted otherwise)				
2.3.2.1		Detailed training on generator and critical components	Sum	1		R
2.3.2.2		Detailed training on generator operation, including engine management systems and electrical control	Sum	1		R
2.3.2.3		Simple overview of protection systems	Sum	1		R
2.3.3		Motor Control Centres (Training to cater for 5 operational and 5 engineering staff, unless noted otherwise)				
2.3.3.1		Detailed training on MCC and critical components	Sum	1		R
2.3.3.2		Detailed training on operational systems, including interlocks, control system interface and intelligent relay/VFD/ softstarter configuration	Sum	1		R
2.3.3.3		Safety in operations and maintenance	Sum	1		R
2.3.4		Provide Training Manuals for critical operation and maintenance of the complete system.	Sum	1		R
Total Carried Forward						R

## BILL 4 BOQ 9: OHS, TESTING, COMMISSIONING, TRAINING, GENERAL - ELECTRICAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
2.4		<b>FACTORY ACCEPTANCE TESTS</b>				
2.4.1		Witnessing of Inspections, tests, FAT etc. of equipment by the employers representatives and engineering team representatives outside of the eThekweni Metropolitan Area but within the Republic of South Africa as specified in the detailed specifications. Provision of 4 Pax.	Sum	1		R
2.4.2		Witnessing of Inspections, tests, FAT etc. of equipment by the employers representatives and engineering team representatives outside of the eThekweni Metropolitan Area but outside the borders of the Republic of South Africa as specified in the detailed specifications. Provision for 4 Pax.	Sum	1		R
2.5	Pl. 9.4.	<b>GENERAL</b>				
2.5.1		Guarantee and full maintenance of the complete electrical system for 12 months after handover to the client.  Full list of material and maintenance plan to be provided	Mnts	12		R
2.5.2		Guarantee and full maintenance of the complete Generator system for 12 months after handover to the client. To include all spares and replacement items for generator. Based on running time of 20Hrs per month.  Full list of material and maintenance plan to be provided	Mnts	12		R
2.5.3		Seal all cable entries in buildings and kiosks with foam seal to prevent ingress of water.	Sum	1		R
2.5.4		Detection and re-loaction of existing services for electrical and ICT. All detection to be by hand excavations only.	Sum	1		R
Total Carried Forward To Summary Of Bills						R

**BILL 5 BOQ 1: PRELIMINARY AND GENERAL**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<b><u>SECTION 1</u></b>				
		<b><u>PRELIMINARIES</u></b>				
		Allow for preliminary and general items				
1.1		Fixed	Sum	1		R
1.2		Time	Sum	1		R
1.3		Value	Sum	1		R
Total Carried Forward To Summary Of Bills						R

## BILL 5 BOQ 2: INLET WORKS C&amp;I SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>1</b>		<i>(Refer to Control &amp; Instrumentation Specification: Annexure F)</i> <b>INLET WORKS C&amp;I SYSTEM</b>				
		<b>PLC System</b>				
1.1		Manufacture, supply, off loading and installation of the Inlet Works PLC system (panel integral to the MCC panel), and commissioning as detailed in the specifications and drawings. <i>60325-I-GW-904: Typical PLC GA</i>				
1.1.1		Supply	No	1		R
1.1.2		Install	No	1		R
1.2		Manufacture, supply, off loading and installation of the Second Class Water PLC system (panel integral to the MCC panel), and commissioning as detailed in the specifications and drawings.				
1.2.1		Supply	No	1		R
1.2.2		Install	No	1		R
<b>1.3</b>		<b>Field Junction Boxes</b>				
1.3.1	PI.2.2.	Manufacture, supply, off loading and installation of 304 SS Instrument Junction Boxes as detailed in the specifications and drawings. (Drawing Number 60325-I-GW-905)				
1.3.1.1		Supply	No	10		R
1.3.1.2		Install	No	10		R
1.3.2		3CR12 support stands for the above item.				
1.3.2.1		Supply	No	10		R
1.3.2.2		Install	No	10		R
1.3.3	PI.2.1.	Manufacture, supply, off loading and installation of 304 SS Junction Boxes Type A, as detailed in the specifications and drawings. (Drawing Number 60325-I-GW-902)				
1.3.3.1		Supply	No	3		R
1.3.3.2		Install	No	3		R
1.3.4		3CR12 support stands for the above item.				
1.3.4.1		Supply	No	3		R
1.3.4.2		Install	No	3		R
1.3.5	PI.2.1.	Manufacture, supply, off loading and installation of 304 SS Junction Boxes Type B, as detailed in the specifications and drawings. (Drawing Number 60325-I-GW-903)				
1.3.5.1		Supply	No	6		R
1.3.5.2		Install	No	6		R
Total Carried Forward						R

## BILL 5 BOQ 2: INLET WORKS C&amp;I SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.3.6	PI.1.3.	3CR12 support stands for the above item.				
1.3.6.1		Supply	No	6		R
1.3.6.2		Install	No	6		R
1.3.7		Industrial 4 -way junction boxes, glass reinforced polyester				
1.3.7.1		Supply	No	23		R
1.3.7.2		Install	No	23		R
Control & Instrumentation Cabling						
1.4		Supply and installation of copper Dekabon armoured individual & overall screened 1.0mm <sup>2</sup> cables laid in ducts, trenches, horizontal racks or vertical ducts. Rates shall include the supply and fixing of supports with regard to installation of cables. Rates shall include the PVC cable ties as required.				
1.4.1		2 Pair 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.4.1.1		Supply	m	1330		R
1.4.1.2		Install	m	1330		R
1.4.2		4 Triad 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.4.2.1		Supply	m	60		R
1.4.2.2		Install	m	60		R
1.4.3		4 Pair 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.4.3.1		Supply	m	60		R
1.4.3.2		Install	m	60		R
1.4.4		8 Pair 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.4.4.1		Supply	m	320		R
1.4.4.2		Install	m	320		R
1.4.5		12 Pair 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.4.5.1		Supply	m	200		R
1.4.5.2		Install	m	200		R
1.4.6		16 Pair 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.4.6.1		Supply	m	60		R
1.4.6.2		Install	m	60		R
1.5	PI.1.4.	Termination of copper copper Dekabon armoured individual & overall screened 1.0mm <sup>2</sup> cables. Rates shall include the supply and installation of glands, shrouds, lugs, nuts, bolts and washers as required.				
1.5.1		2 Pair 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.5.1.1		Supply	No	180		R
1.5.1.2		Install	No	180		R
1.5.2		4 Triad 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.5.2.1		Supply	No	8		R
1.5.2.2		Install	No	8		R
Total Carried Forward						R

## BILL 5 BOQ 2: INLET WORKS C&amp;I SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.5.3	PI.1.1.	4 Pair 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.5.3.1		Supply	No	2		R
1.5.3.2		Install	No	2		R
1.5.4		8 Pair 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.5.4.1		Supply	No	12		R
1.5.4.2		Install	No	12		R
1.5.5		12 Pair 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.5.5.1		Supply	No	10		R
1.5.5.2		Install	No	10		R
1.5.6		16 Pair 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.5.6.1		Supply	No	4		R
1.5.6.2		Install	No	4		R
		<b>LV Cable</b>				
1.6		Supply and installation of copper PVC/PVC/SWA/PVC cables laid in ducts, trenches, horizontal racks or vertical ducts. Rates shall include the supply and fixing of supports with regard to installation of cables. Rates shall include the PVC cable ties as required. All cables are Copper PVC/PVC/SWA/PVC cables per SANS 1507.				
1.6.1		4 mm <sup>2</sup> x 4 core				
1.6.1.1		Supply	m	200		R
1.6.1.2		Install	m	200		R
1.6.2		2.5 mm <sup>2</sup> x 3 core				
1.6.2.1		Supply	m	140		R
1.6.2.2		Install	m	140		R
1.6.3		1.5 mm <sup>2</sup> x 4 core				
1.6.3.1		Supply	m	255		R
1.6.3.1		Install	m	255		R
1.6.4		1.5 mm <sup>2</sup> x 3 core				
1.6.4.1		Supply	m	150		R
1.6.4.2		Install	m	150		R
1.7	PI.1.2.	Termination of copper PVC/PVC/SWA/PVC cables. Rates shall include the supply and installation of glands, shrouds, lugs, nuts, bolts and washers as required.				
1.7.1	4 mm <sup>2</sup> x 4 core					
1.7.1.1	Supply	No	6		R	
1.7.1.2	Install	No	6		R	
1.7.2	2.5 mm <sup>2</sup> x 3 core					
1.7.2.1	Supply	No	4		R	
1.7.2.2	Install	No	4		R	
Total Carried Forward						R



## BILL 5 BOQ 2: INLET WORKS C&amp;I SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.7.3		1.5 mm <sup>2</sup> x 4 core				
1.7.3.1		Supply	No	34		R
1.7.3.2		Install	No	34		R
1.7.4		1.5 mm <sup>2</sup> x 3 core				
1.7.4.1		Supply	No	20		R
1.7.4.2		Install	No	20		R
		<b>Communication Cable</b>				
1.8		Supply and installation of Communication cables laid in ducts, trenches, horizontal racks or vertical ducts. Rates shall include the supply and fixing of supports with regard to installation of cables. Rates shall include the PVC cable ties as required.				
1.8.1		CAT6 STP - SWA				
1.8.1.1		Supply	m	255		R
1.8.1.2		Install	m	255		R
1.8.2		8 Core Multimode Fibre Optic Cabling, SWA				
1.8.2.1		Supply	m	200		R
1.8.2.2		Install	m	200		R
1.9		Termination of Communication cables. Rates shall include the supply and installation of glands, shrouds, lugs, nuts, bolts and washers as required.				
1.9.1		CAT6 STP - SWA				
1.9.1.1		Supply	No	34		R
1.9.1.2		Install	No	34		R
1.9.2		8 Core Multimode Fibre Optic Cabling, SWA				
1.9.2.1		Supply	No	6		R
1.9.2.2		Install	No	6		R
1.10		<b>Splicing and OTDR Testing of the Fibre Cabling</b>				
1.10.1		Splicing - Per 8 FO End	No	6		R
1.10.2		OTDR Testing - Per 8 FO End	No	6		R
		<b>Field Instrumentation</b>				
1.11	PI.3.1.	Field Instrumentation: Includes the supply and installation of the field instrumentation as detailed in the specification and data sheets, including all installation accessories and mounting brackets.				
1.12		Open Channel Flow Transmitter - (Data Sheet B7.7.1-1)				
1.12.1		Supply	No	1		R
1.12.2		Install	No	1		R
Total Carried Forward						R

## BILL 5 BOQ 2: INLET WORKS C&amp;I SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.13		Open Channel Flow Transmitter - (Data Sheet B7.7.1-2)				
1.13.1		Supply	No	1		R
1.13.2		Install	No	1		R
1.14		Screen Differential Level Transmitter - (Data Sheet B7.7.2-1)				
1.14.1		Supply	No	6		R
1.14.2		Install	No	6		R
1.15		Washer Compactor Level Transmitter - (Data Sheet B7.7.4-2)				
1.15.1		Supply	No	2		R
1.15.2		Install	No	2		R
1.16		Skip Position Proximity Switch - (Data Sheet B7.7.3-1)				
1.16.1		Supply	No	6		R
1.16.2		Install	No	6		R
1.17		Slurry Pump Flow Switch - (Data Sheet B7.7.6-1)				
1.17.1		Supply	No	2		R
1.17.2		Install	No	2		R
1.18		Grit Classifier Pressure Transmitter - (Data Sheet B7.7.4-1)				
1.18.1		Supply	No	2		R
1.18.2		Install	No	2		R
1.19		HP Booster Pump Pressure Switch - (Data Sheet B7.7.7-1)				
1.19.1		Supply	No	2		R
1.19.2		Install	No	2		R
1.20		Screened Sewage Pump Vibration Transmitter - (Data Sheet B7.7.9-1)				
1.20.1		Supply	No	16		R
1.20.2		Install	No	16		R
1.21		Screened Sewage Pump Bearing Temp Transmitter - (Data Sheet B7.7.8-1)				
1.21.1		Supply	No	8		R
1.21.2		Install	No	8		R
1.22		Motor Winding Temp Transmitter - (Data Sheet B7.7.8-2)				
1.22.1		Supply	No	12		R
1.22.2		Install	No	12		R
1.23		Screened Sump Level Transmitter - (Data Sheet B7.7.5-1)				
1.23.1		Supply	No	1		R
1.23.2		Install	No	1		R
Total Carried Forward						R

## BILL 5 BOQ 2: INLET WORKS C&amp;I SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.24		Bio-reactor Feed Line Pressure Transmitter - (Data Sheet B7.7.4-3)				
1.24.1		Supply	No	1		R
1.24.2		Install	No	1		R
1.25		Sceened Sewage Pump Flow Switch - (Data Sheet B7.7.6-2)				
1.25.1		Supply	No	4		R
1.25.2		Install	No	4		R
1.26		Dry Well Sump Level Switch - (Data Sheet B7.7.10-1)				
1.26.1		Supply	No	1		R
1.26.2		Install	No	1		R
1.27		Screened Sump Level Switch - (Data Sheet B7.7.10-2)				
1.27.1		Supply	No	1		R
1.27.2		Install	No	1		R
1.28		Second Class Water Pressure Transmitter - (Data Sheet B7.7.4-4)				
1.28.1		Supply	No	1		R
1.28.2		Install	No	1		R
1.29		Second Class Water Pump Flow Switch - (Data Sheet B7.7.6-3)				
1.29.1		Supply	No	4		R
1.29.2		Install	No	4		R
1.30		Ultrafine Screenings Conveyor Selector Position Limit - (Data Sheet B7.7.3-4)				
1.30.1		Supply	No	4		R
1.30.2		Install	No	4		R
1.31		Ultrafine Screenings Conveyor Cover Proximity Switch - (Data Sheet B7.7.3-5)				
1.31.1		Supply	No	2		R
1.31.2		Install	No	2		R
1.32	PI.4.1	Cable Ladder and Tray 3CR12 cable ladder including all accessories (Earth continuity jumpers 16mm <sup>2</sup> , 10mm <sup>2</sup> , P1000 3CR12 Unistrut, splice kits) mounted to concrete slabs / walls.				
1.32.1		300 mm cable ladder				
1.32.1.1		Supply	m	150		R
1.32.1.2		Install	m	150		R
1.33.2		300mm 90° bends				
1.33.2.1		Supply	No	10		R
1.33.2.2		Install	No	10		R
1.32.3		300mm Riser/Dropper				
1.32.3.1		Supply	No	10		R
1.32.3.2		Install	No	10		R
1.32.4		300mm Tee Piece				
1.32.4.1		Supply	No	1		R
1.32.4.2		Install	No	1		R
Total Carried Forward						R

**BILL 5 BOQ 2: INLET WORKS C&I SYSTEM**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.32.5		100 mm cable ladder				
1.32.5.1		Supply	m	75		R
1.32.5.2		Install	m	75		R
1.32.6		100mm 90° bends				
1.32.6.1		Supply	No	6		R
1.32.6.2		Install	No	6		R
1.32.7		100mm Riser/Dropper				
1.32.7.1		Supply	No	5		R
1.32.7.1		Install	No	5		R
1.32.8		100mm Tee Piece				
1.32.8.1		Supply	No	Rate Only		Rate only
1.32.8.2		Install	No	Rate Only		Rate only
1.33		Installation Accessories				
1.33.1		P1000 - 3CR12 Unistrut				
1.33.1.1		Supply	m	40		R
1.33.1.2		Install	m	40		R
1.33.2		Angle Steel 3CR12 30mmx30mmx3mm				
1.33.2.1		Supply	m	50		R
1.33.2.2		Install	m	50		R
1.33.3		Channel Steel 3CR12 100mmx50mmx6mm				
1.33.3.1		Supply	m	30		R
1.33.3.2		Install	m	30		R
Total Carried Forward To Summary Of Bills						R

## BILL 5 BOQ 3: DE-WATERING C&amp;I SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
1		(Refer to Control & Instrumentation Specification: Annexure F) <b>DE-WATERING PLANT C&amp;I SYSTEM</b>				
		<b>PLC System</b>				
1.1		Manufacture, supply, off loading and installation of the De-watering Plant PLC system (panel integral to the MCC panel), and commissioning as detailed in the specifications and drawings. <i>60325-I-GW-904: Typical PLC GA</i>				
1.1.1		Supply	No	1		R
1.1.2		Install	No	1		R
1.2		Manufacture, supply, off loading and installation of the Sludge Transfer PLC system (panel integral to the MCC panel), and commissioning as detailed in the specifications and drawings.				
1.2.1		Supply	No	1		R
1.2.2		Install	No	1		R
1.3		<b>Field Junction Boxes</b>				
1.3.1	PI.2.2.	Manufacture, supply, off loading and installation of 304 SS Instrument Junction Boxes as detailed in the specifications and drawings. (Drawing Number 60325-I-GW-905)				
1.3.1.1		Supply	No	15		R
1.3.1.2		Install	No	15		R
1.3.2		3CR12 support stands for the above item.				
1.3.2.1		Supply	No	15		R
1.3.2.2		Install	No	15		R
1.3.3	PI2.1.	Manufacture, supply, off loading and installation of 304 SS Junction Boxes Type A, as detailed in the specifications and drawings. (Drawing Number 60325-I-GW-902)				
1.3.3.1		Supply	No	3		R
1.3.3.2		Install	No	3		R
Total Carried Forward						R

## BILL 5 BOQ 3: DE-WATERING C&amp;I SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.3.4	PI.1.3.	3CR12 support stands for the above item.				
1.3.4.1		Supply	No	3		R
1.3.4.2		Install	No	3		R
1.3.5		Industrial 4 -way junction boxes, glass reinforced polyester				
1.3.5.1		Supply	No	12		R
1.3.5.2		Install	No	12		R
<b>Control &amp; Instrumentation Cabling</b>						
1.4		Supply and installation of copper Dekabon armoured individual & overall screened 1.0mm <sup>2</sup> cables laid in ducts, trenches, horizontal racks or vertical ducts. Rates shall include the supply and fixing of supports with regard to installation of cables. Rates shall include the PVC cable ties as required.				
1.4.1		2 Pair 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.4.1.1		Supply	m	660		R
1.4.1.2		Install	m	660		R
1.4.2		4 Triad 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.4.2.1		Supply	m	Rate Only		Rate only
1.4.2.2		Install	m	Rate Only		Rate only
1.4.3		4 Pair 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.4.3.1		Supply	m	Rate Only		Rate only
1.4.3.2		Install	m	Rate Only		Rate only
1.4.4		8 Pair 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.4.4.1		Supply	m	119		R
1.4.4.2		Install	m	119		R
1.4.5		12 Pair 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.4.5.1		Supply	m	62		R
1.4.5.2		Install	m	62		R
1.4.6		16 Pair 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.4.6.1		Supply	m	19		R
1.4.6.2		Install	m	19		R
1.5	PI.1.4.	Termination of copper copper Dekabon armoured individual & overall screened 1.0mm <sup>2</sup> cables. Rates shall include the supply and installation of glands, shrouds, lugs, nuts, bolts and washers as required.				
1.5.1		2 Pair 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.5.1.1		Supply	No	84		R
1.5.1.2		Install	No	84		R
1.5.2		4 Triad 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.5.2.1		Supply	No	Rate Only		Rate only
1.5.2.2		Install	No	Rate Only		Rate only
Total Carried Forward						R

## BILL 5 BOQ 3: DE-WATERING C&amp;I SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.5.3		4 Pair 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.5.3.1		Supply	No	Rate Only		Rate only
1.5.3.2		Install	No	Rate Only		Rate only
1.5.4		8 Pair 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.5.4.1		Supply	No	6		R
1.5.4.2		Install	No	6		R
1.5.5		12 Pair 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.5.5.1		Supply	No	4		R
1.5.5.2		Install	No	4		R
1.5.6		16 Pair 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.5.6.1		Supply	No	2		R
1.5.6.2		Install	No	2		R
		<b>LV Cable</b>				
1.6	PI.1.1.	Supply and installation of copper PVC/PVC/SWA/PVC cables laid in ducts, trenches, horizontal racks or vertical ducts. Rates shall include the supply and fixing of supports with regard to installation of cables. Rates shall include the PVC cable ties as required. All cables are Copper PVC/PVC/SWA/PVC cables per SANS 1507.				
1.6.1		4 mm <sup>2</sup> x 4 core				
1.6.1.1		Supply	m	100		R
1.6.1.2		Install	m	100		R
1.6.2		2.5 mm <sup>2</sup> x 3 core				
1.6.2.1		Supply	m	100		R
1.6.2.1		Install	m	100		R
1.6.3		1.5 mm <sup>2</sup> x 4 core				
1.6.3.1		Supply	m	405		R
1.6.3.2		Install	m	405		R
1.6.4		1.5 mm <sup>2</sup> x 3 core				
1.6.4.1		Supply	m	315		R
1.6.4.2		Install	m	315		R
1.7	PI.1.2.	Termination of copper PVC/PVC/SWA/PVC cables. Rates shall include the supply and installation of glands, shrouds, lugs, nuts, bolts and washers as required.				
1.7.1		4 mm <sup>2</sup> x 4 core				
1.7.1.1		Supply	No	6		R
1.7.1.2		Install	No	6		R
1.7.2		2.5 mm <sup>2</sup> x 3 core				
1.7.2.1		Supply	No	6		R
1.7.2.2		Install	No	6		R
1.7.3		1.5 mm <sup>2</sup> x 4 core				
1.7.3.1		Supply	No	42		R
1.7.3.2		Install	No	42		R
Total Carried Forward						R

## BILL 5 BOQ 3: DE-WATERING C&amp;I SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.7.4		1.5 mm <sup>2</sup> x 3 core				
1.7.4.1		Supply	No	38		R
1.7.4.2		Install	No	38		R
<b>Communication Cable</b>						
1.8		Supply and installation of Communication cables laid in ducts, trenches, horizontal racks or vertical ducts. Rates shall include the supply and fixing of supports with regard to installation of cables. Rates shall include the PVC cable ties as required.				
1.8.1		CAT6 STP - SWA				
1.8.1.1		Supply	m	405		R
1.8.1.2		Install	m	405		R
1.8.2		8 Core Multimode Fibre Optic Cabling, SWA				
1.8.2.1		Supply	m	100		R
1.8.2.2		Install	m	100		R
1.9		Termination of Communication cables. Rates shall include the supply and installation of glands, shrouds, lugs, nuts, bolts and washers as required.				
1.9.1		CAT6 STP - SWA				
1.9.1.1		Supply	No	42		R
1.9.1.2		Install	No	42		R
1.9.2		8 Core Multimode Fibre Optic Cabling, SWA				
1.9.2.1		Supply	No	6		R
1.9.2.2		Install	No	6		R
1.1		Splicing and OTDR Testing of the Fibre Cabling				
1.10.1		Splicing - Per 8 FO End - Supply	No	6		R
1.10.2		OTDR Testing - Per 8 FO End - Supply	No	6		R
<b>Field Instrumentation</b>						
1.11	PI.3.1.	Field Instrumentation: Includes the supply and installation of the field instrumentation as detailed in the specification and data sheets, including all installation accessories and mounting brackets.				
1.12		Feed Solids Transmitter - (Data Sheet B7.7.13-1)				
1.12.1		Supply	No	2		R
1.12.2		Install	No	2		R
1.13.1		Centrifuge Feed Magflo Transmitter - (Data Sheet B7.7.11-1)				
1.13.1.1		Supply	No	2		R
1.13.1.2		Install	No	2		R
Total Carried Forward						R



## BILL 5 BOQ 3: DE-WATERING C&amp;I SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.14		Centrifuge Dilution Water Magflo Transmitter - (Data Sheet B7.7.11-2)				
1.14.1		Supply	No	2		R
1.14.2		Install	No	2		R
1.15		Polyelectrolyte Magflo Transmitter - (Data Sheet B7.7.11-3)				
1.15.1		Supply	No	2		R
1.15.2		Install	No	2		R
1.16		Polyelectrolyte Lubrication Magflo Transmitter - (Data Sheet B7.7.11-4)				
1.16.1		Supply	No	1		R
1.16.2		Install	No	1		R
1.17		Poly Make-up Water Magflo Transmitter - (Data Sheet B7.7.11-5)				
1.17.1		Supply	No	1		R
1.17.2		Install	No	1		R
1.18		Centrifuge Feed Pump Pressure Transmitter - (Data Sheet B7.7.4-6)				
1.18.1		Supply	No	2		R
1.18.2		Install	No	2		R
1.19		Centrifuge Feed Tank Level Transmitter - (Data Sheet B7.7.4-5)				
1.19.1		Supply	No	1		R
1.19.2		Install	No	1		R
1.20		Centrifuge Feed Tank Level Switch - (Data Sheet B7.7.10-3)				
1.20.1		Supply	No	2		R
1.20.2		Install	No	2		R
1.21		Poly Dosing Pump Pressure Transmitter - (Data Sheet B7.7.4-7)				
1.21.1		Supply	No	2		R
1.21.2		Install	No	2		R
1.22		Poly Lubrication Pump Pressure Transmitter - (Data Sheet B7.7.4-9)				
1.22.1		Supply	No	2		R
1.22.2		Install	No	2		R
1.23		Cake Pump Pressure Transmitter - (Data Sheet B7.7.4-8)				
1.23.1		Supply	No	2		R
1.23.2		Install	No	2		R
1.24		Cake Pump Hopper Level -(Data Sheet B7.7.5-2)				
1.24.1		Supply	No	2		R
1.24.2		Install	No	2		R
Total Carried Forward						R

## BILL 5 BOQ 3: DE-WATERING C&amp;I SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.25		Sludge Cake Silo Level -(Data Sheet B7.7.5-3)				
1.25.1		Supply	No	2		R
1.25.2		Install	No	2		R
1.26		Hopper Flap Proximity Switch - (Data Sheet B7.7.3-2)				
1.26.1		Supply	No	2		R
1.26.2		Install	No	2		R
1.27		Sludge Conveyor Cover Proximity Switch - (Data Sheet B7.7.3-2)				
1.27.1		Supply	No	2		R
1.27.2		Install	No	2		R
1.28		Existing WAS Sump Level Transmitter - (Data Sheet B7.7.5-4)				
1.28.1		Supply	No	1		R
1.28.2		Install	No	1		R
1.29		WAS Transfer Pump Flow Switch - (Data Sheet B7.7.6-4)				
1.29.1		Supply	No	2		R
1.29.2		Install	No	2		R
		<b>Cable Ladder and Tray</b>				
1.30	PI.4.1.	3CR12 cable ladder including all accessories (Earth continuity jumpers 16mm <sup>2</sup> , 10mm <sup>2</sup> , P1000 3CR12 Unistrut, splice kits) mounted to concrete slabs / walls.				
1.30.1		300 mm cable ladder				
1.30.1.1		Supply	m	50		R
1.30.1.2		Install	m	50		R
1.30.2		300mm 90° bends				
1.30.2.1		Supply	No	3		R
1.30.2.2		Install	No	3		R
1.30.3		300mm Riser/Dropper				
1.30.3.1		Supply	No	3		R
1.30.3.2		Install	No	3		R
1.30.4		300mm Tee Piece				
1.30.4.1		Supply	No	Rate Only		Rate only
1.30.4.2		Install	No	Rate Only		Rate only
1.30.5		100 mm cable ladder				
1.30.5.1		Supply	m	60		R
1.30.5.2		Install	m	60		R
1.30.6		100mm 90° bends				
1.30.6.1		Supply	No	6		R
1.30.6.2		Install	No	6		R
1.30.7		100mm Riser/Dropper				
1.30.7.1		Supply	No	4		R
1.30.7.2		Install	No	4		R
Total Carried Forward						R

**BILL 5 BOQ 3: DE-WATERING C&I SYSTEM**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.30.8		100mm Tee Piece				
1.30.8.1		Supply	No	1		R
1.30.8.2		Install	No	1		R
1.30.9		Installation Accessories				
1.30.9.1		P1000 - 3CR12 Unistrut				
1.30.9.1.1		Supply	m	25		R
1.30.9.1.2		Install	m	25		R
1.30.9.2		Angle Steel 3CR12 30mmx30mmx3mm				
1.30.9.2.1		Supply	m	30		R
1.30.9.2.2		Install	m	30		R
1.30.9.3		Channel Steel 3CR12 100mmx50mmx6mm				
1.30.9.3.1		Supply	m	20		R
1.30.9.3.2		Install	m	20		R
Total Carried Forward To Summary Of Bills						R

## BILL 5 BOQ 4: PUMP STATION C&amp;I SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>1</b>		<i>(Refer to Control &amp; Instrumentation Specification: Annexure F)</i>  <b>PUMP STATION C&amp;I SYSTEMS</b>				
<b>1.1</b>		<b>PLC System</b> Manufacture, supply, off loading and installation of the Pump Station PLC system (panel integral to the MCC panel), and commissioning as detailed in the specifications and drawings.				
1.1.1		Supply	No	4		R
1.1.2		Install	No	4		R
<b>1.2</b>		<b>Field Junction Boxes</b>				
1.2.1	PI.2.2.	Manufacture, supply, off loading and installation of 304 SS Instrument Junction Boxes as detailed in the specifications and drawings. (Drawing Number 60325-I-GW-905)				
1.2.1.1		Supply	No	12		R
1.2.1.2		Install	No	12		R
1.2.2		3CR12 support stands for the above item.				
1.2.2.1		Supply	No	12		R
1.2.2.2		Install	No	12		R
		<b>Control &amp; Instrumentation Cabling</b>				
1.3	PI.1.3.	Supply and installation of copper Dekabon armoured individual & overall screened 1.0mm <sup>2</sup> cables laid in ducts, trenches, horizontal racks or vertical ducts. Rates shall include the supply and fixing of supports with regard to installation of cables. Rates shall include the PVC cable ties as required.				
1.3.1		2 Pair 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.3.1.1		Supply	m	1400		R
1.3.1.2		Install	m	1400		R
1.4	PI.1.4.	Termination of copper Dekabon armoured individual & overall screened 1.0mm <sup>2</sup> cables. Rates shall include the supply and installation of glands, shrouds, lugs, nuts, bolts and washers as required.				
1.4.1		2 Pair 1.0mm <sup>2</sup> IAOS/PVC/Dekabon/PVC				
1.4.1.1		Supply	No	24		R
1.4.1.2		Install	No	24		R
Total Carried Forward						R

## BILL 5 BOQ 4: PUMP STATION C&amp;I SYSTEM

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.5	PI.1.1.	<b>LV Cable</b>  Supply and installation of copper PVC/PVC/SWA/PVC cables laid in ducts, trenches, horizontal racks or vertical ducts. Rates shall include the supply and fixing of supports with regard to installation of cables. Rates shall include the PVC cable ties as required. All cables are Copper PVC/PVC/SWA/PVC cables per SANS 1507.				
1.5.1		1.5 mm <sup>2</sup> x 3 core				
1.5.1.1		Supply	m	1400		R
1.5.1.2		Install	m	1400		R
1.6	PI.1.2.	Termination of copper PVC/PVC/SWA/PVC cables. Rates shall include the supply and installation of glands, shrouds, lugs, nuts, bolts and washers as required.				
1.6.1		1.5 mm <sup>2</sup> x 3 core				
1.6.1.1		Supply	No	24		R
1.6.1.2		Install	No	24		R
		<b>Field Instrumentation</b>				
1.7	PI.3.1.	Field Instrumentation: Includes the supply and installation of the field instrumentation as detailed in the specification and data sheets, including all installation accessories and mounting brackets.				
1.7.1		Dissolved Oxygen Transmitter - (Data Sheet B7.7.12-1)				
1.7.1.1		Supply	No	12		R
1.7.1.2		Install	No	12		R
		<b>Cable Ladder and Tray</b>				
1.8	PI.4.1.	3CR12 cable ladder including all accessories (Earth continuity jumpers 16mm <sup>2</sup> , 10mm <sup>2</sup> , P1000 3CR12 Unistrut, splice kits) mounted to concrete slabs / walls.				
1.8.1		100 mm cable ladder				
1.8.1.1		Supply	m	60		R
1.8.1.2		Install	m	60		R
Total Carried Forward						R

**BILL 5 BOQ 4: PUMP STATION C&I SYSTEM**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
1.8.2		100mm 90° bends				
1.8.2.1		Supply	No	6		R
1.8.2.2		Install	No	6		R
1.8.3		100mm Riser/Dropper				
1.8.3.1		Supply	No	4		R
1.8.3.2		Install	No	4		R
1.8.4		100mm Tee Piece				
1.8.4.1		Supply	No	1		R
1.8.4.2		Install	No	1		R
<b>1.9</b>		<b>Installation Accessories</b>				
1.9.1		P1000 - 3CR12 Unistrut				
1.9.1.1		Supply	m	25		R
1.9.1.2		Install	m	25		R
1.9.2		Angle Steel 3CR12 30mmx30mmx3mm				
1.9.2.1		Supply	m	30		R
1.9.2.2		Install	m	30		R
1.9.3		Channel Steel 3CR12 100mmx50mmx6mm				
1.9.3.1		Supply	m	20		R
1.9.3.2		Install	m	20		R
Total Carried Forward To Summary Of Bills						R

**BILL 5 BOQ 5: NETWORK SYSTEMS**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		<i>(Refer to Control &amp; Instrumentation Specification: Annexure F)</i>				
<b>1</b>		<b>NETWORK SYSTEM</b>				
		<b>Fibre Cable</b>				
1.1		Supply and installation of 8 Core Multi-Mode cables laid in ducts, trenches, horizontal racks or vertical ducts. Rates shall include the supply and fixing of supports with regard to installation of cables. Rates shall include the PVC cable ties as required.				
1.1.1		8 Core Multimode Fibre Optic Cabling, SWA				
1.1.1.1		Supply	m	2015		R
1.1.1.2		Install	m	2015		R
1.2		Termination of Fibre Optic cables. Rates shall include the supply and installation of glands, shrouds, lugs, nuts, bolts and washers as required.				
1.2.1		8 Core Multimode Fibre Optic Cabling, SWA				
1.2.1.1		Supply	No	38		R
1.2.1.2		Install	No	38		R
1.3		Splicing and OTDR Testing of the Fibre Cabling				
1.3.1		Splicing - Per 8 FO End - Supply	No	38		R
1.3.2		OTDR Testing - Per 8 FO End - Supply	No	38		R
		<b>NETWORK EQUIPMENT</b>				
1.4		Network Equipment: Includes the supply and installation of the network hardware as detailed in the specification and data sheets, including all installation accessories and mounting brackets.				
1.4.1		Control room network panel, Ethernet Switch, Hardware Firewall, 32 way patch panel, patch leads and all required accessories.				
1.4.1.1		Supply	Sum	1		R
1.4.1.2		Install	Sum	1		R
1.4.2		Minisubstation Unit - Network Equipment. Includes Ethernet Switch, 2 x 8 way patch panels, patch leads and all required accessories.				
1.4.2.1		Supply	Sum	6		R
1.4.2.2		Install	Sum	6		R
Total Carried Forward						R

## BILL 5 BOQ 5: NETWORK SYSTEMS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R	
Brought Forward						R	
1.4.3		Generator - Network Equipment. Includes Ethernet Switch, 2 x 8 way patch panels, patch leads and all required accessories.					
1.4.3.1		Supply	Sum	1		R	
1.4.3.2		Install	Sum	1		R	
1.4.4		Main Substation - Network Equipment. Includes Ethernet Switch, 2 x 8 way patch panels, patch leads and all required accessories.					
1.4.4.1		Supply	Sum	1		R	
1.4.4.2		Install	Sum	1		R	
2		PI. 5.1.	<b>SLEEVES</b>				
			<b>Supply and installation of HDPE sleeves buried in ground as specified for C&amp;I services, including couplings in accordance with non-metallic sleeves and accessories as per SANS 61386-24. Tenderers to note that all sleeves under buildings will be encased in concrete by the building contractor.</b>				
2.1		110mm Flexible double walled black corrugated sleeves including 6mm pilot string as draw wire in each sleeve					
2.1.1		Supply	m	1250		R	
2.1.2		Install	m	1250		R	
3	PI. 5.2.	<b>MANHOLES</b>					
		<b>Construction of watertight manholes in ground as specified for Electrical &amp; data services, including, lockable cover, seals ,bushes, sleeve entries and end caps. Inclusive of cover and frame (Cover and frame - colour: GREY) including engraving on cover to read : "DATA" for data manholes and "ELECTRICAL" for electrical manholes</b>					
		<b>To include:</b>					
		<b>- 300 x 300mm bidem bag with 19mm stone for soak away.</b>					
		<b>- Plinth, brickwork, frame cover, waterproofing, drainage, sleeve stubs and end caps for spare pipes.</b>					
		<b>- All sleeves to be foam sealed after cable installation to prevent water ingress into manholes.</b>					
3.1		800mm x800 x 800mm deep (Internal dimensions) manhole - Electrical / (15kg) - Lockable					
3.1.1		Supply	No	16		R	
3.1.2		Install	No	16		R	
Total Carried Forward						R	



**BILL 5 BOQ 5: NETWORK SYSTEMS**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
4	PI.5.3.	<b>EXCAVATIONS &amp; BACKFILL</b>				
		<b>Excavate for cables and sleeves including temporary support of sides, keeping excavation dry, bedding material, backfilling, compacting and testing as specified. All backfill material to be suitable as per SANS codes and engineers approval. Backfill material to be imported if necessary.</b>				
4.1		In soft or pickable soil (60%)				
4.1.1		Supply	m³	577.5		R
4.1.2		Install	m³	577.5		R
4.2		In medium rock (20%)				
4.2.1		Supply	m³	192.5		R
4.2.2		Install	m³	192.5		R
4.3		In hard rock (20%)				
4.3.1		Supply	m³	192.5		R
4.3.2		Install	m³	192.5		R
Total Carried Forward To Summary Of Bills						R

**BILL 5 BOQ 6: SYSTEM INTEGRATION, TESTING, TRAINING, GENERAL CONTROL & INSTRUMENTATION**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
<b>1</b>		<i>(Refer to Control &amp; Instrumentation Specification: Annexure F)</i>  <b>SYSTEM INTEGRATION</b>  A provsional sum has been included for a specialist company to perform the system integration of the site control system, which includes; system design, software development, factory acceptance testing, site acceptance testing, commissioning, supply and installation of the required SCADA and reporting hardware, provision of the required licenses. This will include the following:				
1.1		Software Development PLC Software Development SCADA System Software Development HMI Screens Development	Prov Sum	1	R 1 500 000.00	R 1 500 000.00
1.2		Software Licenses SCADA Runtime License Historian License Reporting License PLC Engineering License SCADA Development Lincense Network Monitoring Software	Prov Sum	1	R 500 000.00	R 500 000.00
1.3		PC Hardware Requirements Redundant Servers - Historian - Reporting - SCADA Operator Stations Engineering Station	Prov Sum	1	R 1 250 000.00	R 1 250 000.00
1.4		Testing and Commissioning Factory Acceptance Testing Site Acceptance Testing Cold Commissioning Hot Commissioning	Prov Sum	1	R 1 000 000.00	R 1 000 000.00
Total Carried Forward						R

**BILL 5 BOQ 6: SYSTEM INTEGRATION, TESTING, TRAINING, GENERAL CONTROL & INSTRUMENTATION**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
2		<b>TESTING COMISSIONING &amp; HANDOVER</b>				
2.1	Pl. 6.1.	<b>TESTING AND COMMISSIONING:</b>				
2.1.1		Test and commission complete installation per SANS 10142-1 and as specified.	Sum	1		R
2.2	Pl. 6.2.	<b>DOCUMENTATION</b>				
2.2.1		Submit As-built drawings to the Engineers satisfaction. 1 x full set "red line" drawings (hard copy)	Sum	1		R
2.2.2		Submit Operation & Maintenance Manuals to the Engineers satisfaction 3 x sets manufacturers and supplier schedules, operation and maintenance manuals and drawings (hard copy + CD)	Sum	1		R
2.3	Pl. 6.3.	<b>TRAINING</b>				
2.3.1		Control, Instrumentation and SCADA Equipment (Training to cater for 5 operational and 5 engineering staff, unless noted otherwise) Detailed training on the specific PLC, Instrumentation, control and SCADA equipment supplied.	Sum	1		R
2.3.2		Detailed training on process operations with regards to control philosophy understanding. Common PLC, Instrumentation, control and SCADA faults and what action is needed	Sum	1		R
2.3.3		Detailed training on PLC, Instrumentation, control and SCADA settings, programming - (For 2 x engineers. 2 x technicians. All costs to be borne by the tenderer if training is offered out of Durban)	Sum	1		R
2.3.4		Maintenance training, installation of common spare parts	Sum	1		R
2.3.5		Safety in operations and maintenance	Sum	1		R
2.3.6		Provision of Training Manuals for critical operation and maintenance of the complete system.	Sum	1		R
Total Carried Forward						R

**BILL 5 BOQ 6: SYSTEM INTEGRATION, TESTING, TRAINING, GENERAL CONTROL & INSTRUMENTATION**

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						R
2.4		<b>FACTORY ACCEPTANCE TESTS</b>				
2.4.1		Witnessing of Inspections, tests, FAT etc. of equipment by the employers representatives and engineering team representatives outside of the eThekweni Metropolitan Area but within the Republic of South Africa as specified in the detailed specifications.	Sum	1		R
2.4.2		Witnessing of Inspections, tests, FAT etc. of equipment by the employers representatives and engineering team representatives outside of the eThekweni Metropolitan Area but within the Republic of South Africa as specified in the detailed specifications.	Sum	1		R
2.5	Pl. 6.4.	<b>GENERAL</b>				
2.5.1		Guarantee and full maintenance of the complete C&I system for 12 months after handover to the client. Full list of material and maintenance plan to be provided	Mnts	12		R
2.5.2		Seal all cable entries in buildings and kiosks with foam seal to prevent ingress of water.	Sum	1		R
2.5.3		Detection and re-loaction of existing services for electrical and ICT. All detection to be by hand excavations only.	Sum	1		R
Total Carried Forward To Summary Of Bills						R