Item No		Quantity	Rate	Amount
	SECTION 1			
	BILL NO. 1			
	PRELIMINARIES AND GENERAL(Applicable to the whole of the works)			
	FIXED CHARGE ITEMS			
1	Contractual requirements.		SUM	
	Establishment of Facilities on the Site			
	Facilities for Engineer			
2	Furnished offices.		SUM	
3	Telephone.		SUM	
4	Name boards. (In No. 1).		SUM	
	Facilities for Contractor			
5	Offices and storage sheds.		SUM	
6	Workshops.		SUM	
7	Laboratories.		SUM	
8	Living accommodation.		SUM	
9	Ablution and latrine facilities.		SUM	
10	Tools and equipment.		SUM	
11	Water supplies, electric power, communications, dealing with water, and access.		SUM	
12	Plant.		SUM	
13	Other fixed charge obligations.		SUM	
14	Removal of site establishment.		SUM	
	Carried Forward		R	

	Brought Forward		R	
	VALUE RELATED ITEMS			
15	Contractual requirements.		SUM	
	Establishment of Facilities on the Site			
	Facilities for Engineer			
16	Furnished offices.		SUM	
17	Telephone.		SUM	
	Facilities for Contractor			
18	Offices and storage sheds.		SUM	
19	Workshops.		SUM	
20	Laboratories.		SUM	
21	Living accommodation.		SUM	
22	Ablution and latrine facilities.		SUM	
23	Tools and equipment.		SUM	
24	Water supplies, electric power, communications, dealing with water, and access.		SUM	
25	Plant.		SUM	
26	Other value related obligations.		SUM	
27	Removal of site establishment.		SUM	
	TIME RELATED ITEMS			
28	Contractual requirements.		SUM	
	Operation and Maintenance of Facilities on Site, for Duration of Construction, (unless otherwise stated)			
	Facilities for Engineer			
29	Furnished offices.		SUM	
	Carried Forward		R	

	Brought Forward		R	
30	Telephone.		SUM	
31	Survey assistants and materials.		SUM	
	Facilities for Contractor			
32	Offices and storage sheds.		SUM	
33	Workshops.		SUM	
34	Laboratories.		SUM	
35	Living accommodation.		SUM	
36	Ablution and latrine facilities.		SUM	
37	Tools and equipment.		SUM	
38	Water supplies, electric power, communications, dealing with water, and access.		SUM	
39	Plant.		SUM	
40	Supervision for duration of construction.		SUM	
41	Company and head office overhead costs for duration of construction.		SUM	
42	Other time related obligations.		SUM	
	DAYWORK			
43	Artisan	1		
44	Labourer	1		
45	Operator/Machine operator	1		
46	Supervisor	1		
47	Contractor's manager	1		
	TEMPORARY WORKS			
48	Main access road to works.		SUM	
	Carried Forward		R	

	Brought Forward		R	
49	Dealing with or accommodation of traffic.		SUM	
	Existing services.			
50	Supply or hire of specialist equipment for the detection of a particular service.		SUM	
51	The use of equipment referred to in (a) above.		SUM	
	Cost of survey in terms of the Land Survey Act.			
52	Trigonometrical survey and plot boundary pegs - locate and record.		SUM	
53	Trigonometrical survey of plot boundary pegs - protect and re-establish.		SUM	
54	Special water control as per Scope of Work.		SUM	
55	Compensation in terms of sub-clause 57(4)(b)(ii) for delays due to the circumstances described in Sub-clauses 57(1) and (2) of the General Conditions of Contract, as amended	1		
	Carried Forward		R	

	Brought Forward		R	
56	Compliance with OHS and MHSA Act and Regulations (including the Construction Regulations, 2003). The tenderers attention is drawn to the fact that the Occupational Health and Safety Act (Act 85 of 1993) is in force. Copies of the Act are available from the Government Printing Works, 149 Bosman Street, Pretoria (Private Bag X85, Pretoria, 0001, Tel No. (012) 334-4500). Tenderers are expected to be fully aquainted with the requirements of the Act. A pro-forma "Agreement in terms of the Occupational Health and Safety Act - Part C 1.4" is included in these bid documents. Tenderers are advised to study this pro-forma in order to make themselves fully conversant with the requirements and responsibilities of the Act and the Municipality. Tenderers are to provide for the above-mentioned requirements and to allow for all cost implications regarding the above including risk assesment, safety plan and monitoring system for the duration of the contract.		SUM	
	Carried to Final Summary		R	

Section No. 1
Bill No. 1
Preliminaries and General

Item No		Quantity	Rate	Amount

SECTION 2

BILL NO.1

ALTERATIONS (PROVISIONAL)

WORK GROUP ALLOCATION

Unless otherwise stated, all items in this Bill will be allocated to Work Group 102 - Alterations

PREAMBLES

The General Preambles for Trades (2017 edition), as published by the Association of South African Quantity Surveyors, shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items, fully described in the said General Preambles, will be entertained

The following "Supplementary Preambles" are incorporated in this bill to satisfy the requirements of the project and shall take precedence over the provisions of the said General Preambles

SUPPLEMENTARY PREAMBLES

View site:

Before submitting his tender, the Contractor shall visit the site and satisfy himself as to the nature and extent of the work to be done and the value of the materials contained in the buildings or portions of the buildings to be demolished.
No claim for any variations of the contract sum in respect of the nature and extent of the work or of inferior or damaged materials will be entertained

Old materials to become property of the Contractor:

Old materials from alterations, except where described as to be re-used or handed over, become the property of the Contractor, who must allow credit for same in the last item of the "Alterations" trade

Carried Forward R

Brought Forward		R	

Old materials to be carted away:

Old materials from the alterations, except where described as to be re-used or handed over, as well as all rubbish, etc must be regularly carted from the site and not be allowed to accumulate on or around the site

Old materials to be re-used:

None of the old materials are to be used for new work, except where specifically described as being set aside for re-use

Handing over of materials:

Where certain materials or articles from demolitions or alterations are described as to be "handed over to the Employer", it shall be taken to mean "handed over by the Contractor to the Principal Agent" and such materials or articles shall be properly stored by the Contractor until handing over thereof and shall include all necessary transport

The Contractor must obtain an official receipt from the Principal Agent listing the materials or articles and dates of handing over

Should the Contractor fail to submit the receipt when requested to do so, it shall be deemed that the materials or articles are still in his possession and he will be held liable to the Employer for the full replacement value thereof, which amount will be deducted from any monies due to the Contractor

Explosives:

No explosives whatsoever may be used for demolition purposes, unless otherwise stated

Carried Forward		R	

	Brought Forward		R	

GENERAL

The contractor shall carry out the whole of the work with as little mess and noise as possible and with a minimum of disturbance to adjoining premises and their tenants. He shall provide proper protection and provide and erect any temporarytarpaulins and temporary plumbing that may be necessary during the progress of the works, all to the satisfaction of the Architect, and remove when directed.

Any water supplies pipes and other piping that may be met withand found necessary to disconnect or cut, shall be effectually stopped of or grubbed up and removed, and any new connections that may be necessary shall be made with proper fittings, to the satisfaction of the Architect.

Doors, fanlights, fittings, frames, linings, etc shall be thoroughly overhauled before re-fixing including taking off, easing and rehanging, cramping up, re-wedging as required and making good cramps, dowels, etc and easing, oiling, adjusting and repairing ironmongery if necessary, replacing any glass damaged in removal or subsequently and stopping up all nail and screw holes with tinted wood to match timber.

Where doors, windows, etc are described as taken out this shall be understood to include for removal of all beads, architraves, ironmongery, etc and doors which are re-fixed are to be provided with new architraves (elsewhere measured).

Prices for taking out and removing doors and frames shall include for removing door stops, cabin locks, etc and making good to match existing.

With regard to building up openings in existing walls, cement screeds and pavings, granolithic, etc, shall be levelled and prepared for raising of brickwork.

Allow for making good all existing plastered walls where damaged by furniture, etc, and stopping up all screw and holes before painting.

Making good finishes shall be deemed to iclude making good of the brick and concrete surfaces onto which new finishes are applied, where necessary.

	Carried Forward		R	

	Brought Forward			R	
	The contractor will be required to take all dimensions affecting existing building on the site and he will be held solely responsible for the accuracy of all such dimensions.				
	Hazardous materials:				
	Demolitions of buildings, services, external works, site services, etc are to include for the safe removal and disposal of asbestos or asbestos products or other hazardous materials **by approved Registered Specialists**				
	- -				
	TEMPORARY BARRIERS, SCREENS, ETC				
	Temporary barriers, screens, etc including removal:				
1	Dust screen 3000mm high formed of suitable timber framing with 250 micron polyethylene sheeting stapled on including corners, ends, etc. to be used on all the phases of the construction project and in accordance to the Health and Safety specifications and regulations	m	646		
	REMOVAL OF EXISTING WORK				
	Demolishing and removing:				
2	Double- storey building, approximately 43750mm long x 12300mm wide x 8000mm high overall comprising one brick walls and corrugated roof sheeting			SUM	
3	Corrugated shelter, approximately 7500mm long x 3295mm wide x 3500mm high			SUM	
	Taking out and removing doors, windows, etc including thresholds, sills, etc from brickwork (altering openings and making good finishes elsewhere):				
4	Timber single door and steel frame not exceeding 2,5m²	No	3		
5	Glazed clerestory window, size 1948 x 6300mm High	No	2		
	Carried Forward			R	

				R	
	Brought Forward				
6	Glazed clerestory window, size 2066 x 6300mm High	No	1		
7	Roller shutter door approximately 1800 x 2100mm high and prepare for a new roller shutter door	No	1		
	Taking down and removing large unit roof coverings, accessories, etc:				
8	Profiled sheet metal roof covering including timber purlins	m2	37		
	Taking down and removing ceilings, partitions, etc:				
9	Suspended ceilings, including cornices, suspension grid, hangers, etc.	m2	45		
	Carried Forward			R	

				R	
	Brought Forward				
	ALTERING OPENINGS				
	Altering openings including building in new prestressed concrete lintels and bonding new brickwork to existing, all as required:				
10	Altering opening in one brick wall where 1948 x 6300mm high steel window removed to receive new aluminium window	No	2		
11	Altering opening in one brick wall where 2066 x 6300mm high steel window removed to receive new aluminium window	No	2		
	MAKING GOOD OF FINISHES, ETC				
	Making good untinted granolithic:				
12	Floors in patches	m2	50		
	Making good internal/external cement plaster:				
13	Walls in patches	m2	512		
	Making good concrete:				
14	Floors in patches	m2	6		
	GENERAL REPAIRWORK				
	Repairwork to existing brick and cladded walls:				
15	Waterjetting surfaces of existing retaining walls with high pressure low-volume water jetting lance to remove all dirt, brushing down and washing to remove surface contamination, mould, fungus, damp and treating with two coats of anti-fungal wash and leaving perfectly clean on completion	m2	30		
	Carried Forward to Summary of Section No. 2			R	

Section No. 2
Bill No. 1
Alterations (Provisional)

Item No		Quantity	Rate	Amount

SECTION 2

BILL NO. 2

EARTHWORKS (PROVISIONAL)

WORK GROUP ALLOCATION

Unless otherwise stated, all items in this Bill will be allocated to Work Group 104 - Earthworks

PREAMBLES

The General Preambles for Trades (2017 edition) as published by the Association of South African Quantity Surveyors shall be deemed to be included in these bills of quantities and no claims arising from brevity of description of items fully described in the said General Preambles will be entertained

The following "Supplementary Preambles" are incorporated in this bill to satisfy the requirements of the project and shall take precedence over the provisions of the said General Preambles

SUPPLEMENTARY PREAMBLES

Nature of ground

The nature of the ground is assumed to be loose sandy material, therefore "earth", but possibly interspersed with "hard rock" or "soft rock".

The nature of the ground is assumed to be gravel, therefore "earth", but possibly interspersed with "soft rock".

The nature of the ground is assumed to be silty clay with loose river boulders varying in size up to approximately 450mm diameter, therefore "earth", but possibly interspersed with "hard rock".

Carried Forward R

Brought Forward			R	
Trial holes indicate that the nature of the ground is silty clay to a depth of approximately 500mm with fine to medium loose sandy material below, therefore "earth". The trial holes also indicate that the water table is at a maximum depth of approximately 1000mm. A soils investigation has been carried out on site by the engineer and the report is annexed to these bills of quantities. Descriptions of excavations shall be deemed to include all ground conditions classifiable as "earth" described in the above report and where conditions of a more difficult character are indicated these are separately measured **Subterranean water:** No subterranean water is expected Should the Contractor however, encounter any subterranean water on the site, he shall immediately notify the Principal Agent thereof and submit recommendations for keeping the works free from subterranean water together with all costs involved therewith **Excavation for working space in rock:** Notwithstanding clause 10 measurement rule 27 of the Standard System of Measuring Building Work, excavation for working space in material of a more different character (e.g. soft or hard rock) will be measured in cubic metres to the extent executed and given as "extra over" bulk excavation or trench and hole excavation as the case may be **Carting away of excavated material** 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				
Carried Forward			R	

	Brought Forward			R	
	Filling				
	Notwithstanding the reference to prescribed multiple handling in clause 1 page 6 of the Standard System of Measuring Building Work, prices for filling and backfilling shall include for all selection and any multiple handling of material				
	Testing:				
	Prices for backfilling to trenches and holes only are to include for all necessary density tests in accordance with SANS 1200D				
	EXCAVATIONS, FILLING, ETC				
	EXCAVATIONS, ETC				
	Excavation in earth not exceeding 2m deep:				
1	Reduced levels under floors	m3	63		
2	Trenches	m3	62		
3	Holes	m3	28		
	Extra over trench and hole excavations in earth for excavation in:				
4	Soft rock	m3	9		
5	Hard rock	m3	6		
	Extra over all excavations for carting away:				
6	Surplus material from excavations and/or stock piles on site to a dumping site to be located by the contractor	m3	90		
	Risk of collapse of excavations:				
7	Sides of trench and hole excavations not exceeding 1,5m deep	m2	230		
	Keeping excavations free of water:				
8	Keeping excavations free of all water other than subterranean water			SUM	
	Carried Forward			R	

	Brought Forward			R	
	FILLING ETC				
	Earth filling obtained from the excavations and/or prescribed stock piles on site, compacted to 93% Mod AASHTO density:				
9	Backfilling to trenches, holes, etc.	m3	20		
	G5 filling material supplied by the contractor, compacted to 93% Mod AASHTO density:				
10	Under floors, steps, pavings, etc.	m3	79		
11	Backfilling to trenches, holes, etc.	m3	61		
	G7 filling material supplied by the contractor, compacted to 95% Mod AASHTO density:				
12	Backfilling to trenches, holes, etc.	m3	12		
13	Under floors, steps, pavings, etc.	m3	61		
	Compaction of surfaces:				
14	Compaction of ground surface under floors etc including scarifying for a depth of 150mm, breaking down oversize material, adding suitable material where necessary and compacting to 91% Mod AASHTO density	m2	473		
	Prescribed density tests on filling:				
15	"Modified AASHTO Density" test	No	2		
	SOIL POISONING				
	Soil insecticide in accordance with SANS 5859:				
16	Soil insecticide (protection against termites) applied as specified under floors, etc. including forming and poisoning shallow furrows against foundation walls, etc. filling in furrows and ramming	m2	409		
17	To bottoms and sides of trenches, etc.	m2	210		
	Carried Forward to Summary of Section No. 2			R	

Section No. 2
Bill No. 2
Earthworks (Provisional)

Item No		Quantity	Rate	Amount

SECTION 2

BILL NO. 3

CONCRETE, FORMWORK AND REINFORCEMENT

WORK GROUP ALLOCATION

The items in this Bill will be allocated to Work Groups as indicated in brackets at the end of headings or descriptions

PREAMBLES

The General Preambles for Trades (2017 edition) as published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items fully described in the said General Preambles will be entertained

The following "Supplementary Preambles" are incorporated in this bill to satisfy the requirements of the project and shall take precedence over the provisions of the said General Preambles

SUPPLEMENTARY PREAMBLES

Cost of tests:

Breeze concrete:

Breeze concrete shall consist of twelve parts clean dry furnace ash, free from coal or other foreign matter, to one part cement (1:12); the ash graded up to particles which will pass a 16,5mm ring from a minimum which fails to pass a 4,75mm mesh. The finer materials from the screening are to be first mixed with the cement into a mortar and the ash added afterwards and thoroughly incorporated

Carried Forward R

Brought Forward		R	
Lightweight concrete: Lightweight concrete shall have a density of 600kg/m^3 for the top 50mm and 400kg/m^3 for the remaining thickness. The minimum thickness at outlets, channels, etc shall be 50mm			
Waterproof concrete: "Waterproof concrete" shall have the same properties as normal concrete, but the following shall be modified to make the the concrete more water-tight: 1. a cement/water ratio of minimum 1.9 and maximum 2.1 2. minimum OPC content of 300kg/m3 3. Polypropolene micro fibres added to concrete at rate of 182 million per m3			
Formwork: 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 The vertical strutting shall be carried down to such construction as is sufficiently strong to afford the required support without damage and shall remain in position until the newly constructed work is able to support itself Formwork to soffits of solid slabs, etc shall be deemed to be to slabs not exceeding 250mm thick unless otherwise described Formwork to soffits of slabs, beams, etc shall be deemed to be propped up exceeding 1,5m and not exceeding 3,5m high unless otherwise described			
UNREINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES (WORK GROUP 110)			
Carried Forward		R	

				R	
	Brought Forward				
	10MPa/15mm concrete:				
1	Filling in hollow brick walls	m3	60		
	15MPa/19mm concrete:				
2	Surface blinding under footings and bases	m3	12		
	REINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES (WORK GROUP 110)				
	30MPa/19mm concrete:				
	Surface beds on waterproofing	m3	59		
3	Stub columns	m3	1		
	REINFORCED CONCRETE CAST ON/IN FORMWORK (WORK GROUP 110)				
	30MPa/19mm concrete:				
4	Slabs including beams and inverted beams	m3	23		
	Strip footings	m3	21		
5	Bases	m3	28		
6	Isolated beams	m3	7		
7	Bottoms and sides of isolated gutter beams	m3	7		
8	Plinths	m3	5		
	TEST CUBES (WORK GROUP 110)				
9	Making and testing sets of three 150 x 150 x 150mm concrete strength test cubes (Provisional)	Sets	11		
	CONCRETE SUNDRIES (WORK GROUP 110)				
	Finishing top surfaces of concrete smooth with a steel trowel:				
10	Surface beds, slabs, etc.	m2	586		
	Carried Forward			R	

				R	
	Brought Forward				
	35 MPa non-shrink grout:				
11	Bedding approximately 20mm thick under 320 x 250mm base plate, including chamfered edges all round	No	8		
12	Bedding approximately 20mm thick under 215 x 215mm base plate, including chamfered edges all round	No	2		
13	Bedding approximately 20mm thick under 265 x 250mm base plate, including chamfered edges all round	No	3		
	ROUGH FORMWORK (DEGREE OF ACCURACY III) (WORK GROUP 111)				
	Rough formwork to sides:				
14	Stub columns	m2	3		
	SMOOTH FORMWORK (DEGREE OF ACCURACY II) (WORK GROUP 111)				
	Smooth formwork to sides:				
15	Beams	m2	52		
16	Edges, risers, ends and reveals not exceeding 300mm high or wide	m	24		
	Smooth formwork to soffits:				
17	Slabs	m2	153		
	Boxing in special formwork to form:				
18	20 x 20mm Chamfers along top or bottom edges	m	24		
	MOVEMENT JOINTS, ETC (WORK GROUP 110)				
	Expansion joints with 10mm softboard between vertical concrete and brick surfaces:				
19	Not exceeding 300mm high to edges of surface beds	m	7		
	Saw-cut joints:				
20	6 x 10mm Saw-cut joints in top of concrete	m	150		
	Carried Forward			R	

	Brought Forward			R
	Two layers of five-ply malthoid in slip joints between horizontal concrete and brick surfaces, including cement mortar bed:			
21	Joints not exceeding 300mm wide	m	150	
	REINFORCEMENT (PROVISIONAL) (WORK GROUP 114)			
	Mild steel reinforcement to structural concrete work:			
22	Mild steel bar reinforcement (8 to 40mm diameter bars)	t	9.73	
	High tensile steel reinforcement to structural concrete work:			
23	High tensile steel bar reinforcement (8 to 40mm diameter bars)	t	22.77	
	Fabric reinforcement:			
24	Type 395 fabric reinforcement in concrete surface beds, slabs, etc.	m2	433	
	Carried Forward to Summary of Section No. 2			R

Section No. 2
Bill No. 3
Concrete, Formwork and Reinforcement

Item No		Quantity	Rate	Amount

SECTION 2

BILL NO. 4

MASONRY

WORK GROUP ALLOCATION

Unless otherwise stated, all items in this Bill will be allocated to Work Group 116 - Brick and Blockwork

PREAMBLES

The General Preambles for Trades (2017 edition) as published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items fully described in the said General Preambles will be entertained

The following "Supplementary Preambles" are incorporated in this bill to satisfy the requirements of the project and shall take precedence over the provisions of the said General Preambles

SUPPLEMENTARY PREAMBLES

BRICKWORK

General:

Non-load bearing brickwork is to be built to full height less 20mm gap next to the ceiling and is to be left for 14 days before grouting up in 1:3 cement mortar.

Sizes in descriptions:

Where sizes in descriptions are given in brick units, "one brick" shall represent the length and "half brick" the width of a brick

Hollow walls:

Descriptions of hollow walls shall be deemed to include leaving every fifth perpend of the bottom course of the external skin open as a weep hole

Carried Forward R

Brought Forward		R	
Bagged and sealed walls: Walls in two skins described as "bagged and sealed" shall be deemed to include having the outer face of the inner skin bagged with 1:6 cement and sand mixture and sealed with two coats bitumen emulsion waterproofing coating			
Face bricks : Bricks shall be ordered timeously to obtain uniformity in size and colour All face brickwork shall be regularly cleaned down as the work proceeds and shall be protected as necessary by an approved method			
Pointing: Descriptions of recessed pointing to fair face brickwork and face brickwork shall be deemed to include smooth floated square recessed, hollow recessed, weathered pointing, etc			
BLOCKWORK			
Concrete masonry units: Blocks are to be either solid or hollow modular dense concrete masonry units having a compressive strength of 7MPa			
Wall ties for blockwork: Wall ties shall be polypropylene ties complying with BS 76377. Ties for hollow walls shall be of sufficient length to allow not less than 75mm of each end to be built into the blockwork. Ties are to be spaced at intervals of not more than 1m in the horizontal direction and not more than 400mm staggered in the vertical direction except at openings, vertical joints or ends of walls where they are to be placed vertically above each other			
Blockwork: Blockwork shall comply with SANS 10145 "Concrete Masonry Construction"			
Carried Forward		R	

	Brought Forward			R	
	Surfaces to be plastered shall have joints raked out to a depth of at least 10mm to provide a key. Cavities of hollow walls shall be kept free of mortar droppings or other undesirable matter. Every second perpend of the bottom course of the external skin of hollow walls shall be left open as a weep hole				
	Standard complementary blocks:				
	Descriptions of blockwork shall be deemed to include standard complementary blocks such as corner, three-quarter, half and quarter blocks required in the construction of corners, reveals, jambs, ends, etc to solid and hollow walls and for bonding as necessary				
	DECORATIVE BLOCKS				
	Blocks shall be of approved manufacture, sound, well burnt or cured and uniform and true in size, shape and colour				
	SUPERSTRUCTURE				
	Brickwork of NFP bricks in class II mortar				
1	Half brick walls	m2	119		
	Brickwork of NFX bricks (14 MPa nominal compressive strength) in class II mortar in loadbearing walls etc:				
2	One brick walls	m2	612		
3	One brick walls in beamfilling	m2	261		
4	345mm Solid walls of two half brick skins including wire ties and with cavity filled solid with 15Mpa /15 mm concrete as the work proceeds	m2	515		
5	352mm Solid walls of two half brick skins including wire ties and with cavity filled solid with 15Mpa /15 mm concrete as the work proceeds	m2	54		
	2,5mm Brickwork reinforcement:				
6	75mm Wide reinforcement built in horizontally	m	351		
	Carried Forward			R	

				R	
	Brought Forward				
7	150mm Wide reinforcement built in horizontally	m	3,877		
	Prestressed fabricated concrete lintels, including necessary temporary supports:				
8	75 x 110mm Lintels in lengths not exceeding 3m long	m	19		
	Turning pieces to lintels, etc:				
9	220mm Wide turning pieces	m	36		
	Carried Forward			R	

	Brought Forward			R	
	FACE BRICKWORK				
	External/Internal face bricks (Allow a Prime Cost Amount of R8500/1000 bricks delivered to site) pointed with recessed horizontal and vertical joints:				
10	Extra over brickwork for face brickwork	m2	352		
	Brick-on-edge header course copings, sills, etc of face bricks at a purchase price of R6500,00/1000 bricks delivered to site pointed with polished recessed joints on all exposed faces (Provisional)				
11	150mm Wide sills set sloping and slightly projecting	m	218		
	Carried Forward to Summary of Section No. 2			R	

Section No. 2
Bill No. 4
Masonry

Item No		Quantity	Rate	Amount

SECTION 2

BILL NO. 5

WATERPROOFING

WORK GROUP ALLOCATION

Unless otherwise stated, all items in this Bill will be allocated to Work Group 120 - Waterproofing

PREAMBLES

The General Preambles for Trades (2017 edition) as published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items fully described in the said General Preambles will be entertained

The following "Supplementary Preambles" are incorporated in this bill to satisfy the requirements of the project and shall take precedence over the provisions of the said General Preambles

SUPPLEMENTARY PREAMBLES

Waterproofing:

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

Carried Forward R

				R	
	Brought Forward				
	DAMPPROOFING OF WALLS AND FLOORS				
	One layer 375 micron embossed polyethylene dampproof course (SANS 952-1985 type B):				
1	In walls	m2	109		
2	In walls vertically at reveals	m2	210		
	One layer 250 micron green polyethylene waterproof sheeting (SANS 952-1985 type C) sealed at laps with PVC self-adhesive tape:				
3	Under surface beds	m2	409		
	JOINT SEALANTS ETC				
	Two- part grey polysulphide sealing compound including backing cord, bond breaker, primer, etc				
4	6 x 10mm In saw cut joints in floors	m	179		
	White silicone sealing compound				
5	6 x 10mm in joints	m	179		
	Carried Forward to Summary of Section No. 2			R	

Item No			Quantity	Rate	Amount
	SECTION 2				
	BILL NO. 6				
	ROOF COVERINGS				
	WORK GROUP ALLOCATION				
	The items in this Bill will be allocated to Work Groups as indicated in brackets at the ends of headings or descriptions				
	PREAMBLES				
	The General Preambles for Trades (2017 edition) as published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items fully described in the said General Preambles will be entertained				
	The following "Supplementary Preambles" are incorporated in this bill to satisfy the requirements of the project and shall take precedence over the provisions of the said General Preambles				
	SUPPLEMENTARY PREAMBLES				
	Profiled metal roof sheeting and accessories shall be supplied with a 10 year guarantee and be installed by an approved installer				
	All fixing holes shall be drilled and not punched				
	Roof covering accessories shall be manufactured from the same material as used for roof covering				
	PROFILED METAL SHEETING AND ACCESSORIES (WORK GROUP 124)				
	0,58mm Galvanised "Chromadek" pre-painted roof sheeting in single-length sheets, fixed to cold formed lipped channel at 1000mm c/c on sisalation/PVC underlay:				
1	Roof coverings with pitch not exceeding 25 degrees	m2	608		
	Carried Forward			R	

	Brought Forward			R	
	Accessories:				
2	0.8mm Aluminium barge flashings 605mm girth	m	139		
	PROFILED POLYCARBONATE SHEETING AND ACCESSORIES (WORK GROUP 122)				
	0.47mm IBR profile roof sheeting fixed to intermediate coated steel purlins at 1200mm c/c with 65mm fixtite metal fastners. Side laps to be stitched at 500mm c/c between purlins with 22mm metal stitching fastener in accordance with manufaturer's recommedations:				
3	Side cladding	m2	77		
	Carried Forward			R	

	Brought Forward			R	
	ROOF AND WALL INSULATION (WORK GROUP 122)				
	Heavy industrial grade aluminium foil based insulation:				
4	Two sided bubble insulation membrane	m2	551		
	Carried Forward to Summary of Section No. 2			R	

Section No. 2
Bill No. 6
Roof Coverings

Item No		Quantity	Rate	Amount

SECTION 2

BILL NO. 7

CARPENTRY AND JOINERY

WORK GROUP ALLOCATION

Unless otherwise stated, all items in this Bill will be allocated to Work Group 126 - Carpentry & Joinery

PREAMBLES

The General Preambles for Trades (2017 edition) as published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items fully described in the said General Preambles will be entertained

The following "Supplementary Preambles" are incorporated in this bill to satisfy the requirements of the project and shall take precedence over the provisions of the said General Preambles

SUPPLEMENTARY PREAMBLES

Fixing:

Items described as "nailed" shall be deemed to be fixed with hardened steel nails or pins, or to be shot-pinned, to brickwork or concrete

Items described as "plugged" shall be deemed to include screwing to fibre, plastic or metal plugs at not exceeding 500mm centres, and where described as "bolted", the bolts have been given separately elsewhere

Joinery:

Descriptions of frames shall be deemed to include frames, transomes, rails, etc

Descriptions of hardwood joinery shall be deemed to include sinking and pelleting heads and nuts of bolts

Carried Forward R

Brought Forward		R	
Particle board All particle board shall comply with SANS 50312 having the required marking as per SANS 50312/EN 312 **Decorative thermosetting plastic laminate covering:** Laminate covering shall be glued under pressure and edge strips of same shall be butt jointed at junctions with adjacent similar finish **Sizes:** Sizes are nominal and the Contractor shall make allowance in his prices for minor variances in stated finished sizes of timber doors, door members, door frames, architraves, etc **Prices** Prices for all joinery work are to include for general framing, housing and notching, arris rounded angles, glueing, blocking, planting on, screwing, adhesives, dowels, pellets, cross tongues, screws and nails and setting up complete and also for all square cutting and waste. Tops shall be secured with metal or hardwood buttons.			
Carried Forward		R	

				R	
	Brought Forward				
	FLOORS, ETC				
	SKIRTINGS				
	Wrought meranti:				
1	19 x 76mm Skirtings including 19mm quadrant bead, nailed	m	208		
	DOORS, ETC				
	Semi-solid flush doors with gaboon veneer, hung to steel frames:				
2	44mm Door 820 x 2025mm high (TP-03)	No	6		
3	44mm Door 1020 x 2025mm high (TP-05)	No	1		
	Solid flush doors with horizontal curved-in grooves and gaboon veneer, hung to aluminium frames:				
4	40mm Door 1020 x 2025mm high (TP-04)	No	2		
	Solid hardwood doors with slatted panels on both sides and concealed edges to suit opening, including three (3) hinges per leaf (measured elsewhere) hung to aluminium frames:				
5	44mm Folding door 2400 x 2060mm high with concealed edges (TP-12)	No	1		
6	44mm Door 820 x 2060mm high with concealed edges (TP-14)	No	1		
	SUPPLEMENTARY PREAMBLES				
	Fire doors:				
	Fire doors are to be in accordance with SANS 1253				
	DUCT COVERS				
	Exterior grade hardwood P.A R., coated and treated:				
7	50 x 300mm Timber slats coated and treated	No	26		
	Carried Forward			R	

	Brought Forward			R	
	NOTICEBOARDS, KEYBOARDS, ETC				
	Pinning boards:				
8	Pinning board 900 x 1200mm high overall formed of 9mm thick pinning material fixed to brickwork with suitable contact adhesive and framed with aluminium frame, plugged	No	4		
	Carried Forward to Summary of Section No. 2			R	

Section No. 2
Bill No. 7
Carpentry and Joinery

Item No		Quantity	Rate	Amount

SECTION 2

BILL NO. 8

CEILINGS, PARTITIONS AND ACCESS FLOORING

WORK GROUP ALLOCATION

Unless otherwise stated, all items in this Bill will be allocated to Work Group 129 - Ceilings

PREAMBLES

The General Preambles for Trades (2017 edition) as published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items fully described in the said General Preambles will be entertained

The following "Supplementary Preambles" are incorporated in this bill to satisfy the requirements of the project and shall take precedence over the provisions of the said General Preambles

SUPPLEMENTARY PREAMBLES

Fixing:

Items described as "nailed" shall be deemed to be fixed with hardened steel nails or pins, or to be shot-pinned, to brickwork or concrete

Items described as "plugged" shall be deemed to include screwing to fibre, plastic or metal plugs at not exceeding 500mm centres, and where described as "bolted", the bolts have been given separately elsewhere

Ceilings:

Unless otherwise described, ceilings shall be deemed to be horizontal

Carried Forward R

	Brought Forward			R	
	Bulkheads:				
	Bulkheads are defined as those portions of ceilings which are stepped down from the general ceiling level in a particular room or area and which generally occur along the perimeter. Their purpose is either to conceal services or to create architectural features				
	Bulkheads have only been described as such where they conform to the above definition and where the horizontal, vertical or sloping dimensions do not exceed 1200mm. Where these dimensions are more than 1200mm such portions of ceilings have been included in the appropriate general items of ceilings				
	Unless otherwise described, bulkheads shall be deemed to be horizontal along the length				
	Openings:				
	Prices for openings for light fittings, ventilation grilles, air conditioning diffusers, etc are to include for any necessary additional support, trimming around, etc				
	Steel components:				
	All steel components for ceilings, partitions, etc are to be galvanised in accordance with SANS 121				
	INSULATION				
	Non-combustible fibreglass insulation of a density of not less than 10kg/m3 bonded with an inert thermo-setting resin:				
1	120mm Insulation in blanket form, closely fitted and laid on top of brandering between roof timbers	m2	603		
	Flexible acoustic insulation:				
2	50mm Thick laid on top of timber and/or steel structure	m2	311		
	Carried Forward			R	

	Brought Forward			R	
	NAILED UP CEILINGS				
	12.5mm Thick Fibre-cement plain ceiling boards with H-profile galvanised steel jointing strips:				
3	Ceilings including 38 x 38mm sawn softwood brandering at 400mm centres and cross brandering at 400mm centres	m2	76		
4	Sloping ceilings including 38 x 38mm sawn softwood brandering at 400mm centres	m2	26		
	9.5mm Thick rhinoboard with taped and skimmed flush joints:				
5	Ceilings including 38 x 38mm sawn softwood brandering at 400mm centres and cross brandering at 400mm centres	m2	44		
6	Soffits and sides of horizontal bulkheads, size 1200 x 75mm deep, suspended exceeding 2m but not exceeding 4m below concrete soffits	m	47		
7	Extra over ceiling for 600 x 600mm trap door of 38 x 38mm wrought softwood rebated framing with one cross brander, covered with ceiling board and fitted flush in opening, including necessary trimmers around	No	5		
	Gypsum plasterboard cornices:				
8	75mm Coved cornices	m	345		
	SUSPENDED CEILINGS				
	SUPPLEMENTARY PREAMBLES				
	Proprietary suspended ceilings:				
	Hangers, suspension grids, "lay-in" panels, etc are to be in accordance with the manufacturers' recommendations				
	Carried Forward			R	

	Brought Forward			R	
	Electrical light fittings, diffusers, panels, etc are generally "lay-in" units of the same dimensions as the suspension grid described and an allowance must be made in the rates 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)				
	Flush plastered gypsum plasterboard suspended ceilings:				
	Ceilings shall comprise 12,5mm gypsum plasterboard boards screwed to and including screw-up suspension grid consisting of main tees at 1200mm centres and galvanised steel capped cross tees at 400mm centres and with tape fixed over joints and the whole finished with gypsum plaster trowelled to a smooth polished surface				
	The grid shall be suspended by means of galvanised steel L-section hangers at suitable centres, securely shot-pinned or screwed to concrete, steel or wood				
	Flush plastered gypsum plasterboard suspended bulkheads:				
	Bulkheads shall comprise galvanised steel studding of 63,5mm top and bottom tracks with vertical studs at maximum 400mm centres, pop-riveted to the top and bottom tracks with similar additional vertical studs as necessary at abutments, ends, etc and covered as described with plasterboard screwed to studding with drywall screws at maximum 300mm centres. Boards shall be butt jointed and finished with tape and jointing compound and the whole finished with gypsum plaster trowelled to a smooth polished surface to the thickness recommended by the manufacturer				
	Descriptions shall be deemed to include any additional studs at ends and intersections, corner beads, cornices at junctions with ceilings, jointing compound, tape, etc				
	600 x 1200 x 15mm pre-painted acoustic panels on exposed suspension grid system including hangers, necessary hold-down clips and wedges, etc:				
9	Ceilings suspended not exceeding 1m below timber purlins at 950mm centres (trusses at 1000m centres)	m2	577		
	Carried Forward			R	

				R	
	Brought Forward				
	Cornices, perimeter trims, etc to suspended ceilings:				
10	30 x 30mm Pre-painted aluminium shadow line perimeter trims, plugged	m	345		
	PARTITIONS, ETC				
	RW 45dB - 60 minutes fire rating steel stud drywall partitions, consisting of stud and track system with 102 x 35mm "Drywall Ultrasteel" studs at 600mm centres friction fitted into head track and floor track and clad on both sides with 15mm thick "FireStop" board fixed at 220mm centres using 25mm "RhinoBoard Sharp Point" screws, external angles to have Drywall cornerbeads attached and all joints to be covered with "RhinoTape" and finished with two layers of "RhinoGlide" applied and lightly sanded down, leaving wall surface prepared for painting (elsewhere measured):				
11	Partitions 3000mm high with bottom and top tracks plugged	m	27		
12	Extra over partition 3000mm high for vertical abutment	No	5		
13	Extra over partition 3000mm high for corner	No	2		
14	Extra over partition 3000mm high for T-intersection	No	3		
15	Extra over partition 3000mm high for fair end	No	2		
	Carried Forward to Summary of Section No. 2			R	

Item No		Quantity	Rate	Amount

SECTION 2

BILL NO. 9

FLOOR COVERINGS, WALL LININGS, ETC

WORK GROUP ALLOCATION

Unless otherwise stated, all items in this Bill will be allocated to Work Group 130 - Resilient floor and wall coverings

PREAMBLES

The General Preambles for Trades (2017 edition) as published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items fully described in the said General Preambles will be entertained

The following "Supplementary Preambles" are incorporated in this bill to satisfy the requirements of the project and shall take precedence over the provisions of the said General Preambles

SUPPLEMENTARY PREAMBLES

Fixing:

Floor coverings, wall linings, etc shall, where applicable, be fixed with adhesive as recommended by the manufacturers of the flooring, linings, etc

Woodblock flooring:

Woodblock flooring shall be fixed with bitumen or a similar approved adhesive

Sanding:

Sanding shall be done by using dustless sanders

Carried Forward R

				R	
	Brought Forward				
	Where woodblock flooring is to be laid in areas which were previously covered by woodblocks, there may still be traces of existing bitumen and/or adhesive on the floor. The substrate must therefor be suitably prepared for the proper relaying of woodblock flooring and prices must include therefor, all to the approval of the Principal Agent				
	FLOOR COVERINGS				
	Timber flooring (Allow a Prime Cost Amount of R 750/m2 delivered to site) laid on existing timber joists on subfloors:				
1	On floors	m2	50		
	2.6mm "Smoked Chill Oak" flexible vinyl sheeting:				
2	On floors	m2	60		
	450 x 450 x 2mm Antistatic semi flexible vinyl tiles:				
3	On floors	m2	50		
	SKIRTINGS, NOSINGS, ETC				
	Skirtings, nosings, etc:				
4	70mm Clip-top capping skirtings to vinyl sheeting	m	31		
	POLISH, SEALERS, ETC				
5	Two coats wax polish on vinyl flooring	m2	110		
	Carried Forward to Summary of Section No. 2			R	

Section No. 2
Bill No. 9
Floor Coverings

Item No		Quantity	Rate	Amount

SECTION 2

BILL NO. 10

IRONMONGERY

WORK GROUP ALLOCATION

Unless otherwise stated, all items in this Bill will be allocated to Work Group 132 - Ironmongery

PREAMBLES

The General Preambles for Trades (2017 edition) as published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items fully described in the said General Preambles will be entertained

The following "Supplementary Preambles" are incorporated in this bill to satisfy the requirements of the project and shall take precedence over the provisions of the said General Preambles

SUPPLEMENTARY PREAMBLES

Proprietary items:

Where applicable, the manufacturers' names or product catalogue titles are given in sub-headings preceding the items

Note that the manufacturers names specified in this trade are for the purposes of competitive pricing.

Prices are to be based on the specific products/articles specified.

On request, returnable samples are to be provided to the Project Manager for consideration

Carried Forward R

	Brought Forward			R	
	Locks:				
	Notwithstanding Clause 2, Item 3 of the "Ironmongery" trade of the "Standard System of Measuring Building Work, Seventh Edition", descriptions of locks shall be deemed to include two keys per lock				
	Finishes to ironmongery:				
	Where applicable, finishes to ironmongery are indicated by suffixes in accordance with the following list: BS Satin bronze lacquered CH Chromium plated SC Satin chromium plated SE Silver enamelled GE Grey enamelled AN Anodised natural AS Anodised silver AB Anodised bronze AG Anodised gold ABL Anodised black PB Polished brass PL Polished and lacquered PT Epoxy coated SD Sanded BBS Brushed stainless steel				
	HINGES, BOLTS, ETC				
1	Surface mounted aluminium indicator bolt set	No	8		
2	100mm Stainless steel ball bearing butt hinge with stainless steel screws	No	15		
	LOCKS				
	"EN-SUITE" LOCKS				
	The following locks are to be suitable for master and grand master key operation				
3	Three-lever upright mortice lockset	No	2		
4	Grand master key	No	1		
5	Brass padlock	No	2		
	Carried Forward			R	

	Brought Forward			R	
	HANDLES				
	Approved handles:				
6	Anodised aluminium dove pull handle with 45 x 192mm back plates fixed back-to-back with male/female screws	Pairs	9		
	104 x 30mm Perspex room number plates with white 25mm high "Helvetica" engraved letters and numbers on clear background, screw-fixed to timber doors with two chrome-plated self-tapping screws:				
	PUSH PLATES AND KICK PLATES				
	1,2mm Thick satin finished stainless steel plates countersunk screwed along edges at not exceeding 200mm centres:				
7	300 x 150mm High push plate	No	1		
8	1020 x 300mm High kick plate	No	2		
	DOOR CLOSERS				
	Approved door furniture:				
9	Door closer	No	3		
	SUNDRIES				
	Approved sundries:				
10	Door stop, plugged	No	3		
	Carried Forward			R	

				R	
	Brought Forward				
	BATHROOM FITTINGS				
	Approved fittings:				
11	Soap dispenser, plugged	No	1		
12	Wall-mounted automated hands free hand dryer	No	6		
13	Stainless steel soap dish, plugged	No	7		
14	Stainless steel lockable toilet roll holder, plugged	No	8		
15	Paper towel dispenser and waste bin combination, plugged	No	6		
16	Stainless steel sanitary towel disposal bin, plugged	No	6		
	Approved fittings:				
17	Stainless steel back grab rail 750mm long, plugged	No	2		
18	Stainless steel side grab rail 874mm girth, plugged	No	2		
19	Fold down shower seat, plugged	No	1		
	FITTINGS, ETC				
	Grade 304 stainless steel:				
20	500 x 180 x 492mm Deep overal stainless steel wall-mounted "First Aid" cabinet with sloping top, internal shelf and drop-down door	No	2		
	Carried Forward to Summary of Section No. 2			R	

Section No. 2
Bill No. 10
Ironmongery

Item No		Quantity	Rate	Amount

SECTION 2

BILL NO. 11

STRUCTURAL STEELWORK

WORK GROUP ALLOCATION

Unless otherwise stated, all items in this Bill will be allocated to Work Group 134 - Structural Steelwork in Buildings

PREAMBLES

The General Preambles for Trades (2017 edition) as published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items fully described in the said General Preambles will be entertained

The following "Supplementary Preambles" are incorporated in this bill to satisfy the requirements of the project and shall take precedence over the provisions of the said General Preambles

SUPPLEMENTARY PREAMBLES

Specification:

All structural steel must comply with SANS 1200H (Degree of Accuracy II)

All hot rolled structural steel sections must comply with SANS 1431 grade 300W, unless otherwise specified on the drawings

Unless otherwise designated, all bolts and nuts will be grade 4.6 to SANS 135 and BS 916. Descriptions of bolts shall be deemed to include nuts and washers. Descriptions of L-shaped and U-shaped anchor bolts shall be deemed to include bending, threading, nuts and washers and embedding in concrete. Descriptions of expansion anchors and bolts and chemical anchors and bolts shall be deemed to include nuts, washers and mortices in brickwork or concrete

Carried Forward R

	Brought Forward			R	
	All connections must be welded all round with a 6mm fillet weld, unless otherwise specified on the drawings				
	Drawings and shop details:				
	The Contractor shall be responsible for preparing shop drawings and details which must be submitted to the Principal Agent for approval prior to commencement of fabrication.				
	Before commencing any fabrication, the steel fabricator must check the accessibility of the site and design the sizes of individual parts accordingly				
	Hot-dipped galvanizing:				
	After fabrication and prior to delivery to site, all steelwork described as hot-dipped galvanized, is to be descaled and thoroughly cleaned by pickling, after which it is to be hot dip galvanized in accordance with the requirements of SANS 121/1501461				
	Descriptions:				
	Descriptions of bolts shall be deemed to include nuts and washers				
	Descriptions of L-shaped and U-shaped anchor bolts shall be deemed to include bending, threading, nuts and washers and embedding in concrete				
	Descriptions of expansion anchors and bolts and chemical anchors and bolts shall be deemed to include nuts, washers and mortices in brickwork or concrete				
	STEEL COLUMNS AND BEAMS				
	Welded columns in single lengths with flat base, cap, bearer and connection plates, bolted to concrete:				
1	203 x 203mm x 46kg/m I-section universal columns	t	0.87		
2	254 x 146mm x 31kg/m I-section universal columns	t	1.46		
3	305 x 165mm x 46kg/m I-section universal columns	t	3.31		
	Carried Forward			R	

	Brought Forward			R	
	Welded beams in single lengths with flat bearer and connection plates, bolted to steel:				
4	IPE - AA 140 x 73 I-section rafters	t	0.17		
5	203 x 133mm x 30kg/m I-section universal beams	t	1.49		
6	101.6 x 3mm x 8kg/m I-section universal beams	t	0.24		
7	254 x 146mm x 31kg/m I-section universal beams	t	1.10		
8	305 x 165mm x 40kg/m I-section universal beams	t	2.40		
	Carried Forward			R	

				R	
	Brought Forward				
	STEEL PURLINS, GIRTS, BRACING, ETC.				
	Purlins and girts, bolted to steel:				
9	125 x 65 x 20 x 2,5mm Thick cold-formed lipped channel purlins	t	0.97		
10	125 x 75 x 20 x 2mm Thick cold-formed lipped channel purlins	t	0.13		
11	150 x 50 x 20 x 2,5mm Thick cold-formed lipped channel purlins	t	6.79		
12	250 x 75 x 20 x 3mm Thick cold-formed lipped channel purlins	t	3.00		
	Welded bracing, anti-sag rails, etc with flat connection plates, bolted to steel:				
13	50 x 50 x 3mm Thick sag angle	t	0.29		
14	60 x 60 x 6mm Thick angle false rafters	t	0.34		
15	80 x 80 x 3.5mm Thick square hollow section	t	0.18		
16	120 x 120 x 8mm Thick angle rafters	t	1.05		
	BASE PLATES, ETC.				
17	20mm Thick base plates holed four for 20 diameter (bolts measured elsewhere in No. 18 base plates)	t	0.23		
	BOLTS, FASTENERS, ETC				
18	20mm Diameter chemical anchor	No	604		
	PAINTING				
	Prepare and apply one galvanised iron primer to a DFT of 25-40 microns, one coat universal undercoat to a DFT of 25-35 microns and two coats of gloss enamel to a DFT of 25-35 microns per coat, on:				
19	Structural steel columns, beams, etc	m2	349		
20	Steel purlins, girts, etc	m2	409		
	Carried Forward			R	

	Brought Forward		R	
	Paint testing:			
21	Provide the sum of Seventy Five Thousand for quality control inspection by an authorised independent inspection authority	Item		75,000.00
22	Profit (.....%)		%	
23	General attendance (.....%)		%	
	Carried Forward to Summary of Section No. 2		R	

Section No. 2
Bill No. 11
Structural Steelwork

Item No		Quantity	Rate	Amount

SECTION 2

BILL NO. 12

METALWORK

WORK GROUP ALLOCATION

Unless otherwise stated, all items in this Bill will be allocated to Work Group 136 - Metalwork

PREAMBLES

The General Preambles for Trades (2017 edition) as published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items fully described in the said General Preambles will be entertained

The following "Supplementary Preambles" are incorporated in this bill to satisfy the requirements of the project and shall take precedence over the provisions of the said General Preambles

SUPPLEMENTARY PREAMBLES

Descriptions of bolts, anchors, etc:

Descriptions of bolts shall be deemed to include nuts and washers

Descriptions of expansion anchors and bolts and chemical anchors and bolts shall be deemed to include nuts, washers and mortices in brickwork or concrete

Items described as "holed for bolt(s)" shall be deemed to exclude the bolts, unless otherwise described

Items described as "plugged" shall be deemed to include screwing to fibre, plastic or metal plugs at not exceeding 600mm centres

Carried Forward R

	Brought Forward		R	
	Fixing:			
	Unless otherwise described, descriptions of items shall be deemed to include for fixing to brickwork or concrete			
	Where items are described as "bolted", the bolts are measured elsewhere as stated in clause N.7 of the Model Preambles			
	References:			
	References in descriptions of windows, doors, gates, refer to the respective types of windows, doors, etc. detailed in the Architect's window schedules bound into the back of these bills of quantities			
	Tenderers are to price the following items in conjunction with the above Architect's drawings, etc. and no claim arising from brevity of descriptions in these bills of quantities, of items shown on the Architect's drawings, etc. shall be entertained			
	Carried Forward		R	

				R	
	Brought Forward				
	STEEL BALUSTRADES				
	Welded and bolted patent balustrades to balconies and stairs:				
1	Horizontal balustrades 1000mm high, formed of continuous pipe top and bottom rails and stanchions bolted to concrete (bolts elsewhere)	m	30		
2	Extra over for 45 degree bend	No	2		
3	16mm Expansion bolt	No	36		
4	16mm Chemical anchor with loose bolt	No	36		
	GALVANISED STEEL GATES, SCREENS, ETC				
5	Custom-made screen, 1652 x 2100mm high, spot welded to columns	No	2		
6	Custom-made screen, 2796 x 5800mm high, spot welded to columns	No	1		
7	Custom-made screen, 4906 x 8976mm high, spot welded to columns	No	1		
8	Custom -made screen, 8261 x 2100mm high , spot welded to columns	No	1		
	Laser cut galvanised mild steel screens, fixed to structural steel columns:				
	PRESSED STEEL DOOR FRAMES				
	1,6mm Rebated frames suitable for one brick walls:				
9	Frame for door 1500 x 2100mm high (TP-02)	No	2		
10	Frame for door 1100 x 2100mm high (TP-05)	No	1		
	PRESSED STEEL TRANSFORMER ROOM DOORS AND FRAMES				
	Carried Forward			R	

	Brought Forward			R	
	Steel doors with ventilation louvres:				
11	Purpose made mild steel transformer double door with steel louvres, 1500 x 2100mm High (TP-02)	No	2		
	ALUMINIUM WINDOWS, DOORS, ETC				
	Aluminium windows, doors, etc:				
	The successful tenderer shall be responsible for the complete design work including determining required section sizes and fixing details, all subject to the Project Manager's approval				
	Doors, windows, etc shall be designed and constructed to withstand wind pressures of 1,1kn/m2 (unfactored) and 1,5kn/m2 (factored)				
	All calculations shall be submitted to the Project Manager for approval				
	Doors and windows shall comply with AAAMSA design criteria				
	Glazing shall comply with SAGGA regulations. Glass thicknesses shall comply with SAGGA regulations irrespective of thicknesses shown on the schedules/drawings				
	Doors and windows shall be supplied with protective tape and plastic which shall be removed only once surrounding trades have been completed				
	The following certificates shall be provided prior to commencement of site work:				
	1 A copy of the relevant AAAMSA Performance Test Certificate from the manufacturer/contractor supplying the architectural aluminium product				
	2 A Certificate of Conformance confirming that anodising or powder coating has been processed in accordance with SANS 999 and SANS 1796 respectively				
	Carried Forward			R	

	Brought Forward		R	
3	A copy of the relevant Performance Compliance Report from the system suppliers			
4	A copy of the relevant Safiera Energy Rating Certification			
5	A powder guarantee of not less than 15 years issued by the powder manufacturer. The specific conditions contained in this guarantee shall form part of the powder coating process			
6	A Certificate of Conformance confirming that glazing has been installed in accordance with SANS 10400-N, ensuring that safety glazing materials have been installed in the mandatory areas and that each individual pane of safety glazing materials has been permanently marked			
7	A warranty from the manufacturer of the laminated safety glass and/or hermetically sealed glazing units guaranteeing the products against delamination and colour degradation for a period of not less than five years			
	All windows and door joints must be sealed to the inside with "Dow Corning" silicone during manufacturing			
	All dimensions shall be verified on site before commencing the work and a full set of shop drawings showing all relevant details shall be submitted to the Architect for his approval, prior to the manufacture of the units			
	Sizes			
	Where sizes are given these are nominal sizes			
	Ironmongery			
	The tenderer must allow in his pricing for supply and fixing of ALL ironmongery			
	Heavy duty high quality fittings must be allowed for and samples will be required for approval by the Project Manager			
	ALUMINIUM CASEMENT WINDOWS			
	Carried Forward		R	

	Brought Forward			R	
	Powder coated black aluminium windows with and including 12 x 12mm solid square aluminium burglar bars fixed to window over opening sashes, 6mm clear float safety glass, glazing beads, black nylon ironmongery, woolpile weather seals, packing pieces, friction stays, coverstrips and sealing all round on both sides with polysulphide or similar approved sealant:				
12	Window type TP01, 2800 x 400mm high (W01)	No	2		
13	Window type TP02, 4446 x 400mm high (W02)	No	2		
14	Window type TP03, 1850 x 400mm high (W03)	No	2		
15	Window type TP04, 3000 x 400mm high (W04)	No	1		
16	Window type TP05, 400 x 2808mm high (W05)	No	1		
17	Window type TP06, 5990 x 400mm high, including a side window, 399 x 1558mm High (W06)	No	1		
18	Window type TP07, 5330 x 400mm high (W07)	No	1		
19	Window type TP08, 400 x 900mm high (W08)	No	2		
20	Window type TP09, 400 x 2725mm high (W09)	No	3		
21	Window type TP10, 6000 x 900mm high (W10)	No	1		
22	Window type TP11, 996 x 1200mm high (W11)	No	2		
23	Window type TP12, 1893 x 1200mm high (W12)	No	1		
24	Window type TP13, 1893 x 720mm high (W13)	No	1		
25	Window type TP14, 5600 x 2400mm high (W14)	No	1		
26	Window type TP15, 2845 x 2900mm high (W15)	No	1		
27	Window type TP16, 2845 x 3087mm high (W16)	No	1		
28	Window type TP17, 5870 x 3087mm high (W17)	No	1		
29	Window type TP18, 3273 x 400mm high (W18)	No	1		
	Carried Forward			R	

				R	
	Brought Forward				
30	Window type TP19, 3280 x 400mm high (W19)	No	1		
31	Window type TP20, 2540 x 2331mm high (W20)	No	1		
32	Window type TP20, 6465 x 400mm high (W21)	No	1		
33	Trapezium-shaped window TP22, 10546mm x 1200mm high (extreme height) (W22) (Drawing No. 1002-001-0405)	No	1		
34	Trapezium-shaped window TP23, 10546mm x 1200mm high (extreme height) (W23) (Drawing No. 1002-001-0405)	No	1		
35	Window type TP24, 10645 x 1320mm high (W24)	No	1		
36	Window type TP25, 58400 x 1522mm high (W25)	No	1		
37	Triangular-shaped window TP26, 5325mm x 1500mm high (extreme height) (W26) (Drawing No. 1002-001-0405)	No	1		
38	Window type TP27-A, 6975 x 4000mm high (W27-A)	No	1		
39	Window type TP27-B, 6050 x 4000mm high (W27-B)	No	1		
40	Window type TP28, 2365 x 400mm high (W28)	No	2		
41	Window type TP29, 3000 x 2400mm high (W29)	No	1		
42	Window type TP30, 2100 x 1000mm high (W30)	No	1		
	Carried Forward			R	

				R	
	Brought Forward				
	ALUMINIUM DOORS, FRAMES, ETC				
	Powder coated black aluminium door units complete with coupling mullions, 6mm clear safety glass, pvc gaskets, woolpile draught seals, packing pieces, coverstrips, ironmongery and sealing all round on both sides with polysulphide or similar approved sealant:				
43	Double door unit, size 1500mm x 2100mm high overall with door in two equal leaves (TP01)	No	1		
44	Door frame, size 900 x 2100mm high with lockset and handles (TP-03)	No	6		
45	Door frame, size 1100 x 2100mm high with lockset and handles (TP-04)	No	2		
46	Door frame, size 2400 x 2100mm high with lockset and handles (TP-12)	No	1		
47	Door frame, size 900 x 2100mm high with lockset and handles (TP-14)	No	1		
48	Door size, 1500 x 2400mm high with lockset and handles (SF-01)	No	1		
49	Door size, 1780 x 2100mm high with lockset and handles (SF-02)	No	1		
50	Door size, 1500 x 2100mm high with lockset and handles (SF-03)	No	1		
51	Door size, 3700 x 2100mm high with lockset and handles (SF-04)	No	1		
52	Door size, 1500 x 2800mm high with lockset and handles (TP-08)	No	1		
53	Door frame, size 1500 x 2400mm high with lockset and handles (TP-09)	No	2		
	Carried Forward			R	

				R	
	Brought Forward				
	ALUMINIUM SLIDING FOLDING DOORS				
	Powder coated sliding folding doors complete with subframes, ironmongery, glass, cover strips and sealing all round on both sides with poly sulphide or similar approved sealant:				
54	Purpose made sliding folding door, 9815 x 2330mm high (TP-06)	No	1		
55	Purpose made sliding folding door, 5870 x 2900mm high (TP-07)	No	2		
	STEEL ROLLER SHUTTERS, ETC				
	Natural anodised zincalume roller shutters:				
56	Manual push-up slatted roller shutter for 3500 x 2100mm high opening (TP-10)	No	1		
57	Manual push-up slatted roller shutter for 3500 x 2400mm high opening (TP-11)	No	2		
	SHOWER CUBICLE PANELS AND DOORS				
	Anodised aluminium shower cubicle panels and doors with frames, sliding gear, pivot hinges, cleats, stops, etc and 6,38mm toughened clear safety glass, plugged to tiled walls and sealed on both sides with silicone sealant:				
58	Swing door 1000 x 2100mm high with 165mm undercut	No	6		
	Carried Forward to Summary of Section No. 2			R	

Section No. 2
Bill No. 12
Metalwork

Item No		Quantity	Rate	Amount

SECTION 2

BILL NO. 13

PLASTERING

WORK GROUP ALLOCATION

Unless otherwise stated, all items in this Bill will be allocated to Work Group 142 - In situ finishes

PREAMBLES

The General Preambles for Trades (2017 edition) as published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items fully described in the said General Preambles will be entertained

The following "Supplementary Preambles" are incorporated in this bill to satisfy the requirements of the project and shall take precedence over the provisions of the said General Preambles

SUPPLEMENTARY PREAMBLES

Moisture tests:

Before any finishes, coverings, etc are applied to screeds, plastering, etc or any other in-situ finish, moisture tests are to be carried out to the complete satisfaction of the Project Manager to ensure that these surfaces have the correct moisture content for the finish to be applied

Labours, etc

Labours such as fair, rounded and chamfered edges, trowel cuts, throats, V-joints, angles, etc shall be deemed to be included in the descriptions

Carried Forward R

Brought Forward R

Sample Panels

A sample panel size 1m x1m, of each of the various plaster type wall and floor finishes in this contract, shall be prepared for the approval of the Project Manager and the cost of the sample panel(s) shall be deemed to be included in the overall costs of the relevant wall and floor finishes

GRANOLITHIC

Method:

The method to be used shall be either the monolithic method or the bonded method

Preparation:

For granolithic applied monolithically, the concrete floor shall be swept clean after bleeding of the concrete has ceased and the slab has begun to stiffen; any remaining bleed water shall be removed and the granolithic applied immediately thereafter. For granolithic to be bonded to the floor slab after it has hardened, the slab surface shall be hacked (preferably by mechanical means) until all laitance, dirt, oil, etc is dislodged and swept clean of all loose matter. The slab shall then be wetted and kept damp for at least six hours before applying the granolithic

Mix:

Unless otherwise described, granolithic shall attain a compressive strength of at least 41MPa. The coarse aggregate shall comply with SANS 1083 and shall generally be capable of passing a 10mm mesh sieve. Where the thickness of the granolithic exceeds 25mm, the size of the coarse aggregate shall be increased to the maximum size compatible with the thickness of the granolithic

Carried Forward R

Brought Forward		R	
Panels: Granolithic shall be laid in panels not exceeding 14m² for monolithic finishes, not exceeding 9,5m² for bonded finishes and not exceeding 6m² for all external granolithic. Wherever possible, panels shall be square but at no time should the length of the panel exceed 1,5 times its width Where possible joints between panels shall be positioned over joints in the floor slab and shall be at least 3mm wide through the full thickness of the finish, separated by strips of wood or fibreboard and finished with V-joints **Laying:** Monolithic granolithic shall be applied to the partially set slab and thoroughly compacted and lightly wood floated to the required levels Bonded granolithic shall be applied to the slab after applying a 1:1 sand-and-cement slurry brushed over the surface and allowed to partially set before applying the granolithic. The granolithic shall be throughly compacted and lightly wood floated to the required levels After wood floating, the monolithic and bonded granolithic shall remain undisturbed until bleeding has ceased and the surface has stiffened. Any remaining bleed water and laitance shall then be removed and the surface steel trowelled or power floated **Curing, seasoning and protection:** Granolithic shall be covered with clean hessian with waterproof building foil over and kept wet for at least seven days after laying **Colour:** Coloured granolithic shall be tinted with an approved colouring pigment mixed into a true and even colour			
Carried Forward		R	

	Brought Forward			R	
	TINTED WHITE CEMENT SCREEDS				
	Tinted screed shall be composed of one bag White Portland Cement and two wheelbarrows "Malmesbury" sand. Surfaces shall be finished with a steel trowel to leave a smooth finish and coated with two coats "Earthcote S.I. Floorcote" two-pack polyurethane floor sealer applied as per the manufacturer's recommendations				
	NOTE: Tinted screeds are to be strengthened with "Primal Eccos" acrylic polymer (15% of the water volume is to be substituted with the acrylic polymer during the mixing process)				
	Coarse sand is to be used for these screeds				
	All tinting, finishing, strengthening, etc are to be mixed, applied, etc strictly in accoprdance with the manufacturer's instructions				
	CEMENT PLASTER				
	Unless otherwise described, cement plaster shall be taken to mean Class 1 cement plaster i.e. 1:4 cement:sand plaster (common cement)				
	SCREEDS				
	3:1 Cement plaster screeds wood floated for tiles, on concrete:				
1	40mm Thick on floors and landings	m2	169		
	3:1 Cement plaster screeds wood floated for "vinyl" or other flexible type flooring, including applying an approved self-levelling coating applied by an approved specialist, on concrete:				
2	40mm Thick on floors and landings	m2	110		
	SPECIAL FLOOR COATING				
	5mm Thick non-slip "Polyurethane" or similar approved self-levelling epoxy floor coating applied by an approved specialist, on:				
3	On floors	m2	218		
	Carried Forward			R	

	Brought Forward			R	
	INTERNAL PLASTER				
	Cement plaster wood floated for tiles, on brickwork:				
4	On walls	m2	839		
5	On narrow widths	m2	10		
	EXTERNAL PLASTER				
	Cement plaster steel floated, on brickwork:				
6	On walls	m2	523		
7	On walls in sunk/raised panels	m2	97		
8	On narrow widths	m2	52		
	CORNER PROTECTORS, DIVIDING STRIPS, ETC				
	Brass:				
9	3 x 30mm Flat section dividing strip	m	30		
	Carried Forward to Summary of Section No. 2			R	

Item No		Quantity	Rate	Amount

SECTION 2

BILL NO. 14

TILING

WORK GROUP ALLOCATION

Unless otherwise stated, all items in this Bill will be allocated to Work Group 144 - Tiling

PREAMBLES

The General Preambles for Trades (2017 edition) as published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items fully described in the said General Preambles will be entertained

The following "Supplementary Preambles" are incorporated in this bill to satisfy the requirements of the project and shall take precedence over the provisions of the said General Preambles

SUPPLEMENTARY PREAMBLES

Fixing:

Unless described as "fixed with adhesive to plaster (plaster elsewhere)", descriptions of tiling on brick or concrete walls, columns, etc shall be deemed to include 1:4 cement plaster backing and descriptions of tiling on concrete floors, etc shall be deemed to include 1:3 cement plaster bedding

Tiling described as "fixed with adhesive on power floated concrete" shall be deemed to include for approved tiling key-coat

Ceramic, porcelain, marble and granite tiles are to be fixed and grouted with suitable adhesives and grouts from the "Tal Goldstar" or similar approved range of products as recommended by the manufacturer of the tiles

Carried Forward R

				R	
	Brought Forward				
	Preparatory work to existing painted plastered surfaces:				
	Preparation of all existing painted plastered surfaces is to include for removing all loose and flaking material by wire brushing, thoroughly washing down and allowing to dry completely and applying one coat masonry bonding agent				
	WALL TILING				
	75 x 300mm Glass tiles (Allow a Prime Cost Amount of R 200/m2 delivered to site) fixed with adhesive to plaster (plaster elsewhere) and flush pointing with and including waterproof grout:				
1	On walls	m2	335		
2	On narrow widths	m2	84		
	Mosaic tiles (Allow a Prime Cost Amount of R 250/m delivered to site) fixed with adhesive to plaster (plaster elsewhere) and flush pointing with and including waterproof grout:				
3	Listello strip dado trim	m	160		
	FLOOR TILING				
	8.6 x 590 x 1190mm Porcelain floor tiles (Allow a Prime Cost Amount of R 450/m2 delivered to site) fixed with adhesive to 40mm screed (screed elsewhere) and flush pointing with and including waterproof grout:				
4	On floors	m2	169		
5	Skirting 100mm high (of fair cut tiles)	m	137		
	48 x 48mm Non-slip mosaic floor tiles (Allow a Prime Cost Amount of R 380/m2 delivered to site) fixed with adhesive to screed (screed elsewhere) and flush pointing with and including waterproof grout:				
6	On shower floors to falls and currents	m2	21		
	Carried Forward			R	

				R	
	Brought Forward				
	SUNDRIES				
	Stainless steel dividing strips:				
7	50 x 15mm Flat section dividing strips between tiles and vinyl sheeting	m	30		
8	28 x 10 x 2,5mm L-section dividing strips between tiles	m	100		
	Stainless steel corner protectors, stair nosings, expansion joint strips, etc:				
9	22,5mm Stainless steel expansion joint strip with and including neoprene compression strip type MCN100	m	100		
	Carried Forward to Summary of Section No. 2			R	

Item No		Quantity	Rate	Amount

SECTION 2

BILL NO. 15

PLUMBING AND DRAINAGE (PROVISIONAL)

WORK GROUP ALLOCATION

The items in this Bill will be allocated to Work Groups as indicated in brackets at the end of headings or descriptions

PREAMBLES

The General Preambles for Trades (2017 edition) as published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items fully described in the said General Preambles will be entertained

The following "Supplementary Preambles" are incorporated in this bill to satisfy the requirements of the project and shall take precedence over the provisions of the said General Preambles

SUPPLEMENTARY PREAMBLES

Wire gratings:

Descriptions of gutter outlets, etc shall be deemed to include wire balloon gratings

Stormwater channels:

Descriptions of channels shall be deemed to include necessary excavation, surface preparation, compaction, etc and disposal of surplus material on site

Carried Forward R

Brought Forward		R	
French drains: Descriptions of french drains shall be deemed to include excavation, stone filling graded from 300mm diameter at bottom to 75mm diameter at top, approved geofabric filter blanket over stone, 300mm earthfilling over and disposal of surplus material on site			
Septic tanks: Descriptions of proprietary type septic tanks shall be deemed to include excavation, bedding and jointing, concrete base slabs, jointing to drains and backfilling, compaction, etc all in accordance with the manufacturer's instructions and disposal of surplus material on site			
Stainless steel basins, sinks, wash troughs, urinals, etc: Stainless steel for economy basins, domestic sinks and worktops shall be Type 430 (17/0) Stainless steel for urinals, basins, quality sinks, wash troughs, institutional equipment, etc shall be Type 304 (18/8) Stainless steel for laboratory sinks, photographic equipment, etc shall be Type 316 (18/8) Units shall have standard aprons on all exposed edges and tiling keys against walls where applicable			
Sealing of edges: Outer edges of sinks, basins, baths, urinals, etc are to be sealed against adjacent surfaces with approved mildew resistant silicone sealant and prices must include therefor			
uPVC pipes and fittings: Sewer and drainage pipes and fittings shall be jointed and sealed with butyl rubber rings Soil, waste and vent pipes and fittings shall be solvent weld jointed or sealed with butyl rubber rings			
Carried Forward		R	

Brought Forward R

uPVC pressure pipes and fittings:

Pipes of 50mm diameter and smaller shall be plain ended with solvent welded uPVC loose sockets and fittings

Pipes of 63mm diameter and greater shall have sockets and spigots with push-in type integral rubber ring joints. Bends shall be uPVC and all other fittings shall be cast iron, all with similar push-in type joints

High density polyethylene (HDPe) pipes and fittings:

Pipes shall be type IV and of the class specified with "Plasson" or "Alprene" compression fittings

Polypropylene pipes:

Polypropylene pipes 54mm diameter and smaller shall be seamless copper coloured Class 16 pipes jointed with "Fast-fuse" heat welded thermoplastic or where so described "Polylock" compression fittings

Pipes shall be firmly fixed to walls, etc with coloured nylon snap-in pipe clips with provision for accommodating thermal movement and jointed and fixed strictly in accordance with the manufacturer's instructions

Copper pipes:

Pipes shall be hard drawn and half-hard "Maksal" pipes of the class described. 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

Copper pipes are to be installed in accordance with the latest revision of the Code of Practice for Copper Plumbing soldering techniques. Flux, solder, etc to be strictly in accordance with the manufacturer's requirements with special attention to copper flux composition

Carried Forward R

	Brought Forward		R	
	Reducing fittings: 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 claims for extra bushes, reducers, etc will be entertained **Fixing of pipes:** 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 **Paper wrapping to pipes:** Pipes chased into brickwork must be wrapped with two layers of stout brown paper tied with wire. Rates are to include for wrapping around joints and fittings **Disinfection of water pipework:** Water pipework is to be disinfected at completion in accordance with SANS 1200L (provision for disinfection elsewhere) **Petrolatum anti-corrosion tape** Pipes to be taped shall be coated with the appropriate primer and the tape shall be applied in the appropriate widths and with suitable overlaps Couplings and fittings to pipes shall be taped in strict accordance with the manufacturer's instructions including mastic, tape, "Layflat" sheeting, securing of same, etc Prices for wrapping of pipes shall include for all work as described to couplings in the length			
	Carried Forward		R	

Brought Forward		R	
Laying, backfilling, bedding, etc of pipes:			
Pipes shall be laid and bedded in accordance with manufacturers' instructions and trenches shall be carefully backfilled			
Where no manufacturers' instructions exist, pipes shall be laid in accordance with Clauses 5.1 and 5.2 of each of the following: SANS 1200L : Medium-pressure pipelines SANS 1200LD : Sewers SANS 1200LE : Stormwater drainage			
Pipe trenches, etc shall be backfilled in accordance with Clauses 3, 5.5, 5.6, 5.7 and 7 of SANS 1200DB : Earthworks (Pipe trenches)			
Pipes shall be bedded in accordance with Clauses 3.1 to 3.4.1, 5.1 to 5.3 and 7 of SANS 1200LB : Bedding (Pipes)			
Unless otherwise described, bedding of rigid pipes shall be Class B bedding			
General:			
Descriptions of cast iron roof outlets shall be deemed to include joints to pipes and casting into concrete (adaptors for joints to PVC pipes, etc are given separately)			
Descriptions of overflow pipes where measured in number, shall be deemed to include joints to cisterns and splay cut ends			
Descriptions of pipes laid in and including trenches and of inspection chambers, catchpits, etc shall be deemed to include excavation, bedding, backfilling, compaction to a minimum of 98% Mod AASHTO density and disposal of surplus material on site			
Descriptions of service pipes and flexible connecting pipes shall be deemed to include connections to taps, cisterns, etc and to steel pipes (adaptors for connections to copper pipes, etc are given separately)			
Carried Forward		R	

				R	
	Brought Forward				
	Descriptions of WC pans, slop hoppers, etc shall be deemed to include for joints to soil pipes (pan connectors are separately measured) and shall have straight or side outlets and "P" or "S" traps as necessary				
	Description of waste unions shall be deemed to include rubber or vulcanite plugs and chains fixed to fittings.				
	As-built drawings:				
	Where required, the Contractor shall prepare an updated set of as-built drawings. At completion of the contract the Contractor shall hand these drawings to the Project Manager for reproducing onto the originals for handing over to the Employer (provision for allowance of as-built drawings elsewhere)				
	Proprietary items:				
	Where applicable, the manufacturers' names or product catalogue titles are given in sub-headings preceding the items				
	Note that the manufacturers names specified in this trade are for the purposes of competitive pricing.				
	Prices are to be based on the specific products/articles specified.				
	On request, returnable samples are to be provided to the Project Manager for consideration				
	RAINWATER DISPOSAL (WORK GROUP 148)				
	0,6mm Galvanised sheet steel gutters and rainwater pipes with powder coated finish on outside to match roof sheeting colour:				
1	150 x150mm Box gutters	m	31		
2	100 x 75mm Rainwater pipes	m	12		
3	Extra over gutter for stopped end	No	2		
4	Extra over gutter for angle	No	2		
5	Extra over gutter for outlet for 100 x 75mm pipe	No	2		
	Carried Forward			R	

	Brought Forward			R	
6	Extra over rainwater pipe for bend	No	4		
7	Extra over rainwater pipe for shoe	No	2		
8	Extra over rainwater pipe for eaves or plinth offset	No	2		
	Carried Forward			R	

				R	
	Brought Forward				
	SANITARY FITTINGS (WORK GROUP 148)				
	Approved stainless steel:				
9	1800 x 535mm sink with two 343 x 410mm centre bowls, on cupboard (cupboard elsewhere)	No	1		
	Sanitary fittings:				
10	595 x 455mm Vanity basin mounted in vanity slab (vanity slab elsewhere)	No	10		
11	580 x 410mm Underslung wash hand basin mounted in vanity slab (vanity slab elsewhere)	No	1		
12	Close-coupled WC suite comprising pan with double flap heavy duty thermoset seat and matching 9 litre cistern	No	6		
13	Paraplegic WC suite with lid, fitments, purpose made CP side flush lever and purpose made double flap white epoxy painted wooden seat	No	2		
14	Wall urinal with spreader and waste union (flush valve elsewhere)	No	6		
15	900 x 900 x 150mm shower tray with waste outlet, bedded in position	No	7		
	WASTE UNIONS, ETC				
16	40mm CP basin waste union and anti-theft plug	No	11		
17	38mm Sink waste union with plug, stay and chain	No	1		
	TRAPS, ETC				
	uPVC:				
18	40mm "P" or "S" trap	No	11		
19	CP hinged urinal domical grating	No	12		
20	40mm Shower trap with chromium plated grating	No	7		
21	50mm Bottle trap	No	6		
	Carried Forward			R	

				R	
	Brought Forward				
	TAPS, VALVES, ETC				
22	15mm Basin mixer with waste union and angle flow regulating valves	No	10		
23	Chrome single lever, extra long handle basin mixer with waste union and angle flow regulating valves	No	1		
24	15mm Star sink mixer	No	1		
25	15mm Shower mixer	No	7		
26	15mm Shower head	No	7		
27	15mm Overhead shower arm	No	7		
28	Urinal flush valve	No	6		
	ELECTRIC GEYSERS (WORK GROUP 148)				
29	150 Litre electric geyser	No	1		
	ELECTRIC WATER HEATERS				
	Powdercoated Instant Water Boiler, etc:				
30	10 Litre stainless steel Hydroboil, 340 x 205 x 630mm high with a two-way tap	No	1		
	WATER TANKS, ETC.				
31	10, 000 Litre water storage tank	No	4		
	AS-BUILT DRAWINGS				
32	Provision of as-built drawings	No	1		
	Carried Forward to Summary of Section No. 2			R	

Section No. 2
Bill No. 15
Plumbing and Drainage (Provisional)

Item No		Quantity	Rate	Amount

SECTION 2

BILL NO. 16

GLAZING

WORK GROUP ALLOCATION

Unless otherwise stated, all items in this Bill will be allocated to Work Group 150 - Glazing

PREAMBLES

The General Preambles for Trades (2017 edition) as published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items fully described in the said General Preambles will be entertained

The following "Supplementary Preambles" are incorporated in this bill to satisfy the requirements of the project and shall take precedence over the provisions of the said General Preambles

SUPPLEMENTARY PREAMBLES

Float glass:

The term "float glass" is used for monolithic annealed glass

Laminated glass:

Laminated glass to have polyvinyl butyral (PVB) interlayer(s)

Carried Forward R

	Brought Forward			R	
	TOPS, SHELVES, DOORS, MIRRORS, ETC				
	4mm Silvered float glass copper backed mirrors with 10mm bevelled and polished edges fixed with double sided adhesive tape:				
1	Mirror 600 x 1200mm high	No	2		
2	Mirror 1200 x 1200mm high	No	1		
3	Mirror 1800 x 1200mm high	No	3		
	Carried Forward to Summary of Section No. 2			R	

Section No. 2
Bill No. 16
Glazing

Item No		Quantity	Rate	Amount

SECTION 2

BILL NO. 17

PAINTWORK

WORK GROUP ALLOCATION

Unless otherwise stated, all items in this Bill will be allocated to Work Group 152 - Painting

PREAMBLES

The General Preambles for Trades (2017 edition) as published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items fully described in the said General Preambles will be entertained

The following "Supplementary Preambles" are incorporated in this bill to satisfy the requirements of the project and shall take precedence over the provisions of the said General Preambles

SUPPLEMENTARY PREAMBLES

PREPARATORY WORK TO EXISTING WORK

Previously painted plastered surfaces:

Surfaces shall be thoroughly washed down and allowed to dry completely before any paint is applied. Blistered or peeling paint shall be completely removed and minor cracks shall be opened, filled with a suitable filler and finished smooth

Previously painted metal surfaces:

Surfaces shall be thoroughly rubbed and cleaned down. Blistered or peeling paint shall be completely removed down to bare metal

Carried Forward R

	Brought Forward			R	
	Previously painted wood surfaces: Surfaces shall be thoroughly cleaned down. Blistered or peeling paint shall be completely removed and cracks and crevices shall be primed, filled with suitable filler and finished smooth **PAINT SPECIFICATIONS** All painting shall be done in accordance with specifications, unless otherwise described **COLOURS** When staining timber, the resultant colour or shade must be to the complete satisfaction of the Project Manager before any overcoating or preservative is applied Paintwork is classified in the following different colour groups: "White", "Pastel", "Deep" and "Transparent" in accordance with the "Natural Colour System" (NCS) adopted by the SA National Standards Unless otherwise described, all paintwork shall be deemed to be classified in the "White" colour group **PAINTWORK, ETC TO NEW WORK** **ON INTERNAL FLOATED PLASTER SURFACES** **One coat alkali resistant plaster primer and two coats PVA acrylic emulsion paint on**				
1	Walls	m2	218		
	Carried Forward			R	

	Brought Forward			R	
	ON EXTERNAL FLOATED PLASTER SURFACES				
	One coat alkali resistant primer and two coats premium quality polyurethane enamel paint, on:				
2	Walls	m2	2,058		
3	On narrow widths	m2	196		
	ON INTERNAL GYPSUM PLASTER SURFACES				
	One coat primer and two coats interior quality acrylic PVA paint				
4	Ceilings and beams	m2	716		
	Carried Forward			R	

	Brought Forward			R	
	METAL SURFACES WITH				
	One coat alkyd based zinc phosphate primer and two coats premium quality polyurethane enamel paint, on steel:				
5	Door frames	m2	9		
	ON WOOD SURFACES				
	One coat primer, one coat alkyd based universal undercoat and two coats superior quality universal enamel paint, on:				
6	Doors	m2	4		
7	Skirtings, rails not exceeding 300mm girth	m	208		
	Carried Forward to Summary of Section No. 2			R	

SECTION SUMMARY - Building Works

Carried to Final Summary R

Section No. 2

Item No		Quantity	Rate	Amount

SECTION 3

BILL NO.1

SLIPWAY DECK (PROVISIONAL)

EARTHWORKS

WORK GROUP ALLOCATION

Unless otherwise stated, all items in this Bill will be allocated to Work Group 104 - Earthworks

PREAMBLES

The General Preambles for Trades (2017 edition) as published by the Association of South African Quantity Surveyors shall be deemed to be included in these bills of quantities and no claims arising from brevity of description of items fully described in the said General Preambles will be entertained

The following "Supplementary Preambles" are incorporated in this bill to satisfy the requirements of the project and shall take precedence over the provisions of the said General Preambles

SUPPLEMENTARY PREAMBLES

Nature of ground:

The nature of the ground is assumed to be loose sandy material, therefore "earth", but possibly interspersed with "soft rock" or "hard rock"

The nature of the ground is assumed to be gravel, therefore "earth", but possibly interspersed with "soft rock" or "hard rock"

The nature of the ground is assumed to be silty clay with loose river boulders varying in size up to approximately 450mm diameter, all of which will be deemed as "earth", but possibly interspersed with "hard rock"

Carried Forward R

Brought Forward		R	
Trial holes indicate that the nature of the ground is silty clay to a depth of approximately 500mm with fine to medium loose sandy material below, therefore "earth"			
A soils investigation has been carried out on the site by the Engineer and the report is annexed to these bills of quantities. The soils report indicates that the ground varies between silty sand, reworked soil of mixed origin and residual shale, all of which will be deemed as "earth". All very hard unweathered shale, ironstone, etc the removal of which necessitates the use of explosives or heavy duty hydraulic percussion hammers (peckers), will be classified as "hard rock"			
Should the Contractor encounter any "soft" or "hard" rock in the excavations, he shall immediately notify the Engineer who shall be the sole arbiter as to what constitutes "soft" or "hard" rock for final account purposes			
Excavation for working space in rock:			
Notwithstanding clause 10 measurement rule 27 of the Standard System of Measuring Building Work, excavation for working space in material of a more different character (e.g. soft or hard rock) will be measured in cubic metres to the extent executed and given as "extra over" bulk excavation or trench and hole excavation as the case may be			
Carting away of excavated material:			
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			
Filling:			
Notwithstanding the reference to prescribed multiple handling in clause 1 of the Standard System of Measuring Building Work, prices for filling and backfilling shall include for all selection and any necessary multiple handling of material			
Carried Forward		R	

	Brought Forward			R	
	Testing:				
	Prices for backfilling to trenches and holes only are to include for all necessary density tests in accordance with SANS 1200D				
	Formwork:				
	Formwork to sides of bases, pile caps, ground beams, etc will only be measured where it is prescribed by the Engineer for design reasons				
	Formwork necessitated by irregularity or collapse of excavated faces will not be measured and the cost thereof shall be deemed to be included in the allowance for taking the risk of collapse of the sides of the excavations, provision for which is made in "Earthworks"				
	SITE CLEARANCE, ETC				
	Site clearance:				
1	Digging up and removing rubbish, debris, vegetation, hedges, shrubs, bush, etc and trees not exceeding 200mm girth	m2	451		
	FILLING, ETC				
	Earth filling supplied by the Contractor, compacted to 95% Mod AASHTO density:				
2	200mm Cement stabilised material over site to form platforms, compacted to Engineer's specification	m3	90		
	Compaction of surfaces:				
3	Compaction of ground surface under floors etc. including scarifying for a depth of 150mm, breaking down oversize material, adding suitable material where necessary and compacting to 95% Mod AASHTO density	m2	451		
	Prescribed density tests on filling:				
4	"Modified AASHTO Density" test	No	9		
	REVETMENT				
	Carried Forward			R	

	Brought Forward			R	
	Revetment				
5	50 - 300KG Rock	m3	1,258		
6	750 - 1250KG Rock	m3	6,714		
7	150mm quarry run	m3	98		

WORK GROUP ALLOCATION

The items in this Bill will be allocated to Work Groups as indicated in brackets at the end of headings or descriptions

PREAMBLES

The General Preambles for Trades (2017 edition) as published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items fully described in the said General Preambles will be entertained

The following "Supplementary Preambles" are incorporated in this bill to satisfy the requirements of the project and shall take precedence over the provisions of the said General Preambles

SUPPLEMENTARY PREAMBLES

Cost of tests:

Breeze concrete:

Breeze concrete shall consist of twelve parts clean dry furnace ash, free from coal or other foreign matter, to one part cement (1:12); the ash graded up to particles which will pass a 16,5mm ring from a minimum which fails to pass a 4,75mm mesh. The finer materials from the screening are to be first mixed with the cement into a mortar and the ash added afterwards and thoroughly incorporated

	Carried Forward			R	

Brought Forward R

Lightweight concrete:

Lightweight concrete shall have a density of 600kg/m^3 for the top 50mm and 400kg/m^3 for the remaining thickness. The minimum thickness at outlets, channels, etc shall be 50mm

Waterproof concrete:

"Waterproof concrete" shall have the same properties as normal concrete, but the following shall be modified to make the the concrete more water-tight:
1. a cement/water ratio of minimum 1.9 and maximum 2.1
2. minimum OPC content of 300kg/m3
3. Polypropolene micro fibres added to concrete at rate of 182 million per m3

Formwork:

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

The vertical strutting shall be carried down to such construction as is sufficiently strong to afford the required support without damage and shall remain in position until the newly constructed work is able to support itself

Formwork to soffits of solid slabs, etc shall be deemed to be to slabs not exceeding 250mm thick unless otherwise described

Formwork to soffits of slabs, beams, etc shall be deemed to be propped up exceeding 1,5m and not exceeding 3,5m high unless otherwise described

REINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES (WORK GROUP 110)

Carried Forward R

	Brought Forward			R	
	50MPa/19mm concrete:				
	200mm Surface beds on waterproofing	m3	83		
	TEST CUBES (WORK GROUP 110)				
8	Making and testing sets of three 150 x 150 x 150mm concrete strength test cubes (Provisional)	Sets	14		
	CONCRETE SUNDRIES (WORK GROUP 110)				
	Finishing top surfaces of concrete smooth with a steel trowel:				
9	Surface beds, slabs, etc.	m2	414		
	MOVEMENT JOINTS, ETC (WORK GROUP 110)				
	Saw-cut joints:				
10	3 x 70mm Saw-cut joints in top of concrete	m	89		
	Fabric reinforcement:				
11	Type 395 fabric reinforcement in concrete surface beds, slabs, etc.	m2	414		
	DAMPPROOFING OF WALLS AND FLOORS				
	One layer geofabric:				
12	Under surface beds	m2	451		
	One layer 250 micron green polyethylene waterproof sheeting (SANS 952-1985 type C) sealed at laps with PVC self-adhesive tape:				
13	To sub-base	m	58		
	JOINT SEALANTS ETC				
	White silicone sealing compound				
14	10 x 10mm in joints	m	89		
15	12mm Wide in joints	m	89		
	Carried Forward			R	

	Brought Forward			R	
16	Silicone keyed joint sealant	m	99		
	Carried to Final Summary			R	

Section No. 3
Bill No. 1
Slipway Deck

Item No		Quantity	Rate	Amount

SECTION 4

BILL NO. 1

EXTERNAL WORKS (PROVISIONAL)

(ALL TRADES)

WORK GROUP ALLOCATION

The items in this Bill will be allocated to Work Groups as indicated in brackets at the end of headings or descriptions

PREAMBLES

The Model Preambles for Trades (2008 edition) as published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items fully described in the said General Preambles will be entertained

The following "Supplementary Preambles" are incorporated in this bill to satisfy the requirements of the project and shall take precedence over the provisions of the said General Preambles

SUPPLEMENTARY PREAMBLES

Nature of ground:

The nature of the ground is assumed to be loose sandy material, therefore "earth", but possibly interspersed with "soft rock" or "hard rock"

The nature of the ground is assumed to be gravel, therefore "earth", but possibly interspersed with "soft rock" or "hard rock"

The nature of the ground is assumed to be silty clay with loose river boulders varying in size up to approximately 450mm diameter, all of which will be deemed as "earth", but possibly interspersed with "hard rock"

Carried Forward R

Brought Forward		R	
Trial holes indicate that the nature of the ground is silty clay to a depth of approximately 500mm with fine to medium loose sandy material below, therefore "earth"			
A soils investigation has been carried out on the site by the Engineer and the report is annexed to these bills of quantities. The soils report indicates that the ground varies between transported soils at surface comprising gravel layers of varying thickness and interspersed with clay, and weathered shales varying from very soft rock to medium hard rock consistency, all of which will be deemed as "earth". All very hard unweathered shale, ironstone, etc the removal of which necessitates the use of explosives or heavy duty hydraulic percussion hammers (peckers), will be classified as "hard rock"			
Should the Contractor encounter any "soft" or "hard" rock in the excavations, he shall immediately notify the Engineer who shall be the sole arbiter as to what constitutes "soft" or "hard" rock for final account purposes			
Subterranean water:			
No subterranean water is expected			
Excavation for working space in rock:			
Notwithstanding clause 11 of the Standard System of Measuring Building Work, excavation for working space in rock will be measured in cubic metres to the extent executed and given as "extra over" bulk excavation or trench and hole excavation as the case may be			
Carting away of excavated material:			
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			
Filling:			
Notwithstanding the reference to prescribed multiple handling in Clause 1 of the Standard System of Measuring Building Work, prices for filling and backfilling shall include for all selection and any necessary multiple handling of material			
Carried Forward		R	

				R	
	Brought Forward				
	Testing:				
	Prices for backfilling to trenches and holes only are to include for all necessary density tests in accordance with SANS 1200D				
	Maintenance period:				
	The maintenance period to civil works such as roads, parking and related earthworks shall be twelve calender months				
	DEMOLITIONS, ETC (WORK GROUP 104)				
	Breaking up and removing:				
1	150mm Thick mesh reinforced concrete surface beds, paving, etc.	m2	561		
	Taking down and removing:				
2	Palisade fence 3000mm high	m	40		
	SITE CLEARANCE, ETC (WORK GROUP 104)				
	Site clearance:				
3	Stripping average 150mm thick layer of top soil and depositing material in prescribed stock piles on site	m2	200		
	PAVINGS, ETC				
	SUPPLEMENTARY PREAMBLES				
	Testing of material and filling:				
	Descriptions of earth filling, compaction, etc shall be deemed to include for all necessary testing required in accordance with the SABS 1200 series				
	EARTHWORKS (WORK GROUP 104)				
	Carried Forward			R	

				R	
	Brought Forward				
	Excavation in earth not exceeding 2m deep:				
4	Over site between buildings, retaining walls, etc to reduce levels and dispose in prescribed stock piles on site	m3	135		
	Extra over all excavations for carting away:				
5	Surplus material from excavations and/or stock piles on site to a dumping site to be located by the contractor	m3	135		
	Compaction of surfaces:				
6	Compaction of ground surface under pavings, etc including scarifying for a depth of 150mm, breaking down oversize material, adding suitable material where necessary and compacting to 98% Mod AASHTO density	m2	200		
	Earth filling from commercial sources supplied by the Contractor under parking areas, roadways, etc:				
7	Sub-base course of G5 material compacted to 95% Mod AASHTO density	m3	30		
8	Sub-base course of G7 material compacted to 93% Mod AASHTO density	m3	30		
	Weedkiller (active ingredients metalaclor 102,8 g/l, terbitilasien 248,6 g/l and atrasien 248,6 g/l) mixed in the proportion of 100 ml weedkiller to 100 l water and applied at a rate of 10 l/m2:				
9	Under paving, etc	m2	200		
	PRECAST CONCRETE (WORK GROUP 112)				
	Paving of 200 x 100 x 60mm "Type S-A" precast concrete paving bricks with butt joints, on 20mm thick river sand bed with sand-and-cement mixture swept into joints and hosed down, including preparation of ground or filling:				
10	Paving in herringbone bond pattern	m2	100		
	Carried Forward			R	

	Brought Forward			R	
	Paving of 200 x 100 x 80mm "Type S-A" precast concrete paving bricks with butt joints, on 20mm thick river sand bed with sand-and-cement mixture swept into joints and hosed down, including preparation of ground or filling:				
11	Paving in herringbone bond pattern to falls [Ll]	m2	100		
	Precast concrete finished smooth on exposed surfaces, including bedding, jointing and pointing:				
12	150 x 300mm High kerbs (SANS 927 fig 3) with 150 x 150 x 300mm unreinforced concrete haunching at back of each joint, including excavation, backfilling, etc	m	2		
13	150 x 300mm High kerbs (SANS 927 fig 3) with 150 x 150 x 300mm unreinforced concrete haunching at back of each joint, circular-on-plan exceeding 4m radius, formed with straight kerbs, including excavation, backfilling, etc	m	2		
14	150 x 300mm High kerbs (SANS 927 fig 8) with 150 x 150 x 300mm unreinforced concrete haunching at back of each joint, including excavation, backfilling, etc	m	4		
15	150 x 300mm High kerbs (SANS 927 fig 8) with 150 x 150 x 300mm unreinforced concrete haunching at back of each joint, circular-on-plan exceeding 4m radius, formed with straight kerbs, including excavation, backfilling, etc	m	7		
16	100 x 300mm High kerbs (SANS 927 fig 5b) with 150 x 150 x 300mm unreinforced concrete haunching at back of each joint, including excavation, backfilling, etc	m	2		
	Road signs:				
17	Standard "STOP" sign with 50mm diameter galvanised mild steel post bedded in and including unreinforced concrete base, including any necessary excavation, paint finish, etc	No	1		
	Paintwork:				
	Carried Forward			R	

	Brought Forward			R	
	Prepare and apply one coat white reflective road marking paint on bituminous road surfacing, precast concrete paving blocks, etc:				
18	100mm Wide dotted line	m	10		
	Carried Forward			R	

				R	
	Brought Forward				
	RAMPS				
	EARTHWORKS (WORK GROUP 104)				
	Excavation in earth not exceeding 2m deep:				
19	Reduced levels under floors	m3	37		
	Extra over all excavations for carting away:				
20	Surplus material from excavations and/or stock piles on site to a dumping site to be located by the contractor	m3	35		
	G5 filling material supplied by the contractor, compacted to 95% Mod AASHTO density:				
21	Under floors, steps, pavings, etc	m3	8		
	Compaction of surfaces:				
22	Compaction of ground surface under floors etc including scarifying for a depth of 150mm, breaking down oversize material, adding suitable material where necessary and compacting to 91% Mod AASHTO density	m2	55		
	Prescribed density tests on filling:				
23	"Modified AASHTO Density" test	No	9		
	Soil insecticide in accordance with SANS 5859:				
24	Soil insecticide (protection against termites) applied as specified to bottoms and sides of trenches, etc including forming and poisoning shallow furrows against foundation walls, etc filling in furrows and ramming	m2	55		
	CONCRETE WORK (WORK GROUP 110)				
	25MPa/19mm reinforced concrete:				
	Ramps	m3	18		
	Carried Forward			R	

	Brought Forward			R	
	Test cubes				
25	Making and testing sets of three 150 x 150 x 150mm concrete strength test cubes (Provisional)	Sets	5		
	Finishing top surfaces of concrete smooth with a steel trowel:				
26	Surface beds, slabs, etc to falls	m2	55		
	FORMWORK (WORK GROUP 111)				
	Smooth formwork to sides:				
27	Sloping outer edges of ramps approximately 450mm high extreme	m	9		
	REINFORCEMENT (WORK GROUP 114)				
	Fabric reinforcement:				
28	Type 395 fabric reinforcement in concrete surface beds, slabs, etc	m2	55		
	Carried Forward			R	

	Brought Forward			R	
	FENCING (WORK GROUP 136)				
	Clear view or similar and approved galvanised steel security fence with posts at 3382mm centres, erected complete including concrete bases, stays, rails, verticals, galvanised steel bolts, straining eye bolts, single overhang with 3 strands of barbed wire, etc. and finished with epoxy coating and including site clearance, preparation of ground, etc.:				
29	Security fence 3000mm high	m	40		
	STEEL BOLLARDS (WORK GROUP 136)				
30	273mm Dia., 2125mm High stainless Grade 4.4, 250MPA (MIN) steel bollards with PL 25 x 2115mm weld to pipe w/(4) 6 x 50mm fillet welds top and bottom, 25 x 2115 x 16mm thick steel plate (Grade 4.4, FY=250MPA-MIN) including 800 x 800 x 1200mm deep excavation, 25MPA mass concrete and backfilled to 95% MOD ASSHTO density (Refer to drawing no. 1002-011-2005)	No	10		
	Carried Forward to Summary of Section No. 4			R	

Section No. 4
Bill No. 1
External Works (Provisional)

Item No		Quantity	Rate	Amount

SECTION 4

BILL NO. 2

SITE SERVICES (PROVISIONAL)

WORK GROUP ALLOCATION

The items in this Bill will be allocated to Work Groups as indicated in brackets at the end of headings or descriptions

PREAMBLES

The Model Preambles for Trades (2008 edition) as published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items fully described in the said General Preambles will be entertained

The following "Supplementary Preambles" are incorporated in this bill to satisfy the requirements of the project and shall take precedence over the provisions of the said General Preambles

SUPPLEMENTARY PREAMBLES

Stormwater channels:

Descriptions of channels shall be deemed to include necessary excavation, surface preparation, compaction, etc and disposal of surplus material on site

French drains:

Descriptions of french drains shall be deemed to include excavation, stone filling graded from 300mm diameter at bottom to 75mm diameter at top, approved geofabric filter blanket over stone, 300mm earthfilling over and disposal of surplus material on site

Carried Forward R

Brought Forward		R	
Septic tanks: Descriptions of proprietary type septic tanks shall be deemed to include excavation, bedding and jointing, concrete base slabs, jointing to drains and backfilling, compaction, etc all in accordance with the manufacturer's instructions and disposal of surplus material on site			
uPVC pipes and fittings: Sewer and drainage pipes and fittings shall be jointed and sealed with butyl rubber rings Soil, waste and vent pipes and fittings shall be solvent weld jointed or sealed with butyl rubber rings			
uPVC pressure pipes and fittings: Pipes of 50mm diameter and smaller shall be plain ended with solvent welded uPVC loose sockets and fittings Pipes of 63mm diameter and greater shall have sockets and spigots with push-in type integral rubber ring joints. Bends shall be uPVC and all other fittings shall be cast iron, all with similar push-in type joints			
High density polyethylene (HDPe) pipes and fittings: Pipes shall be type IV and of the class specified with "Plasson" or "Alprene" compression fittings			
"Polycop" polypropylene pipes: Polypropylene pipes 54mm diameter and smaller shall be seamless copper coloured Class 16 pipes jointed with "Fast-fuse" heat welded thermoplastic or where so described "Polylock" compression fittings Pipes shall be firmly fixed to walls, etc with coloured nylon snap-in pipe clips with provision for accommodating thermal movement and jointed and fixed strictly in accordance with the manufacturer's instructions			
Carried Forward		R	

Brought Forward R

Copper pipes:

Pipes shall be hard drawn and half-hard "Maksal" pipes of the class described. 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

Copper pipes are to be installed in accordance with the latest revision of the Code of Practice for Copper Plumbing soldering techniques. Flux, solder, etc to be strictly in accordance with the manufacturer's requirements with special attention to copper flux composition

Reducing fittings:

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

Disinfection of water pipework:

Water pipework is to be disinfected at completion in accordance with SABS 1200L (provision for disinfection elsewhere)

"Densyl" petrolatum anti-corrosion tape as manufactured by Denso SA (Pty) Ltd.:

Pipes to be taped shall be coated with the appropriate primer and the tape shall be applied in the appropriate widths and with suitable overlaps

Couplings and fittings to pipes shall be taped in strict accordance with the manufacturer's instructions including mastic, tape, "Layflat" sheeting, securing of same, etc

Carried Forward R

Brought Forward		R	
Prices for wrapping of pipes shall include for all work as described to couplings in the length			
Laying, backfilling, bedding, etc of pipes:			
Pipes shall be laid and bedded in accordance with manufacturers' instructions and trenches shall be carefully backfilled			
Where no manufacturers' instructions exist, pipes shall be laid in accordance with Clauses 5.1 and 5.2 of each of the following: SABS 1200L : Medium-pressure pipelines SABS 1200LD : Sewers SABS 1200LE: Stormwater drainage			
Pipe trenches, etc shall be backfilled in accordance with Clauses 3, 5.5, 5.6, 5.7 and 7 of SABS 1200DB : Earthworks (Pipe trenches)			
Pipes shall be bedded in accordance with Clauses 3.1 to 3.4.1, 5.1 to 5.3 and 7 of SABS 1200LB : Bedding (Pipes)			
Unless otherwise described, bedding of rigid pipes shall be Class B bedding			
General:			
Descriptions of pipes laid in and including trenches and of inspection chambers, catchpits, etc shall be deemed to include excavation, bedding, backfilling, compaction to a minimum of 98% Mod AASHTO density and disposal of surplus material on site			
Descriptions of service pipes and flexible connecting pipes shall be deemed to include connections to taps, cisterns, etc and to steel pipes (adaptors for connections to copper pipes, etc are given separately)			
As-built drawings:			
Where required, the Contractor shall prepare an updated set of as-built drawings. At completion of the contract the Contractor shall hand these drawings to the Project Manager for reproducing onto the originals for handing over to the Employer (provision for allowance of as-built drawings elsewhere)			
Carried Forward		R	

	Brought Forward			R	
	Carried Forward			R	

	Brought Forward			R	
	DEMOLITIONS, ETC (WORK GROUP 104)				
	Demolishing and removing:				
1	Existing rectangular concrete channel, 450 x 450mm deep	m	134		
2	Pipe jacking of 450mm Wide concrete channels	m	134		
3	Existing inspection chambers, size and depth to be confirmed on site	No	6		
	STORMWATER CHANNELS (WORK GROUP 146)				
	Precast concrete channels:				
4	400 x 400mm Rectangular precast concrete channel cast in 1800mm lengths, finished smooth to falls, rounded edge to exposed side and 10mm mortar joints channels	m	134		
5	Extra over for angles, intersections, ends, dressing into sides of catchpits, etc	No	5		
6	Excavation in earth not exceeding 1m deep for channels	m3	60		
7	Backfilling to pipe trenches compacted to 95% Mod AASHTO density	m3	15		
	Extra over all excavations for carting away:				
8	Surplus material from excavations and/or stock piles on site to a dumping site to be located by the contractor	m3	60		
	STORMWATER DRAINAGE (WORK GROUP 146)				
9	Excavation in earth not exceeding 1m deep for pipe trenches	m3	29		
10	Excavation in earth exceeding 1m and not exceeding 2m deep for pipe trenches	m3	124		
11	Excavation in earth exceeding 2m and not exceeding 4m deep for pipe trenches	m3	107		
	Carried Forward			R	

				R	
	Brought Forward				
12	Backfilling to pipe trenches compacted to 95% Mod AASHTO density	m3	90		
13	Selected granular filling in bedding under and filling around pipes	m3	42		
14	Sand filling in bedding under and filling around pipes	m3	15		
15	19mm Crushed stone bedding under pipes	m3	15		
	Class 100D concrete pipes with interlocking joints:				
16	450mm Dia. pipe laid in trenches (trenches elsewhere)	m	83		
17	1000mm Dia. pipe laid in trenches (trenches elsewhere)	m	53		
	Sumps, catchpits, inspection chambers, etc including concrete kerbs or precast concrete cover slabs (gratings and covers elsewhere):				
18	600 x 450mm Brick catchpit not exceeding 1m deep internally	No	10		
19	1250mm Diameter precast concrete circular inspection chamber 1m deep internally	No	6		
	Cast iron gratings, covers, etc:				
20	700 x 550mm Grey iron square dish grating and frame	No	10		
21	1250mm Diameter manhole cover and frame	No	6		
22	30mm Diameter galvanised steel rod step iron 500mm long, built in across corner of chamber	No	48		
23	Lifting-key for manhole cover (handed to Employer)	No	6		
	Encasing pipes in concrete:				
24	Unreinforced concrete encasing 150mm thick all round 450mm horizontal pipe	m	30		
25	Unreinforced concrete encasing 150mm thick all round 1000mm horizontal pipe	m	37		
	Carried Forward			R	

	Brought Forward			R	
	Sundries:				
26	Extra over excavation in earth for pipe trenches, chambers, etc for excavation in soft rock	m3	26		
27	Extra over excavation in earth for pipe trenches, chambers, etc for excavation in hard rock	m3	13		
	Alterations, pipe connections, etc:				
28	Connection to existing 300mm concrete stormwater pipe for and forming junction with new pipe including connection, fittings, couplings, etc.	No	1		
	TESTING:				
29	Testing stormwater drainage system			SUM	
	Carried Forward			R	

	Brought Forward			R	
	SOIL DRAINAGE (WORK GROUP 146)				
30	Excavation in earth not exceeding 1m deep for pipe trenches	m3	77		
31	Backfilling to pipe trenches	m3	56		
32	Selected granular filling in bedding under and filling around pipes	m3	15		
	Normal duty uPVC sewer channels:				
33	450mm Channels in bottoms of inspection chambers	m	22		
	Heavy duty (Class 34) uPVC sewer and drain pipes:				
34	110mm Pipes laid in trenches (trenches elsewhere)	m	72		
	Extra over heavy duty (Class 34) uPVC sewer and drain pipes for fittings:				
35	110mm Bend	No	14		
36	110mm Junction	No	5		
37	110mm Rodding eye	No	5		
38	110mm Reducing junction	No	4		
39	160mm Overflow gulley head	No	3		
40	160mm Access reducing junction	No	3		
	Alterations:				
41	Excavate for and locate existing 160mm diameter uPVC soil drain pipe approximately 2000mm deep and connect to 160mm diameter uPVC pipe including all necessary fittings, backfilling, etc	No	1		
	Testing:				
42	Testing soil drainage system			SUM	
	AS-BUILT DRAWINGS				
43	Provision of as-built drawings			SUM	
	Carried Forward to Summary of Section No. 4			R	

Section No. 4
Bill No. 2
Site Services (Provisional)

SECTION SUMMARY - External Works

Bill No		Page No		Amount
1	External Works (Provisional)	99		
2	Site Services (Provisional)	108		
	Carried to Final Summary		R	

Section No. 4

Item No		Quantity	Rate	Amount

SECTION 5

BILL NO. 1

INSTALLATION OF CRADLES AND ASSOCIATED ITEMS (PROVISIONAL)

Manufacture, works testing, supply and deliver to site, moving into position, installation, connecting up, site testing, witness testing, providing to insurance inspectors, demonstrating to the Employer, commissioning and maintenance of the complete cradles and associated items as shown on the drawings and in any other supplied supplementary documents.

PREAMBLES

The Model Preambles for Trades (2008 edition) as published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items fully described in the said Model Preambles will be entertained

The following "Supplementary Preambles" are incorporated in this bill to satisfy the requirements of the project and shall take precedence over the provisions of the said Model Preambles

SUPPLEMENTARY PREAMBLES

General:

Subcontract amounts are net.

Subcontract amounts are for material and equipment supplied and installed complete by firms of specialists

Each subcontract amount may comprise more than one element of work. Therefore, each subcontract amount may include for work to be carried out by more than one subcontractor

Carried Forward R

	Brought Forward		R	
	Profit: Where stated, the contractor may allow for profit if required **General attendance on nominated/selected subcontractors:** The item "General Attendance" which follows each subcontract amount for nominated/selected subcontractors' work, shall be deemed to cover all the contractor's costs incurred in providing free of charge to the nominated/selected subcontractors, the following: 1. Access to the site and places where the subcontract work is to be carried out, including the reasonable use of any temporary personnel hoists erected by the contractor 2. The provision of water and lighting and of single phase electric power to a position within 50 metres of the place where the subcontract work is to be carried out but excluding water, fuel and power for commissioning of any installation 3. The provision of an area for the subcontractor to establish temporary office accommodation and workshops and for the storage of plant and materials 4. The use of erected scaffolding belonging to the contractor, in common with others having the like right, while it remains erected on the site 5. The use, at reasonable times by arrangement of the contractor's erected hoisting equipment 6. Making good in all trades and cleaning down and removal of rubbish on completion **Special attendance on nominated/selected subcontractors:** Where stated, special attendance as set out in clause 8.1 of section B of the Preliminaries will be described in detail in this bill			
	Carried Forward		R	

	Brought Forward			R	
	Builder's work:				
	Builder's work in connection with specialist services is given elsewhere in these bills of quantities				
	Allocation for procurement, fabrication, installation, commissioning and handing over:				
	NOTE: Procure material, complete fabrication, trial assemble (in the Contractors workshop for Engineers inspection prior to delivery to site) and delivery to site.				
	The Contractor shall be paid for the cost of materials procured. The Contractor shall provide the invoice for the Materials to the Engineer. The Engineer will verify the materials at the Contractors workshop and following this verification will request the Quantity Surveyor to pay for the materials as per the invoice. The Contractor shall be paid the outstanding amounts for fabrication once the fabricated materials have been delivered to the site and verified by the engineer.				
	MAIN CRADLE				
	Supply and installation of the "Main Cradle" complete as detailed in this BOQ and/or the Part C3 Scope of Works and the detailed construction drawings supplied, inclusive of diving				
1	Supply	t	85		
2	Install	t	85		
3	Comissioning	t	85		
	SIDE SLIP CRADLES				
	Supply and installation of the two (2) "Side Slip Cradles" complete as detailed in this BOQ and/or the Part C3 Scope of Works and the detailed construction drawings supplied, inclusive of diving				
4	Supply	t	70		
	Carried Forward			R	

				R	
	Brought Forward				
5	Install	t	70		
6	Comissioning	t	70		
	MAIN AND SIDE SLIP CRADLE WHEEL SETS				
	Supply and installation of the two (2) "Main and side slip cradle wheel sets" complete as detailed in this BOQ and/or the Part C3 Scope of Works and the detailed construction drawings supplied, inclusive of diving				
7	Supply	No	460		
8	Install	No	460		
9	Comissioning	No	460		
	DOCKING FRAMES AND ACCESS BRIDGES				
	4no.off frames for the main cradle and 6no.off frames for the side slip cradle. The tonnage stated is inclusive of all the docking frames and associated components. The Contractor shall supply the docking frames complete, with all associated parts assembled. The details and components of a complete main cradle docking frame and a complete side cradle docking frame are shown on the relevant drawings supplied to the Contractor.				
	Contractor to supply and install the docking frames complete, with all associated parts assembled.				
10	Procurement	t	75		
11	Installation	t	75		
12	Commissioning & Handover	t	75		
	Carried Forward			R	

	Brought Forward			R	
	UPHAUL AND DOWNHAUL SHEAVE WHEELS AND SUPPORTS				
	1no.off Uphaul sheave wheel mounted on the main cradle and 2no.off Downhaul sheave wheel mounted at the slipway extremity, underwater. The Down haul sheave wheel assembly that was installed in 2015 must be removed for disposal. The old down haul sheave wheel assembly must also be removed and the concrete must be made good after removal.				
	Contractor to supply and install complete, with all associated parts assembled.				
13	Procurement	t	8		
14	Installation	t	8		
15	Comissioning	t	8		
	Gr.316 STAINLESS STEEL BASE PLATES UNDER RAILS				
	Supply and installation of 20mm thick base plates underneath the main, side and anti-tilt rails as detailed in the BOQ and/or the Part C3 SCope of Works and the detailed construction drawings supplied to the contractor.				
	Contractor to supply and install complete, with all associated parts assembled.				
16	Supply	t	85		
17	Install	t	85		
18	Comissioning	t	85		
	Carried Forward			R	

	Brought Forward			R	
	MAIN, SIDE AND ANTI-TILT RAILS				
	Supply and installation of all required rails, holding downplates, clips, fixing and securing elements as detailed in the BOQ and/or the Part C3 Scope of Works and the detailed construction drawings supplied to the contractor.				
	Contractor to supply and install complete, with all associated parts assembled.				
19	Supply	t	65		
20	Install	t	65		
21	Comissioning	t	65		
	5 TON BRIDGE GIRDER CRANE				
22	Allow an amount of Five Million Rand Only for the supply and installation of a 5 Ton Bridge Girder Crane		Item		5,000,000.00
23	Profit (.....%)			%	
24	General attendance (.....%)			%	
	Carried Forward			R	

	Brought Forward			R	
	UPHAUL, DOWNHAUL AND SIDE SLIP WINCHES				
25	Supply and installation of the complete uphaul, downhaul and side slip winches including ropes, hydraulic power units, control panels, base plates and any ancilliaries eg.: hydraulic tubing, hydraulic flexibles, couplings, required to ensure fully operational winch units that can be subjected to performance testing, is provided. The winches supplied shall be in accordance and conformance to the relevant engineering Codes and Standards. The required winch specifications and performance/duty parameters are included in the Part C3 - Scope of Work. The quoted amount from the Contractor shall include for the careful removal and recovery of the existing winch unit and all ancilliary equipment, to the site laydown area. The existing winch and ancilliaries have a heritage value for the TNPA and as such, the Contractor must ensure that the winch is not in any way damaged during the removal, recovery and transfer activities.			SUM	
	UPHAUL AND DOWNHAUL WINCH STEEL WIRE ROPE SUPPORT BLOCKS				
26	Supply and installation of the complete uphaul, downhaul and side slip winches including ropes, hydraulic power units, control panels, base plates and any ancillaries such hydraulic tubing, hydraulic flexibles, couplings, etc. required to ensure fully operational winch units that can be subjected to performance testing, in accordance and conformance to the relevant engineering codes and standards. The Contractor conforms to all requirements as detailed in this BOQ and the Part C3 Scope of Works and the detailed construction drawings supplied by the TNPA. Rate includes diving.			SUM	
	ZINC ANODES				
27	Supply and Installation of zinc anodes conforming to TNPA specification	t	3.00		
	GENERAL AND MISCELLANEOUS ITEMS				
	Carried Forward			R	

	Brought Forward		R	
	HYDRAULIC SYSTEM FOR DOCKING SUPPORT ARMS AND ADJUSTABLE PADS AND POWER SYSTEM FOR CONTROL AND OPERATION OF THE DOCKING SUPPORT ARMS			
28	Supply and Installation of complete hydraulic docking arm and support pad system including associated power system required for powering and operating the docking support arms and pads		SUM	
	MECHANICAL EQUIPMENT - STORM WATER MANAGEMENT AND RECYCLING SYSTEM			
29	Stormwater system to handle run-off from the slipway deck generated during ship maintenance. The mechanical equipment requirements and quantities are described on the relevant drawings supplied to the Contractor.		SUM	
	OPERATIONAL REQUIREMENTS			
	DEMOLITION OF OLD LEAD-IN JETTIES			
30	The Contractor shall completely remove and carefully recover all old jetty piles, bracing structures, decking and stiffening/bracing steelwork comprising the jetties which are currently located in the water. The old jetty components shall be carefully handled once removed and transported out of the water to the site lay down area. Particular care must be taken by the Contractor to not cause preventable damage to the jetty components as TNPA considers the components to possess heritage value.		SUM	
	DEMOLITION AND DISPOSAL OF EXISTING MATERIALS, EQUIPMENT AND PLANT THROUGHOUT THE SITE			
31	Allow an amount of Six Million Rand to cater for the demolition and disposal of the existing materials and equipment from the site as required.	Item		6,000,000.00
32	Profit (.....%)		%	
33	General attendance (.....%)		%	
	Carried Forward		R	

	Brought Forward			R	
	ON-CRADLE VESSEL STEEL SUPPORTS WITH ASSEMBLED WOOD CHOCK BLOCKS				
34	Supports to provide support to maintain the vessel upright on the cradle, they are collapsible steel structures mounted to the cradle frame and are topped with wood for the interface between the vessel body and the support			SUM	
	SLIPWAY SERVICES (HIGH PRESSURE-LOW FLOW SEA WASH WATER, COMPRESSED AIR AND ALL ASSOCIATED ANCILLARIES)				
35	Allow an amount of Two Million Rand to cater for slipway services i.e: high pressure-low flow sea wash water and compressed air. Sum to cover procurement, supply, installation, commissioning and handover		Item		2,000,000.00
36	Profit (.....%)			%	
37	General attendance (.....%)			%	
	SLIPWAY STRUCTURES				
38	Demolition of existing and construction of new slipway structure complete (Refer to drawings no. 1002-011-3012, 1002-011-3013) - (Cradle rails, etc. measured elsewhere)			SUM	
	CORROSION PROTECTION OF STEELWORK - Comprising factory priming, transport damage touch up and final site coats				
39	Corrosion protection shall be applied to all steel surfaces including bolt and hole surfaces (wet assemblies) and shall be a 5year supplier guaranteed, AIA and Engineer approved marine grade corrosion protection system and the rate shall include grit/water blasting and high pressure washing and cleaning conforming to TNPA requirements and approved specifications	m2	15,000		
	Carried Forward			R	

	Brought Forward		R	
	COMMISSIONING, TESTING AND HANDOVER:			
	The Contractor shall be responsible for documenting, through the use of underwater video surveillance and bathymetric testing the complete installation and repairs of all concrete works and rail installations.			
40	Underwater video and photographic surveillance - The video footage obtained shall be high resolution, enabling the engineer to assess the quality of the installations that are being videoed. The video shall be supplied in a readily available video format.		SUM	
41	Detailed bathymetric survey - The survey must result in a detailed and accurate model of the submerged structures and rails and provide all levels with contour spacing of no larger than 500mm. Muliti-beam sonar equipment is recommended to be used at a density that can be viewed in a point cloud or processed into a high resolution map. All vehicles, equipment and materials required to undertake the survey shall be allowed for in the pricing		SUM	
42	Allow an amount of Three Million Rand to cater for testing and other specialist studies (Others as defined by the Engineer during construction)	Item		3,000,000.00
43	Profit (.....%)		%	
44	General attendance (.....%)		%	
45	Hot and cold commission and trial operation		SUM	
46	Handing over to Employer		SUM	
	Carried to Final Summary		R	

Section No. 5
Bill No. 1
Cradles and Associated Items

Item No			Quantity	Rate	Amount
	SECTION NO. 6				
	BILL NO. 1				
	ELECTRICAL INSTALLATION				
	OPERATIONS BUILDING AND SLIPWAY				
	LOW VOLTAGE				
	DISCONNECTION / REMOVAL OF REDUNDANT ELECTRICAL EQUIPMENT				
	The following equipment shall be isolated, disconnected, removed and handed over to the Employer:				
1	Decommissioning of existing kiosks feeding streetlights, cables, DB's in the existing operations building.			SUM	
	LV SWITCHGEAR				
	MCCs, DBs and LV Switchgear				
	Manufacture, deliver to site, install, commission, test kiosks, distribution boards motor control centre and tuning of 400 volt motor starters as per specification and single line diagram, to be housed in new MCC Enclosure. Rates to include for 3CR12 steelwork and powder coated, busbars and drilling, busbar connections internal wiring etc. Refer to attached single line diagram. Colour shall be Electric Orange and red doors for MCC.				
2	MCC 1	No	1		
3	DB/E - 1	No	1		
4	DB/E - 2	No	1		
5	DB/E - A	No	1		
6	KIOSK (SW-K2) - Slipway area	No	1		
	Carried Forward			R	

				R		
	Brought Forward					
7	KIOSK (SW-K3) - Slipway area	No	1			
	CABLES AND CONDUCTORS					
	Supply, deliver to site cables and conductors as specified. Install, rack, strap and testing of cables as per specification including clamps, ties and cable numbering system					
8	2,5mm conductors (mixed colours - live, neutral and earth)	m	5,400			
9	4,0mm conductors (mixed colours - live, neutral and earth)	m	4,200			
10	2.5 mm² 2c 600/1000V PVC/SWA/PVC ECC Cu Cable	m	100			
11	2.5 mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	m	50			
12	4,0 mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	m	260			
13	6 mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	m	60			
14	10mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	m	210			
15	16mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	m	260			
16	35mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	m	100			
17	95mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	m	100			
18	6,0mm² PVC Green insulated Copper single core	m	100			
19	1.5mm² draw wire (not insulated)	m	300			
20	630mm² - 1 Core unarmoured XLPE insulated PVC sheathed copper cable (Red colour)	m	400			
21	630mm² - 1 Core unarmoured XLPE insulated PVC sheathed copper cable (Yellow/White colour)	m	400			
22	630mm² - 1 Core unarmoured XLPE insulated PVC sheathed copper cable (Blue colour)	m	400			
23	630mm² - 1 Core unarmoured XLPE insulated PVC sheathed copper cable (White colour)	m	400			
	Carried Forward			R		

	Brought Forward			R	
24	6,0mm² PVC Green insulated Copper single core	m	160		
25	35mm² PVC Green insulated Copper single core	m	160		
26	50mm² PVC Green insulated Copper single core	m	300		
27	70mm² PVC Green insulated Copper single core	m	300		
28	120mm² PVC Green insulated Copper single core	m	300		
29	185mm² PVC Green insulated Copper single core	m	300		
	CABLES TERMINATIONS				
	Termination of cables shall include supply installation and testing of the IP68 glands with corrossion guard , making-off the cable, lugs, and fitting the gland to the board gland plate, switchgear or equipment and final connection of cable tails into board or terminals. Include for Reducing Glands and shrouds where applicable. NB: IP68 Glands are to be used				
30	2.5 mm² 2c 600/1000V PVC/SWA/PVC ECC Cu Cable	No	16		
31	2.5 mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	No	4		
32	4mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	No	6		
33	6mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	No	16		
34	10mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	No	22		
35	16mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	No	16		
36	35mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	No	16		
37	95 mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	No	6		
38	6,0mm² PVC Green insulated Copper single core	No	20		
39	Earthing and Bonding of all electrically connected Equipment and cable racking and supports as per Spec & regulations.			SUM	
	Carried Forward			R	

	Brought Forward			R	
40	630mm² - 1 Core unarmoured XLPE insulated PVC sheathed copper cable (all 4 colour cables/for all phases plus neutral)	No	50		
	CABLE TRAY, LADDER, TRUNKING, POWER SKIRTING, CONDUIT AND ACCESSORIES				
	Supply, deliver to site unpainted hot dipped galvanised steel cable tray, cable ladder, P9000 trunking type as specified heavy duty range, inclusive of all items required to install in accordance with manufacturers specification. Power skirting shall be grey in colour.Supply, deliver and Install hot dip galvanised heavy duty all items such as brackets, rawl bolts,splices, bonding straps etc. required to install in accordance with manufacturers specification. NB: all additional HDG steel supports to be included in the rates.				
41	300mm wide tray - Cable ladder	m	120		
42	Cable ladder bends (5), 4-ways (2), tee ways (5) and all required accessories			SUM	
43	Supply and install HDG angle iron including mounting clamps for cable droppers as specified. 40mm x 40mm x 5mm.	No	30		
44	300mm wide tray - Cable tray	m	160		
45	Cable tray bends (14), 4-ways (3), tee ways (8) and all required accessories			SUM	
46	Supply and install HDG angle iron bends including mounting clamps for cable droppers as specified. 40mm x 40mm x 5mm.	No	30		
47	2 compartment hot dip galvinised steel powerskirting complete with elbow, internal and external bends, covers and all required accessories. To be grey in colour.	m	40		
48	Supply, delivery and installation of P9000 steel trunking complete with covers, brackets and all required accessories for complete installation	m	320		
	Carried Forward			R	

				R	
	Brought Forward				
	Cable Boxes and Conduits:				
	Supply, deliver to site, store and install IP65 Cable Boxes for light fitting cables inclusive of terminals etc as specified. Rates to include Termination glands & terminations				
49	IP66 Four- way box	No	10		
50	25mm PVC Conduit including all necessary accessories. Rate to include chasing conduit in the wall and close make good.	m	600		
51	32mm PVC Conduit including all necessary accessories. Rate to include chasing conduit in the wall and close make good.	m	240		
52	25mm steel Conduit including all necessary accessories. Rate to include surface mounted on the wall and close make good.	m	100		
53	32mm steel Conduit including all necessary accessories. Rate to include surface mounted on the wall and close make good.	m	100		
	Sleeves:				
	Supply and install the following underground flexible conduits in concrete slab, ground, chased through brick walls. All material to be SABS approved as suitable for cable installation. Must be black in colour. Must have 1,5mm draw wire.				
54	160mm Flexible sleeves	m	350		
55	110mm Flexible sleeves	m	350		
	LUMINARIES AND CONTROL DEVICES				
	Supply, deliver and install the following luminaires, complete with accessories and control gear as per specification. Contractor must refer to the specification document for details				
56	Type A3 - IP65 Rated, LED 43W/ +/- 5850 lumen Refer to the specification for details.	No	3		
	Carried Forward			R	

				R		
	Brought Forward					
57	Type A4 - IP65 Rated, LED 43W/ +/- 5850 lumen with back up 1 hour battery. Refer to the specification for details.	No	2			
58	Type A5 - IP65 Rated, 30W/+/- 4440lumen LED Surface-mounted weather-proof fluorescent luminaire, GRP body and acrylic diffuser. Refer to the specification for details.	No	16			
59	Type A6 - IP65 Rated, LED 30W/ +/- 4440lumen with back up 1 hour battery. Refer to the specification for details.	No	9			
60	Type A7 - Decorative suspended downlighter 65W/ +/- 8600 lumen (4000K) luminaire suspended by 3 fold rope suspension luminaire. Refer to the specification for details.	No	2			
61	Type A8 - Decorative suspended downlighter 65W/ +/- 8600 lumen (4000K) luminaire suspended by 3 fold rope suspension luminaire. Same as A7, but this has a backup back to operate for 1-hour.	No	1			
62	Type A9 - Lowbay Luminaire LED 144W/ +/- 20 000 lumen 4000K. Refer to the specification for details.	No	3			
63	Type A10 - Lowbay Luminaire LED 144W/ +/- 20 000 lumen 4000K with back up 1 hour battery. Refer to the specification for details.	No	3			
64	Type B1 - IP65 20W / +/- 2300 lumen 4000K LED bulkhead luminaire with an opal high-impact acrylic diffuser. Refer to the specification for details.	No	15			
65	Type B2 - IP65 20W/ +/- 2300 lumen 4000K LED bulkhead luminaire with an opal high-impact acrylic diffuser with back up 1 hour battery. Refer to the specification for details.	No	2			
66	Type C1 - 80W / +/- 9500 lumen 4000K LED Floodlight, rated IP66. Refer to the specification for details.	No	5			
67	Type D1 - 10W/ +/- 1200 lumen 4000K LED downlighters. Refer to the specification for details.	No	31			
	Carried Forward			R		

				R		
	Brought Forward					
68	Type D2 - 10W/ +/- 1200 lumen 4000K LED downlighters. Same as type D1 above, but these have backup battery to operate for 1-hour.	No	8			
69	Type D3 - 20W/ +/- 2000 lumen 4000K LED downlighters. Same as D1 above, but these have higher lumen of +2000 each.	No	12			
70	Type D4 - 20W/ +/- 2000 lumen 4000K LED downlighters. Same as type D3 above, but these have backup battery to operate for 1-hour.	No	5			
71	Type R1 - 1200mm x 600mm - 65W/ +/-5850 lumen (4000K) recessed mounted LED lighting panel. Refer to the specification for details.	No	4			
72	Type R2 - 1200mm x 600mm 65W/ +/-5850 lumen (4000K) recessed mounted LED lighting panel with back up 1 hour battery. Refer to the specification for details.	No	3			
73	Type R3 - 600mm x 600mm, 39W/ +/-3900 lumen (4000K) recessed mounted LED lighting panel on suspended ceiling. Same as R1 above, but these have a lumen of +/-3900 each.	No	3			
74	Type R3 - 600mm x 600mm, 39W/ +/-3900 lumen (4000K) recessed mounted LED lighting panel on suspended ceiling. Same as type R3 above, but these have backup battery to operate for 1-hour.	No	3			
75	Type EXIT - wall mount LED Emergency Exit sign with back up 1 hour battery.	No	4			
76	Type A1 - 1200mm x 600mm - 65W/ +/-5850 lumen (4000K) surfaced mounted LED lighting panel. Refer to the specification for details.	No	1			
77	Type F - Floodlight luminaire LED 412W/ +/- 54000 lumen 4000K. Refer to specification for details.	No	4			
	LIGHT SWITCHES, SOCKET OUTLET, WELDING ISOLATORS AND ACCESSORIES					
	Carried Forward			R		

				R	
	Brought Forward				
	Supply, deliver and installation of the following accessories as per specification. Rate must allow for the termination and connecting of the PVC conductor to the accessory, fixing to the conduit box and the fitting of the cover plate. (PVC covers)				
78	Supply and installation of 15Amp, 1 lever, 1-way, white cover plate, red toggle, light circuit switch complete with cover and all accessories	No	14		
79	Supply and installation of 15Amp, 1 lever, 2-way, white cover plate, red toggle, light circuit switch complete with cover and all accessories	No	8		
80	Supply and installation of 15Amp, 2 lever, 1-way, white cover plate, red toggle, light circuit switch complete with cover and all accessories	No	2		
81	Supply and installation of 15Amp, 3 lever, 1-way, white cover plate, red toggle, light circuit switch complete with cover and all accessories	No	4		
82	Supply and install 16A, 3pin, 2-pin/ Euro-pin, 230V Switched Socket Outlets, white cover plate, red toggle mounted on the wall	No	9		
83	Supply and install 16A, 3pin, 230V Double Switched Socket Outlets, white cover plate, red toggle mounted on the wall	No	10		
84	Supply and install 16A, 3pin and 2pin / Euro pin, 230V Switched Socket Outlets, white cover plate, blue toggle mounted on the wall	No	5		
85	Supply and install 16A, 3pin, 230V Switched Socket Outlets, white cover plate, red toggle installed in a power skirting	No	34		
86	Supply and install 16A, 2pin, 230V Switched Socket Outlets, white coloured plate, red toggle installed in a power skirting	No	18		
87	Supply and install 16A, 3pin, 230V Switched Socket Outlets, white cover plate, red toggle with chamfered earth installed in a power skirting	No	14		
	Carried Forward			R	

				R	
	Brought Forward				
88	Supply and installation of 32Amp 2-Pole surface mounted isolator, white cover plate with red toggle or red cover plate complete with all necessary accessories	No	20		
89	Supply and installation of 60Amp 3-Pole surface mounted isolator, white cover plate with red toggle or red cover plate complete with all necessary accessories	No	9		
90	Supply, deliver and installation of 400V, 32A, 4-pole IP65 rated Isolator, white cover plate with red toggle or red cover plate, complete with all necessary accessories	No	6		
91	Supply and installation of 63Amp, 5 Pin, 400V Industrial IP65 Welding Socket Outlet, powder coated to electric orange coloured, complete with all necessary accessories	No	8		
92	100mmX100mm hot dip galvanised draw box recessed mounted on wall	No	12		
93	100mmX50mm hot dip galvanised draw box recessed mounted on wall	No	24		
94	Blank PVC cover plates 100mmx100mm complete with all necessary accessories	No	6		
95	Data point RJ45 mounted on wall, cabling by others / Specialists	No	8		
96	Data point RJ45 on power skirting, cabling by others / Specialists	No	8		
97	65 mm round PVC box, complete with cover and all necessary accessories.	No	300		
98	Supply, deliver and installation of occupancy sensor as per specification	No	20		
99	Supply and installation of 60Amp Double Pole surface mounted isolator, white cover plate with red toggle or red cover plate complete with all necessary accessories	No	2		
100	Supply, deliver and installation of 20Amp, 3-pole isolator floodlight switch white cover plate, red toggle, light circuit switch complete with cover and all accessories, mounted at the winch room room	No	1		
	Carried Forward			R	

				R	
	Brought Forward				
101	Supply, deliver and installation of 5amp, unswitched socket outlet, mountd on P9000 with all necessary accessories for complete operation	No	108		
102	Supply, deliver and installation of brushed s/steel walkway outlet box kits and pop-up pedestal complete with all necessary accessories. Rate to allow or include chasing on the floor and make good.	No	2		
103	Photo electric cell as per specification	No	3		
	SUNDRIES				
104	LV reticulation - Preparation of 'As-Built' drawings and manuals as per this specification.	No	1		
105	Supply of hard bound spiral folders containing commissioning/COC certificates, test results & operating & maintenance manuals for the LV equipment, cabling, light fittings, etc.	No	3		
106	Danger tape	m	120		
107	Labelling of light switches, sockets, isolators outlets and all control devices as per drawing pop riveted to cover plate.			SUM	
108	Signs, Labels & Equipment Tags:				
	Supply and install all power, lighting, motors and earthing signs, labels and equipment tags as specified and in accordance with all Statutory requirements.			SUM	
109	EARTH BAR - A 500 mm x 20mm x4mm copper earth bar with 10no. 6 mm diameter holes pre-drilled, surface fixed on insulators	No	7		
110	Supply, deliver and installation of copper earth /rod spike 1200mm complete with all required accessories	No	22		
111	Supply and installation of 125Amp, 5 Pin, 400VAC Industrial IP66/67 industrial Isolator/socket/connector, powder coated to electric orange coloured, complete with all necessary accessories to mounted on the kiosk or as indicated on the drawing or work information.	No	2		
	Carried Forward			R	

				R	
	Brought Forward				
112	Supply and installation of 63Amp, 5 Pin, 400VAC Industrial IP66/67 industrial Isolator/socket/connector, powder coated to electric orange coloured, complete with all necessary accessories to mounted on the kiosk or as indicated on the drawing or work information.	No	2		
113	Supply and installation of 63Amp, 3 Pin, 230VAC Industrial IP66/67 industrial Isolator/socket/connector, powder coated to electric orange coloured, complete with all necessary accessories to mounted on the kiosk or as indicated on the drawing or work information.	No	2		
	EXCAVATIONS				
	The Contractor conforms to all requirements as detailed in this BOQ and the Part C3 Scope of Works and the detailed construction drawings supplied by the TNPA.				
	For LV streetlight cables, feeding cables from Slipway Substation to respective distribution boards, MCC and kiosk as per the drawing. Trenching shall be calculated using the formula below: (0.7m deep * 0.45m wide * length)				
114	Excavate in soft rock, backfilling and compaction to 93% MOD AASHTO	m3	4		
115	Excavate in concrete/road brick and hard soil, backfilling and compaction to 93% MOD AASHTO	m3	42		
116	Excavate in tar and hard soil, backfilling and compaction to 93% MOD AASHTO	m3	42		
117	Re-instate excavated tar, road brick and/or concrete to match existing. Rates to allow for all required materials and labour.	m3	378		
118	Excavate for street light poles in soft rock, concrete and hard soil, backfilling and compaction to 93% MOD AASHTO	m3	4		
119	Handling of material	m3	42		
120	Construction of manholes and complete with cover as per drawing no.100-011-3035 details - LV Manhole	No	4		
	Carried Forward			R	

	Brought Forward			R	
121	Provide fully dimensioned and marked up As-Built drawings of all new street lighting, area lighting, high mast and showing cable and route and cable sizes and type.	No	1		
	UNINTERRUPTED POWER SUPPLY (UPS)				
122	Supply, deliver and Install 5kVA, 230VAC, UPS to operate for 15 minutes on full load for the server, complete with all necessary required accessories. Refer to specifications for details.			SUM	
123	Supply and installation of 32Amp, 3 Pin, 230VAC Industrial Socket Outlet for Server and or UPS, powder coated to blue coloured, complete with all necessary accessories.	No	4		
	ELECTRONICS INSTALLATIONS				
	8 CORE OPTIC CABLE				
	Supply, delivery and installation of 8 core fibre optic cable and all the necessary items required for the installation.				
124	Single mode 9/125 micrometre 8 core fibre optic cable	No	150		
125	12 way Patch Panel Complete with splice trays and LC/APC connectors	No	1		
126	Pigtails 1m LC/APC connectors	No	5		
127	Dome joint: High impact polymer dome joint, complete with organiser tray and cable seals, 2 way.	No	2		
128	Splicing at both ends 24/24	No	10		
129	Bi directional Testing (OTDR)	No	10		
130	Power meter testing	No	10		
131	Sum - For all the consumables and any necessary items required to fulfil the above scope of work. Fittings and Accessories.			SUM	
132	Training			SUM	
	Carried Forward			R	

	Brought Forward			R	
133	Testing and commissioning the complete fibre installation including issuing relevant and required			SUM	
134	Labour			SUM	
	SECURITY SYSTEM				
	Supply, deliver and installation of the following electronics units for security system in the building and to include all required accessories as per specification. Rate must allow for the termination and connecting fixing testing and commissioning as indicated below. Refer to specification document for details.				
	HIGH SPEED PTZ CAMERA, EXTERNAL				
135	Type 1 - IP67 PTZ 2MP, 200m IR range, High resolution imaging, 360views, x36 zoom, Self-learning analytics, robust design, suitable for harshest coastal environment, body - Aluminum and technopolymer, Housing - Pendant and pedestal mount	No	4		
136	AVUEI9AA IR Illuminator 940nm	No	4		
137	AVUEBWAA Wall bracket & AVUEAC Corner adaptor	No	4		
138	POE-INJ-BT-90W-NA PoE injector 802.3bt 90W Single Port, cabling and all required accessories for completion operation.	No	4		
	BULLET CAMERA				
139	Type 2 - 4.0C-H5A-BO1-IR 4.0 MP WDR, LightCatcher, 3.3-9mm f/1.3 P-iris lens, Integrated IR, Next-Generation Analytics	No	9		
140	H4-BO-JBOX1 Junction box for the H5A Bullet, H4A HD Bullet, H4SL HD Bullet, or H4 Thermal cameras, cabling and all required accessories for completion operation.	No	9		
	Carried Forward			R	

	Brought Forward			R	
	FISHEYE CAMERA WITH AUDIO				
141	Type 3 - 8.0C-H5A-FE-DO1-IR 8.0 MP, H5A Fisheye Dome Camera, LightCatcher, Day/Night, WDR, 1.41mm f/2.0, Next-Generation Analytics, Integrated IR with Audio, cabling and all required accessories for completion operation.	No	9		
	DOME CAMERA				
142	Type 4 - 4.0C-H5A-DO1-IR 4.0 MP WDR, LightCatcher, Day/Night, Outdoor Dome, 3.3-9mm f/1.3 P-iris lens, Integrated IR, Next-Generation Analytics	No	6		
143	Housing, brackets, cabling and all other required accessories for complete installation and operation	No	6		
144	2 x RM6-WKS-2MN-EU Remote Monitoring Workstation, 2 Monitors, EU with mouse and keyboard	No	2		
145	Wall mounted 65" LED 4000K Full HD monitors smart TV with HDMI ports	No	3		
146	TV Mounting bracket for above mentioned televisions with all required accessories	No	3		
147	MHD24-G2-EU Monitor, 24" LCD HD, WUXGA	No	4		
	NETWORK AND VIDEO RECORDER				
148	NVR with NVR support per channel, NVR support per audio input, NVR support per audio output, NVR4 Value 12TB, 1U Rack Mount, Windows 10, NVR4-VAL-12TB-EU	No	1		
149	Storage Manager Licence per Camera	No	10		
150	12 Port Gigabit Switch - Smart PoE	No	6		
151	Network Cabinet 12U Swing Glass Door Wall Mounted 600mm X 600mm X 450mm (HWD)	No	6		
	Carried Forward			R	

				R	
	Brought Forward				
	ACCESS CONTROL				
152	Face, Palm, Card and Fingerprint recognition Terminal with Mask Detection including applicable software and software integration	No	8		
153	AC-VT-READ-BIO-USB-FOH02 - VIRDI Fingerprint and card enrollment USB reader, live fingeprint detection embedded, Fingerprint Platen Area: 16 x 19.6mm / Image Size: 15 x 17mm, (VIRDI Part Number: FOH02)	No	1		
154	Access Control Manager Enterprise 6 – Web-Based PACS Enterprise, Appliance for 20 Readers - includes: | physical appliance | embedded 64 bit Linux OS & Open LDAP for configuration database | Access Control Manager Security Management Software | 128 Reader Count Software License | One (1) ACM Verify | ACC Video Integration | Five (5) partitions | Identities CSV export, recurring, one-time, long & short format | Total reader capacity can be expanded from 128 to 400 readers, in increments of 16, with the purchase of the desired quantity of AC-SW-LIC-16RCU-6-P, 16 Reader Count Software Licenses | Supports up to 512 controllers | 250K identities and 150M stored events and twenty (20) simultaneous operators (via browser) | Three (3) year appliance hardware warranty begins at date of shipment	No	1		
155	Manager Integration Software Licenses Access Control Manager 6 Professional, Enterprise, Enterprise Plus & Virtual	No	1		
156	Single door intelligent controller AC-MER-CONT-LP1501 Intelligent Controller, Linux Based with 1 door, 2 inputs and 2 outputs, PoE+ Support, expandable up to 17 doors. (Mercury Part #: LP1501)	No	4		
	Carried Forward			R	

	Brought Forward			R	
157	12VDV power supply for card readers / door strikers. Integrated uninterruptable power supply (7 Ah UPS) Two Door Mercury Single Voltage Integrated Power System supporting two AC-MER-CONT-1DR or one AC-MER-CONT-2DR (Mercury hardware sold separately). Includes painted steel enclosure, removable pre drilled back plate, controller standoffs and mounting screws and a 75 watt 12V/6A or 24V/3A power supply-battery charger. The power supply is pre-wired to eight Class 2, Power Limited (CL2PL) outputs (D8P Board) delivering a regulated independent power connection to Mercury boards and auxiliary equipment. The power supply features dual outputs, form 'C' fault relay contacts, a fire alarm input and network interface (interface module sold separately) to enable monitoring, reporting and control of the power system from Access Control Manager (ACM) link. Battery space for two 12V, 8Ah batteries must be made available in cabinet (unless using two AC-MER-CONT-1DR). Cabinet size: 12" x 14" x 4.5" with door lock, tamper switch and two (2) keys. Weight 14 lb.(LifeSafety Power Part Number: FPO75-D8PE1M)	No	4		
158	Magnetic Door Lock 1200pounds, Break glass and door closer complete with accessories	No	4		
159	Labour for complete door setup	No	4		
	SOFTWARE				
160	Application Software interface			SUM	
161	Plug in for VMS integration	No	1		
162	Babylon Integration License	m	1		
	CABLING AND CONDUIT				
163	Cat 6 UTP link, including average of 50m run, shuttered RJ45 outlet in plate at terminal end, and patch panel mountd modular jack in rack at switch end	No	7		
164	1.5m Cat 6 UTP fly leads with factory assembled connectors at both ends	m	7		
165	150mm wide dg wire mesh basket mounted vertically in risers on unistrot supports, complete with connectors, bends, offsets, splices, etc	m	100		
	Carried Forward			R	

	Brought Forward			R	
166	25mm PVC conduit on surface and chased on wall and make good including all fixings	m	200		
167	Labelling Cat 6 cable	No	30		
168	CAT6 UTP Twisted pair	m	100		
169	Server Cabinets Standing Glass Front & Back Door 42U 600mm X 600mm X 450mm (HWD). Unit must have 4-way fan unit and 10-way PDU	No	1		
170	Fibre Outdoor Drop Cable 150M LC - LC/APC 1Core	No	10		
	COMMUNICATIONS SYSTEMS				
	Voice Evacuation/Public Address System (to be linked with Fire panel) and Broadcasting, Audio Visual System				
171	Allow the sum of One Million Rand for Communications Systems. Amount to be paid at the discretion of Project Manager/Engineer and the Employer upon receiving and approving a quotation from Transnet accredited installer.		Item		1,000,000.00
172	Profit (.....%)			%	
173	General attendance (.....%)			%	
	EARTHING AND BONDING AND LIGHTNING PROTECTION				
	Soil Resistivity Test Allow for the execution of a soil resistivity survey. (This installation must be undertaken by a specialist Sub-contractor). A Final Earth Resisitance of less than 10 Ohm is required.				
	Electrical Earthing Conductors Supply, deliver to site 1000/600 volt PVC insulated (green/yellow) cables with stranded copper conductors. Install, rack, strap and testing of cables as per specification including clamps, ties and cable numbering system as specified. Note: Cable supports measured elsewhere)				
	Carried Forward			R	

	Brought Forward			R	
	Supply, install, test and commissioning of the Lightning protection of the entire building on all corners of the building and centre of the building as a minimum, complete with all necessary required material, accessories for a complete installation. Contractor to use copper earth spike, aluminium or copper conductors as per specification, and have testing points. Rates to include all necessary required accessories for a complete installation and issue test results certificate per building. The installation must comply with SANS 10313. Contractor to include rate for scaffolding where required. Further details on specification document. Refer to drawings and specifications documents for details.				
174	Operations Building has a steel roof - 52m length X 15m width X 7m height			SUM	
175	Substation building has concrete roof - 18m length X 8m width X 3,3m height			SUM	
176	Water pump station has a steel structure and steeel roof - steel structure. Refer to drawing for details.			SUM	
	TESTING AND COMMISSIONING				
	Test and commission the complete electrical installation including completion of quality checksheets, Compliance Certificates & test results and submitting them to the Employer's Reprsentative.				
177	Cold & Hot Commissioning	No	1		
178	Test and commission the complete electrical installation including Certificates of Compliance & test results to the Engineer.			SUM	
179	Nett price for compliance with the conditions of contract including guarantees, insurance and other overheads			SUM	
180	Net amount for site establishment, transport, storage, supervision, quality control, etc. to comply with the conditions as specified			SUM	
181	Compliance with the requirements of SANS 10142 and the OHS Act.			SUM	
	Carried Forward			R	

	Brought Forward		R	
	GENERATOR SET			
	Manufacture, deliver to site, install, test and commission of a generator set 400 volts at 50Hz as per specification and single line diagram. The generator shall be open type and installed in the generator room. Rates to include for steelwork and powder coated, busbars and drilling, busbar connections internal wiring, earthing for the generator set, etc. Refer to attached single line diagram.			
182	650kVA (prime), 400V Diesel Engine Alternator Set - open set frame. Refer to specification document for details and submit returnable schedule with this pricing.		SUM	
183	Water Trap/Fuel Filter cartridge		SUM	
184	New AMF panel as per single line diagram drawing		SUM	
185	New Fuel Tank to supply generator with valves and instruments elivated stand		SUM	
	Electrical reticulation			
186	Interconnecting control & power cabling between genset and alternator and AMF panel		SUM	
187	Support & protection of exposed cabling between genset & AMF panel		SUM	
188	Electronic hooter & red flashing general alarm light mounted on the AMF panel.		SUM	
189	Remote alarm indicator panel complete the red indicator lamp and label - GENERATOR FAULT		SUM	
190	External emergency stop push button and cabling		SUM	
191	Earthing of the generator set		SUM	
	Test and Commissioning			
192	Test & commission on site with load		SUM	
193	Resistance testing of earth system		SUM	
	Carried Forward		R	

				R	
	Brought Forward				
194	Balancing of the essential loads			SUM	
195	Electrical Certification of Compliance			SUM	
	Signage				
196	As per OHS Act - fire & resussitation etc.			SUM	
197	Generator "Manual Start/Test Procedure"			SUM	
198	Caution - This generator will start automatically. Isolate power before working on plant	No	1		
199	Electricity logo on door to AMF panel	No	1		
200	TNPAs ID label of genset & control panel	No	2		
201	Contractors / TNPA details - laminated plastic	No	1		
	General				
202	Diesel fuel for full tank			SUM	
203	Automated pump from the diesel tank to the generator to fill up generator tank when required. Rate to included all necessary accessories required for a full operational pump.			SUM	
204	Laminated plastic framed schematic wiring diagram fixed to the inside of the enclosure adjacent the AMF panel	No	1		
205	A4 size log book on chain in metal envelope in door	No	1		
206	Operational training of Employer's staff			SUM	
207	Manuals - 3 sets			SUM	
208	Drawings			SUM	
209	Allow for crane, rigging and installation of the generator.			SUM	
	Service				
210	Inspection every quarter + new fuel filters for 1st year	No	4		
	Carried Forward			R	

	Brought Forward			R	
211	Full annual service + new battery for 1st year	No	1		
212	Disconnecting cables on existing generator and re-routing and re-connecting curcuits as per single line diagram and for the administration building. Rates to include re-testing of the generator set, provide diesel for testing.			SUM	
	Carried Forward to Summary of Section No. 6			R	

Section No. 6
Bill No. 1
Electrical Installation - Ops Building and Slipway

Item No		Quantity	Rate	Amount

SECTION NO. 6

BILL NO. 2

ELECTRICAL INSTALLATION

SITE LV RETICULATION

ELECTRICAL

The Works include the planning, demolition and disposal of existing equipment, underwater installation by diving, procurement, offloading, material and equipment handling, storage, fabrication, equipment refurbishment, engineering, detailing, main and sub-assemblies, alignment testing, modification, tolerance machining, welding, bolting, jig fabrications, production, corrosion protection, rigging, trial fitting, marking, packing, transportation, installation, punch listing, cold and hot commissioning, trial operation, handover and project management of the following:

#NOTE:

1.All quantities stated in 'Tons' refer to metric tons

2. The Contractor shall allow for the supply and installation of all required fixing elements (bolts, nuts, etc.) and welding consumables in its offered rate per ton for each of the individual BOQ line items as applicable

SITE LV RETICULATION AND LIGHTING

LV SWITCHGEAR

MCCs, DBs and LV Switchgear

Carried Forward R

	Brought Forward			R	
	The Contractor conforms to all requirements as detailed in this BOQ and the Part C3 Scope of Works and the detailed construction drawings supplied by the TNPA.				
	Manufacture, deliver to site, install, commission, test kiosks, distribution boards motor control centre and tuning of 400 volt motor starters as per specification and single line diagram, to be housed in new MCC Enclosure. Rates to include for 3CR12 steelwork and powder coated, busbars and drilling, busbar connections internal wiring etc. Refer to attached single line diagram. Colour shall be Electric Orange for MCC and Kiosk. Rates to includes matereial and concrete for kiosk per kiosk.				
1	Substation Distribution board - DB-1 at Substation LV Room	No	1		
2	Substation Distribution board - DB-2 at Substation LV Room	No	1		
3	Substation Distribution board - DB- 3 at Substation LV Room	No	1		
4	KIOSK 1 - Quay - Quay 3 and 4 Area	No	2		
5	KIOSK 2 - Quay - Quay 3 and 4 Area	No	2		
6	KIOSK 3 - Quay - Quay 3 and 4 Area	No	2		
7	KIOSK (SL-K2) - Streetlight kiosks	No	1		
8	KIOSK (SL-K3) - Streetlight kiosks	No	1		
9	KIOSK (SL-K4) - Streetlight kiosks	No	1		
	CABLES				
	Carried Forward			R	

	Brought Forward			R	
	The Contractor conforms to all requirements as detailed in this BOQ and the Part C3 Scope of Works and the detailed construction drawings supplied by the TNPA.				
	Supply, deliver to site cables and conductors as specified. Install, rack, strap and testing of cables as per specification including clamps, ties and cable numbering system				
10	2,5mm conductors (mixed colours - live, neutral and earth)	m	400		
11	4,0mm conductors (mixed colours - live, neutral and earth)	m	200		
12	2.5 mm² 2c 600/1000V PVC/SWA/PVC ECC Cu Cable	m	60		
13	2.5 mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	m	400		
14	4.0mm² 4c 600/1000V PVC/SWA/PVC Cu Cable	m	140		
15	10mm² 4c 600/1000V PVC/SWA/PVC Cu Cable	m	820		
16	16mm² 2c 600/1000V PVC/SWA/PVC ECC Cu Cable	m	450		
17	16mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	m	1,340		
18	35mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	m	160		
19	50mm² 4c 600/1000V PVC/SWA/PVC Cu Cable	m	100		
20	50mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	m	250		
21	70mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	m	400		
22	95mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	m	750		
23	120mm² 4c 600/1000V PVC/SWA/PVC Cu Cable	m	100		
24	180mm² 4c 600/1000V PVC/SWA/PVC Cu Cable	m	1		
25	35mm² PVC Green insulated Copper single core	m	50		
26	50mm² PVC Green insulated Copper single core	m	50		
	Carried Forward			R	

	Brought Forward			R	
27	70mm² PVC Green insulated Copper single core	m	200		
28	120mm² PVC Green insulated Copper single core	m	50		
29	185mm² PVC Green insulated Copper single core	m	50		
30	Supply, deliver and installation of 250A, 4-pole, 15kA circuit breaker (to match existing breakers brand) installed in the Low voltage distribution board and in MSS LV section as indicate on the single line diagram or as directed by the engineer. Rates to include all necessary required accessories for a complete installation and operation of the breaker.	No	3		
	CABLES TERMINATIONS				
	The Contractor conforms to all requirements as detailed in this BOQ and the Part C3 Scope of Works and the detailed construction drawings supplied by the TNPA.				
	Termination of cables shall include supply installation and testing of the IP68 glands with corrossion guard , making-off the cable, lugs, and fitting the gland to the board gland plate, switchgear or equipment and final connection of cable tails into board or terminals. Include for Reducing Glands and shrouds where applicable. NB: IP68 Glands are to be used				
31	2.5 mm² 2c 600/1000V PVC/SWA/PVC ECC Cu Cable	No	6		
32	2.5 mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	No	38		
33	4 mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	No	4		
34	6 mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	No	16		
35	10 mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	No	10		
36	16 mm² 2c 600/1000V PVC/SWA/PVC ECC Cu Cable	No	10		
37	16 mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	No	52		
38	35 mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	No	4		
39	50mm² 4c 600/1000V PVC/SWA/PVC ECC Cu Cable	No	12		
	Carried Forward			R	

				R	
	Brought Forward				
40	70 mm² 4c 600/1000V PVC/SWA/PVC Cu Cable	No	12		
41	95 mm² 4c 600/1000V PVC/SWA/PVC Cu Cable	No	16		
42	120 mm² 4c 600/1000V PVC/SWA/PVC Cu Cable	No	10		
43	185 mm² 4c 600/1000V PVC/SWA/PVC Cu Cable	No			**Rate Only**
44	6,0mm² PVC Green insulated Copper single core	No	12		
45	16mm² PVC Green insulated Copper single core	No	16		
46	35mm² PVC Green insulated Copper single core	No	8		
47	70mm² PVC Green insulated Copper single core	No	8		
48	120mm² PVC Green insulated Copper single core	No	8		
49	185mm² PVC Green insulated Copper single core	No	22		
50	Earthing and Bonding of all electrically connected Equipment and cable racking and supports as per Spec & regulations.			SUM	
51	EARTH BAR - A 500 mm x 20mm x4mm copper earth bar with 10no. 6 mm diameter holes pre-drilled, surface fixed on insulators	No	9		
52	Supply, deliver and installation of copper earth /rod spike 1200mm on ground, complete with all required accessories. This is for earth mat and earthing as indicated on the drawings.	No	55		
	<u>HIGH MAST AND STREET LIGHTING</u>				
	Carried Forward			R	

				R	
	Brought Forward				
	The Contractor conforms to all requirements as detailed in this BOQ and the Part C3 Scope of Works and the detailed construction drawings supplied by the TNPA.				
	Supply, deliver, and installation of the following fittings and accessories. Rate must allow for the termination and connection of the high mast light fittings and cabling to the accessory, fixing to the pole splitter box, and mast DB. LED Flood light mast must include pole numbering tag. Rates to include any design work required by the specialist for high mast, foundations and concrete and all other related works for a full installation and operations of the high mast.				
53	Supply, deliver, erect and align complete 15m mounting height mast designed with supporting frame to carry 3 No. 412W LED floodlights (Bottom entry - spigot) complete with heavy duty lockable access door, base plate, base plate nuts and lock nuts. HDG to SANS 121 ISO 1461 spec. Flood lights measured elsewhere.	No	3		
54	Mast must have a guarantee of 12 months against faulty workmanship	No	3		
55	Supply, deliver and install complete 3 phase electrical distribution board per mast with equipment with 63A, 3-pole, 5kA Isolator (main breaker), surge arrestor 2-pole, 2x10A, 3-pole, 5kA circuit breaker with busbars and wiring/conductors and with internal cable - mounted inside base of mast.	No	3		
56	Supply, install, terminate and connect 4mm² 5 core trailing cable between DB at base of mast and splitter box at top for flood lights.	m	45		
57	Coring for high mast onto existing concrete at the slipway area for new 15meter high mast. Refer to drawing for positions of the high mast. Rate to allow for detail designs, all required concrete tests.	No	3		
58	Earthing : Supply, deliver and install complete manufacturer standard system consisting of 2 x 1.2m earth spikes, installed under foundation and connected to foundation bolts via 70mm2 copper conductor with stainless steel clamps	No	3		
	Carried Forward			R	

	Brought Forward			R	
59	Casting of foundations with 25Mpa Concrete or as per Engineers specification	m3	6		
60	High tensile Reinforcing to foundations including galv. HD foundation bolts and 20 No. templates for bolts.			SUM	
61	Supply and install in foundation 110mm dia. long radius UPVC bends for cable access (2 per mast)	No	6		
62	Mounting, wiring connection and aiming of 3 floodlight luminaries per mast and lux level testing results.	No	6		
63	All soil tests, concrete tests for construction of the mast bases	No	3		
64	Painting of 15m high mast to match paint specification as per TNPA. Price includes washing down new poles and application of undercoat-twin pack epoxy and top coat in silver. Painting done via scaffolding. Colour to be confimed on site.	No	3		
65	Reclaim existing damaged streetlight poles including streetlight fittings. Streetlight fitting to be delivered to TNPA. (Rate must include making good all mentioned above). To be confirmed with Engineer prior reclaiming of poles.	No	20		
66	Type F - Floodlight luminaire LED 412W / +/- 54 000 lumen 4000K. Refer to the specification for details.	No	9		
67	Type G - Streetlight luminaire LED 78W / +/- 11 000 lumen 4000K. Refer to the specification for details	No	125		
68	Supply, deliver and installation of 9 meter hot dip galvanised poles. Rates to include digging for poles as er manufactures specification, mounting brackets for the streetlight luminiares.	No	20		
69	Supply, deliver and install photo electric cell as per specification	No	20		
	<u>LUMINAIRES AND CONTROL DEVICES (SMALL POWER)</u>				
	Carried Forward			R	

				R	
	Brought Forward				
	Supply, deliver and install the following luminaires, complete with accessories and control gear as per specification. Contractor must refer to the specification document for details				
70	Type A5 - IP65 Rated, 30W/+/- 4440lumen LED Surface-mounted weather-proof fluorescent luminaire, GRP body and acrylic diffuser. Refer to the specification for details.	No	3		
71	Type A6 - IP65 Rated, LED 30W/ +/- 4440lumen with back up 1 hour battery. Refer to the specification for details.	No	2		
72	Type B1 - IP65 20W / +/- 2300 lumen 4000K LED bulkhead luminaire with an opal high-impact acrylic diffuser. Refer to the specification for details.	No	15		
73	Type B2 - IP65 20W/ +/- 2300 lumen 4000K LED bulkhead luminaire with an opal high-impact acrylic diffuser with back up 1 hour battery. Refer to the specification for details.	No	2		
	LIGHT SWITCHES, SOCKET OUTLET, WELDING ISOLATORS AND ACCESSORIES				
	Supply, deliver and installation of the following accessories as per specification. Rate must allow for the termination and connecting of the PVC conductor to the accessory, fixing to the conduit box and the fitting of the cover plate. (PVC covers)				
74	Supply and installation of 15Amp, 1 lever, 1-way, white cover plate, red toggle, light circuit switch complete with cover and all accessories	No	4		
75	Supply and install 16A, 3pin, 2-pin/ Euro-pin, 230V Switched Socket Outlets, white cover plate, red toggle mounted on the wall	No	11		
76	100mmX100mm hot dip galvanised draw box recessed mounted on wall	No	6		
77	100mmX50mm hot dip galvanised draw box recessed mounted on wall	No	4		
	Carried Forward			R	

				R	
	Brought Forward				
78	Blank PVC cover plates 100mmx100mm complete with all necessary accessories	No	6		
79	65mm round PVC box, complete with cover and all necessary accessories.	No	10		
80	Supply, deliver and installation of 20Amp, 3-pole isolator floodlight switch white cover plate, red toggle, light circuit switch complete with cover and all accessories, mounted at the winch room room	No	4		
81	Supply, deliver and installation of occupancy sensor as per specification	No	4		
82	25mm PVC Conduit including all necessary accessories. Rate to include chasing conduit in the wall and close make good.	m	102		
83	32mm PVC Conduit including all necessary accessories. Rate to include chasing conduit in the wall and close make good.	m	51		
84	25mm steel Conduit including all necessary accessories. Rate to include surface mounted on the wall and close make good.	m	51		
85	32mm steel Conduit including all necessary accessories. Rate to include surface mounted on the wall and close make good.	m	51		
86	IP66 Four- way box	No	5		
87	Supply and installation of 125Amp, 5 Pin, 400VAC Industrial IP66/67 industrial Isolator/socket/connector, powder coated to electric orange coloured, complete with all necessary accessories to mounted on the Quay kiosk or as indicated on the drawing or work information.	No	8		
88	Supply and installation of 63Amp, 5 Pin, 400VAC Industrial IP66/67 industrial Isolator/socket/connector, powder coated to electric orange coloured, complete with all necessary accessories to mounted on the Quay kiosk or as indicated on the drawing or work information.	No	8		
	Carried Forward			R	

	Brought Forward			R	
89	Supply and installation of 63Amp, 3 Pin, 230VAC Industrial IP66/67 industrial Isolator/socket/connector, powder coated to electric orange coloured, complete with all necessary accessories to mounted on the Quay kiosks or as indicated on the drawing or work information.	No	8		
	EXCAVATIONS				
	The Contractor conforms to all requirements as detailed in this BOQ and the Part C3 Scope of Works and the detailed construction drawings supplied by the TNPA.				
	For LV streetlight cables, feeding cables from Slipway Substation to respective distribtuion boards, MCC and kiosk as per the drawing. Trenching shall be calculated using the formula below: (0.7m deep * 0.45m wide * length)				
90	Excavate in soft rock, backfilling and compaction to 93% MOD AASHTO	m3	294		
91	Excavate in concrete/road brick and hard soil, backfilling and compaction to 93% MOD AASHTO	m3	294		
92	Excavate in tar and hard soil, backfilling and compaction to 93% MOD AASHTO	m3	168		
93	Re-instate excatated tar, road brick and/or contrete to match existing. Rates to allow for all required materials and labour.	m3	504		
94	Excavate for street light poles in soft rock, concrete and hard soil, backfilling and compaction to 93% MOD AASHTO	m3	10		
95	Handling of material	m3	151.2		
96	Construction of manholes and complete with cover as per drawing no.100-011-3035 details - LV Manhole	No	18		
97	Provide fully dimensioned and marked up As-Built drawings of all new street lighting, area lighting, high mast and showing cable and route and cable sizes and type.			SUM	
	Carried Forward			R	

	Brought Forward			R	
	TESTING AND COMMISSIONING				
	The Contractor conforms to all requirements as detailed in this BOQ and the Part C3 Scope of Works and the detailed construction drawings supplied by the TNPA.				
	Test and commission the complete electrical installation including completion of quality checksheets, Compliance Certificates & test results and submitting them to the Employer's Representative				
98	Cold & Hot Commissioning			SUM	
99	Test and commission the complete electrical installation including Certificates of Compliance & test results to the Engineer.			SUM	
	SUNDRIES				
	The Contractor conforms to all requirements as detailed in this BOQ and the Part C3 Scope of Works and the detailed construction drawings supplied by the TNPA				
100	LV reticulation - Preparation of 'As-Built' drawings and manuals as per this specification.			SUM	
101	Supply of hard bound spiral folders containing commissioning/COC certificates, test results & operating & maintenance manuals for the LV equipment, cabling, light fittings, etc.			SUM	
102	Danger tape	m	2,500		
103	Labelling of Electrical panels, High mast, street light poles and kiosk as per drawing pop riveted to cover plate.			SUM	
104	Supply and installation of industrial 20A, 2-pole, IP65 light switches / isolators to be installed inside the kiosks	No	6		
	Carried Forward			R	

	Brought Forward			R	
105	Supply and installation of 63Amp, 3 Pin, 230VAC Industrial IP66 Socket Outlet, powder coated to electric orange coloured, complete with all necessary accessories mounted on the Quay kiosks as indicated on the drawing.	No	6		
106	Supply, deliver and installation of 20Amp, 3-pole isolator floodlight switch white cover plate, red toggle, light circuit switch complete with cover and all accessories, mounted inside the kiosks as per drawings	No	5		
	Carried Forward to Summary of Section No. 6			R	

Section No. 6
Bill No. 2
Electrical Installation - Site LV Reticulation

Item No			Quantity	Rate	Amount
	SECTION NO. 6				
	BILL NO. 3				
	ELECTRICAL INSTALLATION				
	SITE MV RETICULATION				
	SITE MV RETICULATION				
	MEDIUM VOLTAGE SWITCHGEAR				
	The Contractor conforms to all requirements as detailed in this BOQ and the Part C3 Scope of Works and the detailed construction drawings supplied by the TNPA.				
	Supply, install, connect, test and commissioning of substation switchgear in the positions as indicated on the drawings, complete with all internal equipment, switchgear wiring and labelling.				
1	Decommissioning and removal of existing mini-substations as stated on works information.	No	5		
2	630kVA Vacuum Mini-Substation (transformer with copper winding) - Supply, delivery and installation and commissioning of the complete 12kV mini-substation unit. Refer to specification document for details, and submit returnable schedule with this pricing.	No	4		
3	500kVA Vacuum Mini-Substation (transformer with copper winding) - Supply, delivery and installation and commissioning of the complete 12kV mini-substation unit. Refer to specification document for details, and submit returnable schedule with this pricing.	No	2		
	Carried Forward			R	

	Brought Forward			R	
	1000kVA, 11KV/400V Dry Transformer Dyn11 (copper winding)				
4	Supply, delivery, installation and commissioning of the step down Dry type transformer 11000V/400V, Dyn11 with copper windings. Refer to specification document for details, and submit returnable schedule with this pricing.			SUM	
	Medium Voltage Panel, 12kV				
5	Medium Voltage Switchgear Panel, 12kV Supply, deliver, installation and commissioning of the complete 12kV medium voltage switchgear panel as per single line diagram and as per specification.			SUM	
	Medium Voltage Power Factor Correction, 12kV				
6	Supply, deliver, installation and commissioning of the complete 12kV, 1500kVAr power factor correction (correct to 0,99 lagging) complete with all necessary accessories required and as sper specification. Rates to include any measurements required on site prior installation.	No	2		
7	Supply, delivery and installation of 300mm hot dip galvanised cable tray 50m long including bends, Tee pieces etc.			SUM	
8	Supply, deliver and install all materials necessary for the earthing of equipment & transformer within the substation			SUM	
	MV CABLE				
	The Contractor conforms to all requirements as detailed in this BOQ and the Part C3 Scope of Works and the detailed construction drawings supplied by the TNPA.				
9	Supply, delivery, & installation of new 70mm² 3c copper XLPE PVC individually screened 11kV cable	m	2,200		
10	Supply,deliver and install 185mm² 1c cu insulated earth wire	m	2,200		
11	Supply,deliver and install 70mm² 1c copper insulated earth wire	m	100		
	Carried Forward			R	

	Brought Forward			R	
12	Supply, delivery, & installation of new 35mm² 3c copper Cu PILC 11kV cable	m	50		
	CABLE JOINTS				
13	Supply, delivery cable joint kit for an existing MV 35mm² 3c Cu PILC cable			SUM	
14	Cutting and making new cable joint for an existing MV 35mm² 3c Cu PILC cable and joint kit cable	No	1		
15	Supply, delivery & install yellow plastic warning above MV cables	m	1,200		
	MV TERMINATION				
	Supply, deliver and terminate the MV cable from Church Street, to all mini-substations and to MV switchgear and transformer at the Slipway substation. Rates must allow all necessary accessories required to complete the termination of the cable to the MV switchgears.				
16	Supply, deliver and termination of 35 mm² 3c 11kV Cu PILC cable termination kit, rate is for both ends of the cable	No	2		
17	Termination to the MV Switchgear panels - 70mm2 3core MV cable for all MV cables as per single line diagram, rate is for both ends of the cable.			SUM	
18	Termination to the transformer 70mm2 3core MV cable, rate is for both ends of the cable.			SUM	
19	Termination to the mini-substations for MV feeders or / and per MSS set and both ends of the cable.	No	7		
20	Supply, deliver and installations of earth mat - earth conductors, earth spike (all copper) and all materials necessary for the earthing mat system for Slipway substation. Earthing system not to exceed 5 ohm or must be less than 5 ohms. Test results to be submitted to the Engineer. Rate to include removing of brick road and re-instating brick road with all necessary materials, installation, connection and tesing of earthing. Drawing issued for minimum requirements.			SUM	
	Carried Forward			R	

	Brought Forward			R	
21	Supply, delivery and install Alluminium Busbar sealed trunking IP54 unit for a 1600A (1000mm2 minimum busbar), 3-phase + N + E (neautral and earth busbars same as phases), 35kA, 50Hz, from generator from to LV room supply complete with all necessary accessories for complete installations in a suitable encloser with high degree of protection against ingress. Allow for 20 meters longs, allow for corners and or bends and other related accessories. Refer to substation drawings for measurements or more details.			SUM	
	TESTING AND RESULTS				
22	Soil resitivity earth tests at the new susbtation			SUM	
23	Earth resistance tests in terms of codes (new Slipway MV substation & associated MV network)			SUM	
24	Supply of type test certificates for all MV switchgears			SUM	
25	Routine tests for MV switchgear and transformer			SUM	
26	Testing and Commissioning and hand-over of the complete Substation, MV switchgear & transformer installation system for a full operations.			SUM	
27	Testing and Commissioning of all 7 mini-substations and hand-over of the complete and working/operational MV network installation system.	No	7		
	SUNDRIES				
28	Construction of mini-substation concrete plinths as per mini-substations manufacturer's specifications. Rates to include all required designs, material, accessories and labour	No	6		
29	Protection setting calibration between Church Street Substation and Ochre Substation and between Slipway substation and Bland Street Substation including testing and commissioning.			SUM	
30	cProtection Setting Configuration between Church Street Substation and mini-substation 5 and Slipway Substation including testing and commissioning.			SUM	
	Carried Forward			R	

	Brought Forward			R	
31	Protection Setting Configuration between Slipway Substation and Quay 3 mini-substation			SUM	
32	Cable tracing - Contractor shall trace existing MV cable that will be disconnected from the existing MSB RMU/MSS and will be rerouted to the new Slipway substation. This is also for the private MSS-5.			SUM	
33	MV Network - Preparation of 'As-Built' drawings and manuals .MV Network - Preparation of 'As-Built' drawings and manuals .			SUM	
34	For MV Switchgear - battery cabinet with batteries as per MV switchgear specification.			SUM	
35	Supply, delivery and installation of Fibre cable multi-core (8 core). Rates to complete all necessary accessories required in and between substations.	m	2,500		
36	12 way Patch Panel Complete with splice trays and LC/APC connectors, Pigtails 1m LC/APC connectors, Dome joint: High impact polymer dome joint, complete with organiser tray and cable seals, 2 way, Splicing at both ends 24/24, Bi directional Testing (OTDR), Power meter Testing. Rates to include all necessary required accessories for a complete operation fo the system.			SUM	
37	Supply of hard bound spiral folders containing commissioning/COC certificates, test results & operating & maintenance manuals for the MV equipment, cabling, etc.			SUM	
38	Training of TNPA Personel for MV switching and equipment operation			SUM	
	MARKING AND LABELLING				
	Marking & labelling of all substation equipment.				
39	Supply and install laminated single line schematic diagram of the MV/LV reticulation and state the feeder.			SUM	
40	Labelling with ID codes of all MV & control cable ends at substation and all mini-substations.			SUM	
	Carried Forward			R	

	Brought Forward			R	
41	Supply and install new OHS Act signage & fire & resuscitation notices on MV, generator room and metering/LV rooms of substation.			SUM	
42	Concrete cable route markers complete with properly secured inscription plate with inscription as indicated by the Engineer, as per specification.	No	30		
	CABLE SLEEVES				
	Suppy, deliver and install the following UPVC flexible black & green ring sleeves. All material to be SABS approved as suitable for cable installation. Must have 1,5mm draw wire.				
43	160 mm UPVC Flexible sleeves	m	1,800		
44	110 mm UPVC Flexible sleeves	m	200		
45	75 mm UPVC Flexible sleeves (green sleeves)	m	50		
	EXCAVATIONS				
	For all MV cables from Slipway Substation to mini-substations through manholes and to Church Street Substation as per the drawing. Trenching shall be calculated using the formula below: (1m deep * 0.5m wide * length)				
46	Excavate in soft rock, backfilling and compaction to 93% MOD AASHTO	m3	400		
47	Excavate in concrete, road brick/tar and hard soil, backfilling and compaction to 93% MOD AASHTO	m3	6,600		
48	Re-instate excatated tar and/or contrete to match existing. Rates to allow for all required materials and labour.	m3	600		
49	Handling of material	m3	350		
50	Construction of manholes complete with cover as per drawing no.1002-011-3036 details - MV Manhole	No	27		
	Carried Forward			R	

	Brought Forward			R	
	PROVISIONAL ALLOWANCES				
51	Provisional Amount Five Million Rands only (R 5 million) payable on proof of quotation from Mossel Bay Municipality for power upgrade; Application of Power additional of 1000kVA on existing 11kV supply into TNPA MV network. Rates to include all necessary work required for power upgrade. and / or Application to Mossel Bay Municipality (MSB) and MSB to remove the existing RMU and re-connect to the new substation / change over to the new substation. Amount to be paid at discretion of Project Manager/Engineer and the Employer upon receiving quotations from Mossel Bay Municipality.		Item		5,000,000.00
52	Contractors mark up / attendance for the above			SUM	
	The following shall be supplied and installed on all 7 mini-substation and Slipway and Church street substation, on MV and LV sections of the substations and mini-substations. Rate to include all necessary accessoried required for a complete operation of the meters. Refer to specification documents for detailes.				
53	Supply and Install 3 Phase L&G AMR Energy base meters	No	14		
54	Supply and Install L&G AMR Energy comms units CE-B2 units	No	14		
55	Supply and Install L&G AMR Energy GSM Transmitter unit	No	4		
56	Supply and Install L&G AMR Energy GSM Receiver unit this unit is to be supplied to TNPA DURBAN	No	4		
	Carried Forward to Summary of Section No. 6			R	

Section No. 6
Bill No. 3
Electrical Installation - Site MV Reticulation

SECTION SUMMARY - Electrical Installations

Carried to Final Summary R

Section No. 6

Item No		Quantity	Rate	Amount

SECTION 7

BILL NO. 1

HEATING, VENTILATION AND AIR CONDITIONING INSTALLATION

WORK GROUP ALLOCATION

Unless otherwise stated, all items in this Bill will be allocated to the appropriate Work Groups as follows:

- Mechanical Services .....Work Group 170
- Ductwork Installations .....Work Group 171
- Refrigeration Installations .....Work Group 172
- Steel Water Pipe Installations .....Work Group 173
- Other general items will be allocated to Work Groups as indicated in brackets at the ends of headings or descriptions

PREAMBLES

The clauses under "Section A: GENERAL" (clauses A.1 to A.10) on page 2 of the Model Preambles for Trades (2008 edition) as published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items fully described in the said Model Preambles will be entertained

The descriptions of and quantities for the items measured in this trade have been based on the drawing(s?) and specification(s?) as prepared by ?name of Engineer? for this project, and the tenderers are referred to these documents, as separately listed hereunder, and the following "Supplementary Preambles", for the full descriptions of these items which are to be read and priced in conjunction with the said documents for the various installations

SUPPLEMENTARY PREAMBLES

Carried Forward R

Brought Forward		R	
Prices: Unless otherwise stated, the description of each item shall be deemed to include manufacturing, conveying and delivering, unloading, storing, unpacking, hoisting, setting, fitting and fixing in position, cutting, waste, patterns, templets, plant, temporary works, return of packings, establishment charges, profit and other obligations arising out of the conditions of contract Prices for fans, coil units, major equipment, pumps, etc shall furthermore, allow for any and all electrical connections to the relevant isolators, etc as designed for this purpose **Ductwork:** Descriptions of ducts shall be deemed to include stiffeners, jointing materials, sealants, couplers in the running length and access/inspection panels in accordance with the specification Descriptions of spigot pipes shall be deemed to include the connection of the spigot pipe to the duct Where transformation or reducers occur, the larger size ductwork has been measured through the fitting **Dampers:** Descriptions of smoke and fire dampers shall be deemed to include fusible links, sleeves, frames, supports and access openings in ducts **Air diffusion:** Descriptions of air terminals, grilles, louvres and the like shall be deemed to include necks, frames, supports and flexible connections **Fans:** Descriptions of fan assemblies shall be deemed to include supports from the structure, flexible or other connections to ductwork, vibration isolation mountings and airtight inspection doors and the electrical installation up and the connection to the isolator (isolator installed by others)			
Carried Forward		R	

	Brought Forward		R	
	Sound attenuators: Descriptions of sound attenuators shall be deemed to include flanged or flexible connections to ducts and supports from the structure **Fan coil units, fan air terminals and fan heaters:** Descriptions of fan coil units, fan air terminals and fan heaters shall be deemed to include connection points for water, air and electrical supply, for air grilles, dust trays, condensate trays and vibration isolation mountings. Flexible ducts, flexible hose and connecting cables for connecting these units to each other or to water pipes and electrical supply are separately measured **Major equipment:** Descriptions of major equipment such as chillers, air handling units and the like shall be deemed to include connections to water, air and electrical supply and/or discharge points, supports, bearers, vibration insulation mountings, filters, insulation, inspection ladders and gangways, access doors and panels and painting, etc as specified **Piping:** Pipe diameters are nominal internal unless otherwise stated 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 diameter 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 diameters are given and no claim for extra bushes, reducers, etc will be entertained			
	Carried Forward		R	

	Brought Forward			R	
	Fixing of pipes: Unless 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				
	Pump sets: Descriptions of pumps shall be deemed to include connections to water and electrical supply and/or discharge points, vibration insulation mountings, insulation, drip trays with outlets, pressure gauges, etc				
	Valves: Descriptions of valves shall be deemed to include flanged or screwed connections to pipes, reducers, supports, etc				
	Insulation: Descriptions of insulation shall be deemed to include priming the pipes with zinc chromate primer before the insulation is applied, painting the insulation when completed and applying vapour barrier where specified				
	HEATING, VENTILATION AND AIR CONDITIONING INSTALLATION				
	Supply, install and commission the following HVAC Systems as per specification:				
1	Multiple System Type Mini-Cassette 3.6 kW Cooling (Ceiling Mounted Unit With Panel cover)	No	1		
2	Multiple System Type Mini-Cassette 4.5 kW Cooling (Ceiling Mounted Unit With Panel cover)	No	2		
3	Multiple System Type Mini-Cassette 5.6 kW Cooling (Ceiling Mounted Unit With Panel cover)	No	1		
4	Multiple System Type Mini-Cassette 6.0 kW Cooling (Ceiling Mounted Unit With Panel cover)	No	1		
	Carried Forward			R	

				R	
	Brought Forward				
5	Multiple System Type Outdoor Air Processing Unit - 14 kW Cooling	No	1		
6	Multiple System Type Hide-away Unit - 18 kW Cooling	No	1		
7	Premium wired remote controller	No	5		
8	Gas and Liquid Refrigerant copper piping, refnets joints, insulation and galvanized cable wire baskets with consumables, nitrogen, welding with consumables, refrigerant gas and general consumables.	m	180		
9	22-50mm Dia. PVC condensate drain piping with all associated fittings	m	50		
10	Multiple System, energy efficient condensing module with inverter motor-61.60 & 69.3 kW (Cooling & Heating)	No	1		
11	BACnet gateway module	No	1		
	Fabricate, Deliver, and Install the following Air-Conditioning Ducting with all Necessary Fittings, and Balance the Air Terminals And Commission as Per Specification:				
12	600 x 300mm Internally lined galvanized steel duct	m	2		
13	400 x 300mm Internally lined galvanized steel duct	m	3		
14	300 x 300mm Internally lined galvanized steel duct	m	6		
15	300 x 300mm Insulated duct end plate	No	1		
16	300mm dia. internally lined galvanized steel duct	m	4		
17	250mm dia. Internally lined galvanized steel duct	m	15		
18	200mm dia. Internally lined galvanized steel duct	m	6		
19	300mm Ø Internally lined galvanized steel 90 Deg Bend	No	1		
20	300mm Ø Internally lined galvanized steel 45 Deg Bend	No	2		
21	250mm Ø Internally lined galvanized steel 90 Deg Bend	No	4		
22	200mm Ø Internally lined galvanized steel 90 Deg Bend	No	1		
	Carried Forward			R	

	Brought Forward			R	
23	600 x 300mm - Hide-away Unit - internally lined galvanized steel reducer	No	1		
24	300mm Dia - Hide-away Unit - internally lined galvanized steel reducer	No	1		
25	600 x 300mm - 400 x 300mm Internally lined galvanized steel reducer	No	1		
26	400 x 300mm - 300 x 300mm Internally Lined Galvanized Steel Reducer	No	1		
27	300mm dia - 250mm Ø Internally Lined Galvanized Steel Reducer	No	1		
28	250mm dia - 200mm dia Internally Lined Galvanized Steel Reducer	No	1		
29	300x300 - 250mm dia Internally Lined Galvanized Steel Transformation Piece	No	2		
30	600x300 -250mm dia Internally Lined Galvanized Steel Cross Junction	No	1		
31	400x300 -250mm Ø Internally Lined Galvanized Steel Cross Junction	No	1		
32	300x300 - 300x300 - 250mm dia. Internally lined galvanized steel cross junction	No	1		
33	600x300 - 600x300 - 400x300 Internally lined galvanized steel tee junction	No	1		
34	300x300 - 300x300 - 400x300 Internally lined galvanized steel tee junction	No	1		
35	300x300 - 250mm dia. Internally lined galvanized steel tee junction	No	2		
36	300mm Ø - 200mm dia. Internally lined galvanized steel tee junction	No	2		
37	250mm dia - 200mm dia Internally lined galvanized steel tee junction	No	1		
38	600x600 Supply Air Diffuser - 250mm dia. neck	No	6		
	Carried Forward			R	

				R	
	Brought Forward				
39	600mm Ø Supply Air Diffuser - 250mm dia. neck	No	4		
40	600mm Ø Supply Air Diffuser - 200mm dia. neck	No	4		
41	1200 x 600mm Return air grille with filter - 600 x 300 Neck with a 900 x 210 x 600mm return air plenum - to match the hide away unit return air opening	No	1		
42	1000 x 210mm Fresh air aluminium weather louvre with filter - 1000 x 210 x 600mm return air plenum - to match the outdoor air processing unit fresh air opening	No	1		
43	600 x 600mm Fresh air grille with filter - 250mm dia. neck	No	1		
44	250mm dia. Flexible duct	m	11		
45	200mm dia. Flexible duct	m	4		
46	150mm dia. Flexible duct	m	7		
47	150mm dia. Galvanized steel duct	m	17		
48	200mm dia. Galvanized steel duct	m	11		
49	250mm dia. Galvanized steel duct	m	4		
50	300mm dia. Galvanized steel duct	m	6		
51	150mm dia. 90 Deg Bend	No	3		
52	200mm dia. 90 Deg Bend	No	8		
53	300mm dia. 90 Deg Bend	No	1		
54	150mm dia. Equal Tee	No	2		
55	200mm dia. Equal Tee	No	1		
56	200 - 150mm Dia. Reducing Tee	No	4		
57	250mm dia. Equal Tee	No	1		
58	300 -150mm dia. Reducing Tee	No	2		
59	300 -200mm dia. Reducing Tee	No	2		
	Carried Forward			R	

				R	
	Brought Forward				
60	300 -200mm dia. Reducing Cross Junction	No	2		
61	200 - 150mm dia. Reducer	No	3		
62	250 - 200mm dia. Reducer	No	2		
63	300-200mm dia. Reducer	No	2		
64	250mm dia. Flow Balancing Damper	No	9		
65	500 x 500mm Exhaust air weather louvre in A 500 x 500 - 300mm dia. transformation piece	No	2		
66	Fan attenuator	No	4		
67	Axial flow fan @ 335 l/s & 150 Pa	No	2		
68	300 x 300mm Exhaust air weather louvre in A 300 x 300 - 200mm dia. transformation piece	No	1		
69	Fan attenuator	No	2		
70	Axial flow fan @ 86 l/s & 50 Pa	No	1		
71	300 x 300mm Supply air weather louvre in a 300 x 300 - 200mm dia. transformation piece	No	1		
72	Fan attenuator	No	2		
73	Axial flow fan @ 150 l/s & 100 Pa	No	1		
74	600 x 600mm Extract air grille - 200mm Ø neck	No	6		
75	350mm dia. Air valve with 150mm dia. neck	No	11		
76	350 x 250mm Door grille	No	3		
77	350mm Aluminium turbine ventilator with extraction rate of 517 l/s @ 15 km/h wind speed	No	2		
78	610mm Aluminium turbine ventilator with extraction rate of 1890 l/s @ 15 km/h wind speed	No	6		
	Carried Forward			R	

	Brought Forward		R	
	BUDGETARY ALLOWANCES			
79	Allow an amount of Two Hundred Thousand for a function room to be added on top of the proposed office space	Item		200,000.00
	Carried Forward to Summary of Section No. 7		R	

Section No. 7
Bill No. 1
HVAC Installations

Item No		Quantity	Rate	Amount

SECTION 7

BILL NO. 2

WET SERVICES

WORK GROUP ALLOCATION

Unless otherwise stated, all items in this Bill will be allocated to the appropriate Work Groups as follows:

- Mechanical Services .....Work Group 170
- Ductwork Installations .....Work Group 171
- Refrigeration Installations .....Work Group 172
- Steel Water Pipe Installations .....Work Group 173
- Other general items will be allocated to Work Groups as indicated in brackets at the ends of headings or descriptions

PREAMBLES

The clauses under "Section A: GENERAL" (clauses A.1 to A.10) on page 2 of the Model Preambles for Trades (2008 edition) as published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items fully described in the said Model Preambles will be entertained

The descriptions of and quantities for the items measured in this trade have been based on the drawing(s?) and specification(s?) as prepared by ?name of Engineer? for this project, and the tenderers are referred to these documents, as separately listed hereunder, and the following "Supplementary Preambles", for the full descriptions of these items which are to be read and priced in conjunction with the said documents for the various installations

SUPPLEMENTARY PREAMBLES

Carried Forward R

Brought Forward		R	
Prices: Unless otherwise stated, the description of each item shall be deemed to include manufacturing, conveying and delivering, unloading, storing, unpacking, hoisting, setting, fitting and fixing in position, cutting, waste, patterns, templets, plant, temporary works, return of packings, establishment charges, profit and other obligations arising out of the conditions of contract Prices for fans, coil units, major equipment, pumps, etc shall furthermore, allow for any and all electrical connections to the relevant isolators, etc as designed for this purpose **Ductwork:** Descriptions of ducts shall be deemed to include stiffeners, jointing materials, sealants, couplers in the running length and access/inspection panels in accordance with the specification Descriptions of spigot pipes shall be deemed to include the connection of the spigot pipe to the duct Where transformation or reducers occur, the larger size ductwork has been measured through the fitting **Dampers:** Descriptions of smoke and fire dampers shall be deemed to include fusible links, sleeves, frames, supports and access openings in ducts **Air diffusion:** Descriptions of air terminals, grilles, louvres and the like shall be deemed to include necks, frames, supports and flexible connections **Fans:** Descriptions of fan assemblies shall be deemed to include supports from the structure, flexible or other connections to ductwork, vibration isolation mountings and airtight inspection doors and the electrical installation up and the connection to the isolator (isolator installed by others)			
Carried Forward		R	

Brought Forward		R	
Sound attenuators: Descriptions of sound attenuators shall be deemed to include flanged or flexible connections to ducts and supports from the structure			
Fan coil units, fan air terminals and fan heaters: Descriptions of fan coil units, fan air terminals and fan heaters shall be deemed to include connection points for water, air and electrical supply, for air grilles, dust trays, condensate trays and vibration isolation mountings. Flexible ducts, flexible hose and connecting cables for connecting these units to each other or to water pipes and electrical supply are separately measured			
Major equipment: Descriptions of major equipment such as chillers, air handling units and the like shall be deemed to include connections to water, air and electrical supply and/or discharge points, supports, bearers, vibration insulation mountings, filters, insulation, inspection ladders and gangways, access doors and panels and painting, etc as specified			
Piping: Pipe diameters are nominal internal unless otherwise stated 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 diameter 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 diameters are given and no claim for extra bushes, reducers, etc will be entertained			
Carried Forward		R	

	Brought Forward			R	
	Fixing of pipes: Unless 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				
	Pump sets: Descriptions of pumps shall be deemed to include connections to water and electrical supply and/or discharge points, vibration insulation mountings, insulation, drip trays with outlets, pressure gauges, etc				
	Valves: Descriptions of valves shall be deemed to include flanged or screwed connections to pipes, reducers, supports, etc				
	Insulation: Descriptions of insulation shall be deemed to include priming the pipes with zinc chromate primer before the insulation is applied, painting the insulation when completed and applying vapour barrier where specified				
	WET SERVICES				
	Class 12 HDPE Piping Laid and Buried Trenches Not Exceeding 800m Deep.				
1	40mm dia. HDPE Cl 12 underground water pipe	m	65		
	Fittings for HDPE Class 12 Piping				
2	40mm dia. 90 Degree Elbow	No	4		
3	40mm dia. 45 Degree Elbow	No	5		
4	110mm - 100mm Adaptor Flange	No	2		
5	40mm Ø Isolating valve inside a 400 x 400mm valve chamber	No	1		
	Carried Forward			R	

				R	
	Brought Forward				
	BLACK MILD STEEL FITTINGS				
6	100mm, 90 Degree threaded elbow flanged connections	No	2		
7	100 NB Isolating valve with flanged connections	No	2		
8	Locally approved 100 NB Municipal Water Meter with flanged connections	No	1		
9	100NB Strainer Flanged Connections With Flanged Connections	No	1		
	BLACK MILD STEEL PIPING				
10	100mm Pipes With Flanged Connections	m	2		
	CLASS 1 MEDIUM COPPER PIPES				
11	15mm dia Pipe	m	72		
12	22mm dia Pipe	m	31		
13	28mm dia Pipe	m	10		
14	35mm dia Pipe	m	20		
15	42mm dia Pipe	m	40		
	Capillary Tube Fittings With Soldered Joints				
16	15mm dia Elbow	No	22		
17	22mm dia Elbow	No	6.00		
18	28mm dia Elbow	No	4.00		
19	35mm dia Elbow	No	2.00		
20	42mm dia Elbow	No	6.00		
21	22mm dia Equal Tee	No	13.00		
22	28mm dia Equal Tee	No	4.00		
23	35mm dia Equal Tee	No	12.00		
	Carried Forward			R	

				R	
	Brought Forward				
24	42mm dia Equal Tee	No	7.00		
25	22-15 mm dia Reducer	No	10		
26	28-15 mm dia Reducer	No	3.00		
27	28-22 mm dia Reducer	No	3.00		
28	35-15 mm dia Reducer	No	6.00		
29	35-22 mm dia Reducer	No	3.00		
30	35-28 mm dia Reducer	No	2.00		
31	42-15 mm dia Reducer	No	2		
32	42-22 mm dia Reducer	No	2		
33	42-35 mm dia Reducer	No	2		
	Brass Compression Fittings And Valves				
34	15mm dia Elbow	No	31.00		
35	22mm dia Isolation Valve	No	5		
36	28mm dia Isolation Valve	No	2		
37	35mm dia Isolation Valve	No	3.00		
38	35mm dia Strainer	No	2.00		
	Heavy brown paper loosely wrapped around pipe as sheath for expansion.				
39	15mm dia	m	60.00		
	Pipe Hangers - Anchor, Treaded Rod & Hanger				
40	15mm dia	No	15		
41	22mm dia	No	15.00		
42	28mm dia	No	5.00		
43	35mm dia	No	10.00		
	Carried Forward			R	

				R	
	Brought Forward				
44	42mm dia	No	20		
	HOT WATER INSTALLATION				
	Supply, Install, and Commission The Following Hot Water System Complete with all Auxiliary Fittings As Per Specification				
45	5.5 kW Heat Pump With all field wiring and fittings	No	1.00		
46	250 Liter Electric Geyser Supplied and Installed with all Valves and required Piping as per Manufacture's Specifications.	No	1.00		
47	Hot water circulation system with all relevant pumps, piping and valves.	No	1.00		
	CLASS 1 MEDIUM COPPER PIPES				
48	15mm dia Pipe	m	36.00		
49	22mm dia Pipe	m	31.00		
50	28mm dia Pipe	m	21.00		
51	35mm dia Pipe	m	67.00		
	Capillary Tube Fittings With Soldered Joints				
52	15mm dia Elbow	No	12.00		
53	22mm dia Elbow	No	6.00		
54	28mm dia Elbow	No	15.00		
55	35mm dia Elbow	No	5.00		
56	22mm dia Equal Tee	No	6.00		
57	28mm dia Equal Tee	No	6.00		
58	35mm dia Equal Tee	No	4.00		
59	22-15 mm dia Reducer	No	6		
60	28-15 mm dia Reducer	No	5.00		
	Carried Forward			R	

				R	
	Brought Forward				
61	28-22 mm dia Reducer	No	1.00		
62	35-15 mm dia Reducer	No	4.00		
63	35-22 mm dia Reducer	No	1.00		
64	35-28 mm dia Reducer	No	1.00		
	Brass Compression Fittings And Valves				
65	22mm dia Isolation Valve	No	1		
66	35mm dia Isolation Valve	No	1.00		
	Heavy brown paper loosely wrapped around pipe as sheath for expansion.				
67	15mm dia	m	30.00		
	Pipe Hangers - Anchor, Treaded Rod & Hanger				
68	15mm dia	No	6		
69	22mm dia	No	15.00		
70	28mm dia	No	10.00		
71	35mm dia	No	30.00		
	Lagging Wrapped Around Pipe				
72	15mm dia	m	10		
73	22mm dia	m	31.00		
74	35mm dia	m	67.00		
	WASTE WATER DRAINAGE				
	Class 34 uPVC PIPES				
	Carried Forward			R	

				R	
	Brought Forward				
	Sewer and drainage pipes and fittings shall be through Solid wall Class 34 uPVC socketed soil piping in according to SABS 791, jointed and sealed with butyl rubber rings Soil, waste and vent pipes and fittings shall be according to SABS 967 and solvent jointed Cold water supply pressure pipes and fittings shall be according to SABS 966 and jointed by means of the "Lying" type jointing system Pipes shall be fixed and jointed according to SABS 0112				
75	50mm dia Pipe	m	40		
76	110mm dia Pipe	m	30		
77	160mm dia Pipe	m	40		
	Class 34 uPVC FITTINGS				
78	50mm dia 90 Deg Bend	No	21		
79	110mm dia 90 Deg Bend	No	8		
80	110mm dia 90 Deg Access Bend	No	6		
81	160mm dia 90 Access Deg Bend	No	5		
82	50mm dia 45 90 Deg Bend	No	13		
83	110mm dia 45 Deg Bend	No	4		
84	160mm dia 45 Deg Bend	No	4		
85	110mm dia Pan connector	No	6		
86	50mm dia Equal 1cess junction	No	15		
87	110mm dia - 50mm Ø junction	No	7		
88	110mm dia Equal Access junction	No	2		
89	160mm dia - 50mm Ø junction	No	10		
90	160mm dia - 110mm Ø junction	No	9		
91	160mm dia Equal Access junction	No	2		
	Carried Forward			R	

	Brought Forward			R	
	Pipe Hangers - Anchor, Treaded Rod & Hilti Hanger				
92	50mm dia	No	14		
93	110mm dia	No	2.00		
94	160mm dia	No	1		
	Carried Forward to Summary of Section No. 7			R	

Section No. 7
Bill No. 2
Wet Services

Item No		Quantity	Rate	Amount

SECTION 7

BILL NO. 3

FIRE PROTECTION

WORK GROUP ALLOCATION

Unless otherwise stated, all items in this Bill will be allocated to the appropriate Work Groups as follows:

- Mechanical Services .....Work Group 170
- Ductwork Installations .....Work Group 171
- Refrigeration Installations .....Work Group 172
- Steel Water Pipe Installations .....Work Group 173
- Other general items will be allocated to Work Groups as indicated in brackets at the ends of headings or descriptions

PREAMBLES

The clauses under "Section A: GENERAL" (clauses A.1 to A.10) on page 2 of the Model Preambles for Trades (2008 edition) as published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items fully described in the said Model Preambles will be entertained

The descriptions of and quantities for the items measured in this trade have been based on the drawing(s?) and specification(s?) as prepared by ?name of Engineer? for this project, and the tenderers are referred to these documents, as separately listed hereunder, and the following "Supplementary Preambles", for the full descriptions of these items which are to be read and priced in conjunction with the said documents for the various installations

SUPPLEMENTARY PREAMBLES

Carried Forward R

Brought Forward		R	
Prices:			
Unless otherwise stated, the description of each item shall be deemed to include manufacturing, conveying and delivering, unloading, storing, unpacking, hoisting, setting, fitting and fixing in position, cutting, waste, patterns, templets, plant, temporary works, return of packings, establishment charges, profit and other obligations arising out of the conditions of contract			
Prices for fans, coil units, major equipment, pumps, etc shall furthermore, allow for any and all electrical connections to the relevant isolators, etc as designed for this purpose			
Ductwork:			
Descriptions of ducts shall be deemed to include stiffeners, jointing materials, sealants, couplers in the running length and access/inspection panels in accordance with the specification			
Descriptions of spigot pipes shall be deemed to include the connection of the spigot pipe to the duct			
Where transformation or reducers occur, the larger size ductwork has been measured through the fitting			
Dampers:			
Descriptions of smoke and fire dampers shall be deemed to include fusible links, sleeves, frames, supports and access openings in ducts			
Air diffusion:			
Descriptions of air terminals, grilles, louvres and the like shall be deemed to include necks, frames, supports and flexible connections			
Fans:			
Descriptions of fan assemblies shall be deemed to include supports from the structure, flexible or other connections to ductwork, vibration isolation mountings and airtight inspection doors and the electrical installation up and the connection to the isolator (isolator installed by others)			
Carried Forward		R	

	Brought Forward		R	
	Sound attenuators: Descriptions of sound attenuators shall be deemed to include flanged or flexible connections to ducts and supports from the structure **Fan coil units, fan air terminals and fan heaters:** Descriptions of fan coil units, fan air terminals and fan heaters shall be deemed to include connection points for water, air and electrical supply, for air grilles, dust trays, condensate trays and vibration isolation mountings. Flexible ducts, flexible hose and connecting cables for connecting these units to each other or to water pipes and electrical supply are separately measured **Major equipment:** Descriptions of major equipment such as chillers, air handling units and the like shall be deemed to include connections to water, air and electrical supply and/or discharge points, supports, bearers, vibration insulation mountings, filters, insulation, inspection ladders and gangways, access doors and panels and painting, etc as specified **Piping:** Pipe diameters are nominal internal unless otherwise stated 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 diameter 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 diameters are given and no claim for extra bushes, reducers, etc will be entertained			
	Carried Forward		R	

	Brought Forward			R	
	Fixing of pipes: Unless 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				
	Pump sets: Descriptions of pumps shall be deemed to include connections to water and electrical supply and/or discharge points, vibration insulation mountings, insulation, drip trays with outlets, pressure gauges, etc				
	Valves: Descriptions of valves shall be deemed to include flanged or screwed connections to pipes, reducers, supports, etc				
	Insulation: Descriptions of insulation shall be deemed to include priming the pipes with zinc chromate primer before the insulation is applied, painting the insulation when completed and applying vapour barrier where specified				
	FIRE PROTECTION				
	Supply, Install, and Commission the Following Fire Protection Systems Complete With all Auxiliary fittings as per Specification:				
	CLASS 16 HDPE PIPING & FITTINGS				
1	75mm Pipe laid and including trenches not exceeding 800m deep.	m	2		
2	110mm Pipe laid and including trenches not exceeding 800m deep.	m	99		
3	110mm - 100mm Adaptor Flange	No	4		
4	75mm - 80mm Adaptor Flange	No	2		
5	110 - 40mm Tee Joint	No	1		
	Carried Forward			R	

				R	
	Brought Forward				
6	110 - 75mm Tee Joint	No	2		
7	110mm Tee Joint	No	1		
8	110mm 90 Deg Bend	No	4		
9	110mm 45 Deg Bend	No	8		
10	110mm Isolating valve inside a 400 x 400mm valve chamber	No	2		
11	110mm None return valve	No	1		
	BLACK MILD STEEL FITTINGS				
12	100mm, 90 Degree Threaded Elbow	No	18		
13	100mm, 45 Degree Threaded Elbow	No	3		
14	80mm, 90 Degree Threaded Elbow	No	6		
15	25mm, 90 Degree Threaded Elbow	No	9		
16	100 - 25mm, Threaded Reducing Tee	No	3		
17	100 - 80mm, Threaded Reducing Tee	No	1		
18	80mm Threaded Equal Tee	No	1		
19	80 - 25mm, Threaded Reducing Tee	No	1		
	BLACK MILD STEEL PIPING				
20	100mm Pipes	m	100		
21	80mm Pipes	m	20		
22	25mm Pipes	m	18		
	FIRE APPLIANCES				
23	Fire hose reel complete with 30m rubber hose, chromium plated stopcock, shut off nozzle and wall bracket, bolted to wall	No	4		
24	4.5kg DCP fire extinguisher mounted on a wooden block	No	4		
	Carried Forward			R	

				R	
	Brought Forward				
25	9kg DCP fire extinguisher mounted on wooden block	No	5		
26	10kg Carbon Dioxide fire extinguisher mounted on a wooden block	No	5		
27	Twin booster connection	No	1		
28	Fire hydrant	No	2		
29	Allowance for a 120-minute rated (Class B) double fire doors with self closing mechanims	No	2		
	FIRE DETECTION				
	Complete design, supply and installation of a smoke detection system. Smoke detection system to comply with SANS 10139. Smoke detection system to be an Conventional Extinguishing Panel Linked to the existing addressable system in the main Building				
30	Addressable fire control panel	No	1		
31	Combined fire alarm sounder and xenon flashing beacon	No	8		
32	Optical smoke detectors with bases conventional	No	31		
33	Base sounder/visual with detector	No	6		
34	Heat Detector 60 Deg Fixed With Bases Conventional	No	2		
35	Break glass manual call point	No	7		
36	Break glass manual-magnetic lock override	No	2		
37	PH30 Fire resistant cable	m	250		
38	25mm Bosal conduit with all associated fittings	m	250		
	SIGNAGE				
39	LED directional signage (With Back-up Power)			SUM	
40	Photo luminated directional signage			SUM	
41	Photo luminated fire signage			SUM	
	Carried Forward			R	

	Brought Forward			R	
	FIRE STOP				
42	Allowance for fire stop to all penetrations to through fire zones	m3	10		
	PROVISIONAL SUMS				
43	Allow an amount of One Million One Hundred and Fifty Thousand for a Fire Sprinkler System to be incorporated should the ceiling void space exceed 800mm.		Item		1,150,000.00
44	Profit (.....%)			%	
45	General attendance (.....%)			%	
	Carried Forward to Summary of Section No. 7			R	

Section No. 7
Bill No. 3
Fire Protection

SECTION SUMMARY - Mechanical Installations

Carried to Final Summary R

Section No. 7

Item No		Quantity	Rate	Amount

SECTION NO. 8

BILL NO. 1

PROVISIONAL AMOUNTS

PREAMBLES

The Model Preambles for Trades (2008 edition) as published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items fully described in the said Model Preambles will be entertained

The following "Supplementary Preambles" are incorporated in this bill to satisfy the requirements of the project and shall take precedence over the provisions of the said Model Preambles

SUPPLEMENTARY PREAMBLES

General:

Subcontract amounts are net.

Subcontract amounts are for material and equipment supplied and installed complete by firms of specialists

Each subcontract amount may comprise more than one element of work. Therefore, each subcontract amount may include for work to be carried out by more than one subcontractor

Profit:

Where stated, the contractor may allow for profit if required

Carried Forward R

Brought Forward		R	
General attendance on nominated/selected subcontractors:			
The item "General Attendance" which follows each subcontract amount for nominated/selected subcontractors' work, shall be deemed to cover all the contractor's costs incurred in providing free of charge to the nominated/selected subcontractors, the following:			
1. Access to the site and places where the subcontract work is to be carried out, including the reasonable use of any temporary personnel hoists erected by the contractor			
2. The provision of water and lighting and of single phase electric power to a position within 50 metres of the place where the subcontract work is to be carried out but excluding water, fuel and power for commissioning of any installation			
3. The provision of an area for the subcontractor to establish temporary office accommodation and workshops and for the storage of plant and materials			
4. The use of erected scaffolding belonging to the contractor, in common with others having the like right, while it remains erected on the site			
5. The use, at reasonable times by arrangement of the contractor's erected hoisting equipment			
6. Making good in all trades and cleaning down and removal of rubbish on completion			
Special attendance on nominated/selected subcontractors:			
Where stated, special attendance as set out in clause 8.1 of section B of the Preliminaries will be described in detail in this bill			
Builder's work:			
Builder's work in connection with specialist services is given elsewhere in these bills of quantities			
Carried Forward		R	

	Brought Forward		R	
	SHIPPING CONTAINER			
1	Sub-contract amount of One Hundred and Fifty Thousand Rand for the provision of a shipping container made to fit.	Item		150,000.00
2	Profit (.....%)		%	
3	General attendance (.....%)		%	
	KITCHEN EQUIPMENT			
4	Subcontract amount of Fifty Thousand Rand for kitchen equipment, etc. complete	Item		50,000.00
5	Profit (.....%)		%	
6	General attendance (.....%)		%	
	MOCK-UPS AND SAMPLES			
7	Budgetary Allowance of Fifty Thousand Rand for mock-ups and samples	Item		50,000.00
8	Profit (.....%)		%	
9	General attendance (.....%)		%	
	COMMUNITY LIAISON OFFICER			
10	Subcontract amount of one One Hundred and Eighty Thousand Rand for Community Liaison Officer for a period of twelve (12) months	Item		180,000.00
11	Profit (.....%)		%	
12	General attendance (.....%)		%	
	APPROVED INSPECTION AUTHORITIES			
13	Subcontract amount of one Two Hundred and Fifty Thousand Rand for AIA requirements.	Item		250,000.00
14	Profit (.....%)		%	
15	General attendance (.....%)		%	
	Carried Forward to Summary of Section No. 8		R	

Section No. 8
Bill No. 1
Provisional Sums, ETC

Item No		Quantity	Rate	Amount
	SECTION 8			
	BILL NO. 1			
	BUDGETARY ALLOWANCES			
	PREAMBLES			
	General:			
	A Budgetary Allowance is a sum of money included in the contract sum for work intended for execution by the Contractor, the extent of which is identified but not detailed			
	Work for which budgetary allowances are provided will be measured and valued in accordance with clause 32 of the Principal Building Agreement and deducted in whole or in part if not required without any compensation for loss or profit on the said allowances			
	Each Budgetary Allowance may comprise more than one element of work			
	DREDGING, ETC.			
1	Budgetary Allowance of Five Million Rand for Dredging, etc.	Item		5,000,000.00
	SIGNAGE, ETC.			
2	Budgetary Allowance of One Hundred and Fifty Thousand Rand for additional ironmongery, signage, etc.	Item		150,000.00
	PROVISION OF LOCKERS			
3	Budgetary Allowance of Seventy Five Thousand Rand for the provision of lockers	Item		75,000.00
	LOOSE FURNITURE AND BUILT-IN CUPBOARDS			
4	Budgetary Allowance of Two Hundred and Fifty Thousand for the provision of loose furniture and built-in cupboards	Item		250,000.00
	Carried Forward		R	

	Brought Forward		R	
	TEMPORARY MOBILE OFFICES			
5	Budgetary Allowance of One Million Eight Hundred and Fifty Thousand for the supply and delivery of temporary mobile offices, decanting from existing offices and relocation of staff to and reinstatement of staff to new offices. Temporary offices to be the property of the employer upon completion.	Item		1,850,000.00
	BUILDER'S WORK IN CONNECTION WITH SPECIALIST INSTALLATIONS			
6	Budgetary Allowance of Three Hundred and Fifty Thousand Rand for builder's work in connection with specialist installations	Item		350,000.00
	Carried Forward to Summary of Section No. 8		R	

Section No. 8
Bill No. 2
Budgetary Allowances

SECTION SUMMARY - Provisional Sums

Carried to Final Summary R

Section No. 8

FINAL SUMMARY

Section No		Page No		Amount
1	Preliminaries and General	5		
2	Building Works	83		
3	Slipway Deck	90		
4	External Works	109		
5	Cradles and Associated Items	119		
6	Electrical Installations	160		
7	Mechanical Installations	187		
8	Provisional Sums	193		
	TOTAL (EXCLUDING CONTINGENCIES AND CPAP)		R	
	ADD: A PROVISION FOR THE CIDB CONTRACT SKILLS DEVELOPMENT GOALS (CSDG) (0.25% FACTOR X SUB TOTAL 1)		SUM	
	Allow the Sum of 0.2% of SUB TOTAL 1 for the CIDB BUILD Fee:		SUM	
	TOTAL (EXCLUDING VAT)		R	
	VALUE ADDED TAX		R	
	TOTAL (INCLUDING VAT) CARRIED TO FORM OF OFFER		R	
	Carried to Form of Tender		R	