

**C4021 - CSIR 3457 PHARMA - HVAC - PRICE BREAKDOWN SCHEDULE - SMF**

**SCHEDULE NO.1 : PRELIMINARY AND GENERAL COSTS**

(Note : These prices shall be firm and not subject to price adjustment)

Item	Description	Unit	QTY	Supply Rate	Install Rate	Amount
<b>1.1</b>	<b>SITE ESTABLISHMENT</b>					
1	Camp and fencing	sum	1			
2	Office	sum	1			
3	Office Equipment	sum	1			
4	Store	sum	1			
5	Workshop	sum	1			
6	Other	sum	1			
<b>1.2</b>	<b>ADMINISTRATIVE</b>					
1	Site personnel	sum	1			
2	Supervisory staff	sum	1			
3	Guards	sum	1			
4	Transport	sum	1			
5	Insurance	sum	1			
6	Cost of Guarantee	sum	1			
7	Financing of Retention	sum	1			
8	Running costs e.g. telephone, electricity,					
9	cleaning, services, printing, stationery, etc.	sum	1			
<b>1.3</b>	<b>GENERAL COSTS</b>					
1	Allow an amount if required for expenses incurred to tender.	sum	1			
2	Loading and off loading of material and equipment	sum	1			
3	Setting out of Works.	sum	1			
4	Cleaning of site upon completion of Contract.	sum	1			
5	Critical Path/Schedule.	sum	1			
6	Issuing Cadded Workshop drawings	sum	1			
7	Issuing 3 sets of "As-built" drawings and operational manuals including CD	sum	1			
8	Test and commissioning of complete Works.	sum	1			
9	Inspection and handing over.	sum	1			
10	QC/QA	sum	1			
11	Other items not specifically mentioned	sum	1			
<b>1.4</b>	<b>COMPLIANCE</b>					
1	Allow for complying with the conditions & requirements of tendering & contract conditions	sum	1			
<b>Total for Schedule No. 1 Carried forward to summary page</b>						

**SCHEDULE NO.2 : EXISTING EVAPORATIVE COOLING UNIT**

(Note : These prices shall be firm and not subject to price adjustment)

Item	Description	Unit	QTY	Supply Rate	Install Rate	Amount
<b>2.1</b>	<b>Existing Evaporative Cooler System</b>					
<b>2.1.1</b>	<b>EVAP-01 - Evaporative Cooler System</b>					
1	Replace primary fan CFW 30" BCC-2 DIDW (15 kW / 1120 rpm)	no	1			
2	Replace secondary fans 800dia/9BI/16"/4P/3 kW	no	2			
3	Replace pumps 0.55 kW Centrifugal/Polyprop	no	2			
4	Service and commissioning of Evaporative Cooling unit	sum	1			
5	Supply and installation of new insulated galvanised steel sheet metal ducting, with thickness as per SANS1238, and fittings complete with all hangers and supports as per specifications and concept design drawings.					
5.1	Supply and install ducting					
	Supply:					
	Rectangular Duct - 300x350	m	3			
	Rectangular Duct - 350x300	m	2			
	Rectangular Duct - 350x350	m	2			
	Rectangular Duct - 400x400	m	4			
	Rectangular Duct - 450x500	m	10			
	Rectangular Duct - 500x450	m	3			
	Rectangular Duct - 500x800	m	1			
	Rectangular Duct - 600x500	m	2			
	Rectangular Duct - 650x600	m	3			
	Rectangular Duct - 800x800	m	12			
	Rectangular Duct - 1200x1000	m	5			
	Rectangular Duct - 1200x1200	m	8			
	Round Duct - ø300	m	3			
	Round Duct - ø315	m	2			
	Round Duct - ø355	m	3			
	Round Duct - ø400	m	11			
5.2	Supply and install transformation pieces:					
	Supply:					
	End Cap - 300x350	sum	1			
	End Cap - 350x350	sum	1			
	End Cap - 450x500	sum	8			
	End Cap - 500x450	sum	1			
	End Cap - 650x600	sum	1			
	End Cap - 800x800	sum	1			
	Rectangular 15 Degree Bend - 600x500-500x450	sum	1			
	Rectangular 30 Degree Bend - 400x400-300x350	sum	1			
	Rectangular 30 Degree Bend - 1200x1200-1200x1000	sum	1			
	Rectangular Bend - 300x350-300x350	sum	1			
	Rectangular Bend - 450x500-450x500	sum	2			
	Rectangular Bend - 500x450-500x450	sum	1			
	Rectangular Bend - 800x800-800x800	sum	3			
	Rectangular Duct - Takeoff - 350x300-350x300	sum	2			
	Rectangular Duct - Takeoff - 350x350-350x350	sum	1			
	Rectangular Duct - Takeoff - 400x400-400x400	sum	1			
	Rectangular Duct - Takeoff - 450x500-450x500	sum	2			
	Rectangular Duct - Takeoff - 600x500-600x500	sum	1			
	Rectangular Duct - Takeoff - 650x600-650x600	sum	2			
	Rectangular Duct - Takeoff - 800x800-800x800	sum	1			
	Rectangular Duct Wye - 500x800-450x800-450x800	sum	1			
	Rectangular Duct Wye - 650x600-450x600-450x600	sum	2			
	Rectangular Duct Wye - 800x800-500x800-650x800	sum	1			
	Rectangular to round transition - 400x400-ø300	sum	2			
	Rectangular to round transition - 600x600-ø355	sum	3			
	Rectangular to round transition - 600x600-ø400	sum	16			
	Rectangular transition - 450x600-450x500	sum	4			
	Rectangular transition - 450x800-450x500	sum	2			
	Rectangular transition - 650x800-650x600	sum	1			
	Rectangular transition - 1200x1000-800x800	sum	1			
	Round Bend - ø300-ø300	sum	2			
	Round Bend - ø315-ø315	sum	2			
	Round Bend - ø355-ø355	sum	3			
	Round Bend - ø400-ø400	sum	18			
	Round Duct - Takeoff - ø300-ø300	sum	2			
	Round Duct - Takeoff - ø315-ø315	sum	2			
	Round Duct - Takeoff - ø355-ø355	sum	3			
	Round Duct - Takeoff - ø400-ø400	sum	16			
	Round Duct - Takeoff - ø315-ø315	sum	2			

6	Supply and install supply air grilles					
	SAG 600X600	no	19			
	SAG 400X400	no	2			
7	Supply and install dampers					
	Motorised Pressure Control Damper - ø300	no	2			
	Motorised Pressure Control Damper - ø355	no	3			
	Motorised Pressure Control Damper - ø400	no	16			
	Motorised Pressure Control Damper - ø315	no	1			
	Motorised Fire Damper - 1200 x 1200	no	1			
8	Testing and Commissioning of System	sum	1			
9	All other equipment, not listed, required for a fully working complete system.	sum	1			
<b>Total for Schedule No. 2 Carried forward to summary page</b>						R

### SCHEDULE NO.3 : FUME HOOD EXHAUST SYSTEMS

(Note : These prices shall be firm and not subject to price adjustment)

Item	Description	Unit	QTY	Supply Rate	Install Rate	Amount
<b>3.1</b>	<b>Fume Hood Exhaust Systems</b>					
<b>3.1.1</b>	<b>Synthetics Laboratory Fume Hoods</b>					
1	Service and repair existing fume hoods, as per specifications					
	2m Airvolution Bench Top Fume Hood	no	4			
	Walk in Fume Hood	no	2			
2	Supply and installation of all PVC ductwork complete with transformation pieces, flexible connections, duct hangers, supports, anti-vibration mountings, etc, as per the concept design drawings					
2.1	Supply and install PVC ducting:					
	Ø315 mm	m	15			
	Ø450 mm	m	11			
	Ø560 mm	m	24			
2.2	Supply and install transformation pieces:					
	Transformation Ø560 to Fan Connection	sum	4			
	Round transition: ø560-ø450	sum	2			
	Bend 90° - Ø450 mm	sum	2			
	Bend 90° - Ø560 mm	sum	2			
2.3	Supply and install duct accessories:					
	Cowl Ø560 mm	sum	2			
	OBD Ø315 mm	sum	4			
	OBD Ø450 mm	sum	2			
3	Supply and install PVC fan	no	2			
4	Supply and installation of all electrical wiring, complete with an electrical isolator for a full working installation, as per the technical specifications.	sum	2			
5	Testing and Commissioning of System	sum	2			
6	All other equipment, not listed, required for a fully working complete system.	sum	1			
<b>3.1.2</b>	<b>Flow Laboratory Fume Hoods</b>					
1	Service and repair existing fume hoods, as per specifications					
	2m Airvolution Bench Top Fume Hood	no	4			
2	Supply and install new Vivid Air, or equal alternative, double-sided walk in fume hood, as per specifications	sum	1			
3	Supply and installation of all PVC ductwork complete with transformation pieces, flexible connections, duct hangers, supports, anti-vibration mountings, etc, as per the concept design drawings					
3.1	Supply and install PVC ducting					
	Ø315 mm	m	20			
	Ø450 mm	m	30			
	Ø560 mm	m	0			
	Ø630 mm	m	7			

3.2	Supply and install transformation pieces:					
	Transformation Ø450 to Fan Connection	sum	4			
	Transformation Ø630 to Fan Connection	sum	2			
	Round transition: ø450-ø315	sum	2			
	Round transition: ø630-ø450	sum	2			
	Round Duct Wye: ø630-ø450-ø450	sum	1			
	Bend 90° - Ø315 mm	sum	6			
	Bend 90° - Ø450 mm	sum	3			
	Bend 45° - Ø450 mm	sum	2			
3.3	Supply and install duct accessories:					
	Cowl Ø450 mm	sum	2			
	Cowl Ø630 mm	sum	1			
	OBD Ø315 mm	sum	4			
	OBD Ø450 mm	sum	2			
4	Supply and install PVC fan	no	3			
5	Supply and installation of all electrical wiring, complete with an electrical isolator for a full working installation, as per the technical specifications.	sum	3			
6	Testing and Commissioning of System	sum	3			
7	All other equipment, not listed, required for a fully working complete system.	sum	1			
8	Manufacture, supply and install of fume hood fan removable sound insulation boxes	sum	5			
<b>Total for Schedule No. 3 Carried forward to summary page</b>						R

**SCHEDULE No. 4 : SPLIT TYPE AIR CONDITONING UNITS**

Item	Description	Unit	QTY	Supply Rate	Install Rate	Amount
<b>4.1</b>	<b>SPLIT TYPE AIR CONDITIONING SYSTEMS</b>					
<b>4.1.1</b>	<b>Analytical Lab Unit - AC-01</b>					
1	Supply and installation of <b>Samsung AR12TSHGAWK midwall</b> , or equal alternative, indoor and outdoor unit, complete with anti-vibration mountings, wall mounted controller, etc.	sum	1			
2	Supply and install wall mounted controller	sum	1			
3	Supply and installation of all electrical wiring from outdoor unit to the indoor unit, complete with an electrical isolator at each unit for a full working installation, as per the technical specifications.	sum	1			
4	Supply and installation of all required copper refrigerant piping, complete with refrigeration gas, brackets, insulation, connection to indoor and outdoor units, for a complete working system.	sum	1			
5	Supply and installation of the complete condensate drainage system using 25mm PVC piping for the unit, reticulated to the nearest foul water drain via a u-trap	sum	1			
6	Supply and install galvanised trunking, painted to architects' specifications, for external refrigerant piping.	sum	1			
7	Apply anti-corrosion treatment to air-conditioning equipment	sum	1			
8	Testing and Commissioning of System	sum	1			
9	All other equipment, not listed, required for a fully working complete system.	sum	1			
<b>4.1.2</b>	<b>Scale-up/pre-pilot Unit - AC-02</b>					
1	Supply and installation of <b>Samsung AC120JNMDEH ducted hide-away</b> , or equal alternative, indoor and outdoor unit, complete with insulated plenum box, safeties, supports, drip trays, anti-vibration mountings, wall fixed unit controller, etc.	sum	1			
2	Supply and install wall mounted controller	sum	1			
3	Supply and installation of all electrical wiring from outdoor unit to the indoor unit, complete with an electrical isolator at indoor unit for a full working installation, as per the technical specifications.	sum	1			
4	Supply and installation of all required copper refrigerant piping, complete with brackets, insulation, connection to indoor and outdoor units, for a complete working system.	sum	1			
5	Supply and installation of new insulated galvanised steel sheet metal ducting, with thickness as per SANS1238, and fittings complete with all hangers and supports as per specifications and concept design drawings.	sum	1			
5.1	Supply and install ducting					
	Supply:					
	Rectangular Duct - 350x400	m	3			
	Round Duct - ø350	m	1			
	Return:					
	Rectangular Duct - 600x700	m	0.5			
	Rectangular Duct - 1280x235	m	1			

5.2	Supply and install transformation pieces:					
	Supply:					
	End Cap - 350x400	sum	1			
	Rectangular Bend - 350x400-350x400	sum	1			
	Rectangular transition - 1200x170-350x400	sum	1			
	Round Duct - Takeoff $\phi$ 350- $\phi$ 350	sum	2			
	Round Transition - $\phi$ 350- $\phi$ 200	sum	2			
	Return:					
	End Cap - 1280x235	sum	1			
	Rectangular Duct - Takeoff - 600x700-600x700	sum	1			
6	Supply and installation of all required diffusers and grills complete with, required spigots and insulated flexible connections as per the drawings.					
6.1	CCD $\phi$ 350	no	2			
6.2	RA 600x700	no	1			
7	Supply and installation of the complete condensate drainage system using 25mm PVC piping for the unit, reticulated to the nearest foul water drain via a u-trap.	sum	1			
8	Apply anti-corrosion treatment to air-conditioning equipment	sum	1			
9	Testing and Commissioning of System	sum	1			
10	All other equipment, not listed, required for a fully working complete system.	sum	1			
<b>4.1.3</b>	<b>Flow Lab Unit - AC-03</b>					
1	Supply and installation of <b>Samsung AC160JNMDEH ducted hide-away</b> , or equal alternative, indoor and outdoor unit, complete with insulated plenum box, safeties, supports, drip trays, anti-vibration mountings, wall fixed unit controller, etc.	sum	1			
2	Supply and install wall mounted controller	sum	1			
3	Supply and installation of all electrical wiring from outdoor unit to the indoor unit, complete with an electrical isolator at indoor unit for a full working installation, as per the technical specifications.	sum	1			
4	Supply and installation of all required copper refrigerant piping, complete with brackets, insulation, connection to indoor and outdoor units, for a complete working system.	sum	1			
5	Supply and installation of new insulated galvanised steel sheet metal ducting, with thickness as per SANS1238, and fittings complete with all hangers and supports as per specifications and concept design drawings.	sum	1			
5.1	Supply and install ducting					
	Supply:					
	Rectangular Duct - 450x400	m	0.4			
	Round Duct - $\phi$ 350	m	1			
	Return:					
	Rectangular Duct - 450x400	m	2			
	Rectangular Duct - 1280x235	m	0.6			
5.2	Supply and install transformation pieces:					
	Supply:					
	Rectangular Duct Wye - 450x400-350x400-350x400	sum	1			
	Rectangular to round transition - 350x400- $\phi$ 350	sum	2			
	Rectangular to round transition - 600x600- $\phi$ 350	sum	2			
	Rectangular transition - 1200x170-450x400	sum	1			
	Return:					
	Rectangular Bend - 450x400-450x400	sum	2			
	Rectangular to round transition - 450x400- $\phi$ 450	sum	1			
	Rectangular to round transition - 900x600- $\phi$ 450	sum	1			
	Rectangular transition - 1280x235-450x400	sum	1			
6	Supply and installation of all required diffusers and grills complete with, required spigots and insulated flexible connections as per the drawings.					
6.1	SAG 600x600	no	2			
6.2	RA 600x900	no	1			
7	Supply and installation of the complete condensate drainage system using 25mm PVC piping for the unit, reticulated to the nearest foul water drain via a u-trap.	sum	1			
8	Apply anti-corrosion treatment to air-conditioning equipment	sum	1			
9	Testing and Commissioning of System	sum	1			
10	All other equipment, not listed, required for a fully working complete system.	sum	1			

<b>4.1.4 Synthetic Lab Unit - AC-04</b>					
1	Supply and installation of <b>Samsung AC160JNMDEH ducted hide-away</b> , or equal alternative, indoor and outdoor unit, complete with insulated plenum box, safeties, supports, drip trays, anti-vibration mountings, wall fixed unit controller, etc.	sum	1		
2	Supply and install wall mounted controller	sum	1		
3	Supply and installation of all electrical wiring from outdoor unit to the indoor unit, complete with an electrical isolator at indoor unit for a full working installation, as per the technical specifications.	sum	1		
4	Supply and installation of all required copper refrigerant piping, complete with brackets, insulation, connection to indoor and outdoor units, for a complete working system.	sum	1		
5	Supply and installation of new insulated galvanised steel sheet metal ducting, with thickness as per SANS1238, and fittings complete with all hangers and supports as per specifications and concept design drawings.	sum	1		
5.1	Supply and install ducting				
	Supply:				
	Rectangular Duct - 450x400	m	1.5		
	Round Duct - ø350	m	2		
	Return:				
	Rectangular Duct - 700x250	m	0		
	Rectangular Duct - 1000x300	m	1.2		
	Round Duct - ø450	m	3.1		
5.2	Supply and install transformation pieces:				
	Supply:				
	Rectangular Bend - 450x400-450x400	sum	1		
	Rectangular Duct Wye - 450x400-350x400-350x400	sum	1		
	Rectangular to round transition - 350x400-ø350	sum	2		
	Rectangular to round transition - 600x600-ø350	sum	2		
	Rectangular transition - 1200x170-450x400	sum	1		
	Return:				
	End Cap - 1000x300	sum	1		
	Rectangular Duct - Takeoff - 700x250-700x250	sum	1		
	Rectangular to round transition - 700x250-ø450	sum	1		
	Rectangular to round transition - 900x600-ø450	sum	1		
	Rectangular transition - 1280x235-1000x300	sum	1		
	Round Bend - ø450-ø450	sum	1		
6	Supply and installation of all required diffusers and grills complete with, required spigots and insulated flexible connections as per the drawings.				
6.1	SAG 600x600	no	2		
6.2	RA 600x900	no	1		
7	Supply and installation of the complete condensate drainage system using 25mm PVC piping for the unit, reticulated to the nearest foul water drain via a u-trap.	sum			
8	Apply anti-corrosion treatment to air-conditioning equipment	sum	1		
9	Testing and Commissioning of System	sum	1		
10	All other equipment, not listed, required for a fully working complete system.	sum	1		
<b>4.1.5 Synthetic Lab Unit - AC-LAN-05 &amp; AC-LAN-06</b>					
1	Supply and installation of <b>Samsung AM056KNQDEH midwall</b> , or equal alternative, indoor and outdoor unit, complete with anti-vibration mountings, wall mounted controller, etc.	sum	2		
2	Supply and install wall mounted controller	sum	2		
3	Supply and install standby/duty control panel.	sum	1		
4	Supply and installation of all electrical wiring from outdoor unit to the indoor unit, complete with an electrical isolator at each unit for a full working installation, as per the technical specifications.	sum	2		
5	Supply and installation of all required copper refrigerant piping, complete with refrigeration gas, brackets, insulation, connection to indoor and outdoor units, for a complete working system.	sum	2		
6	Supply and installation of the complete condensate drainage system using 25mm PVC piping for the unit, reticulated to the nearest foul water drain via a u-trap.	sum	2		
7	Supply and install galvanised trunking, painted to architects' specifications, for external refrigerant piping.	sum	2		
8	Apply anti-corrosion treatment to air-conditioning equipment	sum	2		
9	Testing and Commissioning of System	sum	2		
10	All other equipment, not listed, required for a fully working complete system.	sum	1		
<b>4.1.6 Existing AC units</b>					
1	Service existing midwall split air conditioning units	sum	10		
<b>Total for Schedule 4 carried forward to summary page</b>					

**SCHEDULE No. 5 : FRESH AIR SUPPLY SYSTEMS**

Item	Description	Unit	QTY	Supply Rate	Install Rate	Amount
<b>5.1</b>	<b>FRESH AIR SUPPLY SYSTEMS</b>					
<b>5.1.1</b>	<b>Fresh Air Supply System - FAF-01</b>					
1	Procurement, supply, manufacture, delivery to site, storage and installation of:					
1.1	Fresh Air fan	no	1			
1.2	Speed Controller	no	1			
1.3	Sound Attenuator: AMS-S2	no	2			
1.5	Supply Air Grilles:	no	2			
	SAG 600x300 c/w OBD	no	3			
	SAG 200x200	no	2			
1.6	Weather Louvre: 700 x 700	no	1			
1.7	700 x 700 Washable Filter c/w slide in panel and box	no	1			
1.8	250 x 150 opposed blade damper	no	1			
1.9	200 x 200 opposed blade damper	no	1			
2	Supply and installation of all ductwork complete with transformation pieces, flexible connections, duct hangers, supports, anti-vibration mountings, etc, as per the concept design drawings					
2.1	Supply and install ducting					
	Supply:					
	Rectangular Duct - 200x200	m	1			
	Rectangular Duct - 250x150	m	4			
	Rectangular Duct - 400x250	m	8			
	Rectangular Duct - 500x300	m	6			
	Rectangular Duct - 600x300	m	6			
	Rectangular Duct - 700x700	m	1			
	Round Duct - ø450	m	1			
2.2	Supply and install transformation pieces:					
	Supply:					
	End Cap - 250x150	sum	2			
	Rectangular 15 Degree Bend - 500x300-400x250	sum	1			
	Rectangular 15 Degree Bend - 600x300-500x300	sum	1			
	Rectangular 30 Degree Bend - 400x250-250x150	sum	1			
	Rectangular Bend - 250x400-250x400	sum	2			
	Rectangular Bend - 600x300-600x300	sum	2			
	Rectangular Duct - Takeoff - 250x150-250x150	sum	1			
	Rectangular to round transition - 600x300-ø450	sum	1			
	Rectangular to round transition - 700x700-ø450	sum	1			
	Round Transition - ø450-ø400	sum	2			
	Round Transition - ø500-ø450	sum	4			
3	Supply and installation of all electrical wiring from isolator to the fan unit and to and from on/off switch at entrance of laboratory.	sum	1			
4	Testing and Commissioning of system and airflow direction	sum	1			
5	All other equipment, not listed, required for a fully working complete system.	sum	1			
<b>5.1.2</b>	<b>Fresh Air Supply System - FAF-02</b>					
1	Procurement, supply, manufacture, delivery to site, storage and installation of:					
1.1	Fresh Air fan	no	1			
1.2	Speed Controller	no	1			
1.3	Sound Attenuator - AMS S2	no	2			
1.5	Supply Air Diffuser	no	2			
	CCD Ø150	no	1			
	CCD Ø200	no	1			
	CCD Ø250	no	1			
1.6	Weather Louvre: 400 x 450	no	1			
1.7	400 x 450 Washable Filter c/w slide in panel and box	no	1			
1.8	Ø150 opposed blade damper	no	1			
1.9	Ø200 opposed blade damper	no	1			
1.10	Ø250 opposed blade damper	no	1			
2	Supply and installation of all ductwork complete with transformation pieces, flexible connections, duct hangers, supports, anti-vibration mountings, etc, as per the concept design drawings					
2.1	Supply and install ducting					
	Supply:					
	Rectangular Duct - 200x300	m	6			
	Rectangular Duct - 250x300	m	4			
	Rectangular Duct - 300x300	m	3			
	Rectangular Duct - 400x450	m	1			
	Round Duct - ø200	m	1			

2.2	Supply and install transformation pieces: Supply:					
	Rectangular to round transition - 200x300-ø200	sum	2			
	Rectangular to round transition - 200x300-ø250	sum	1			
	Rectangular to round transition - 300x300-ø300	sum	2			
	Rectangular to round transition - 300x300-ø315	sum	4			
	Rectangular transition - 250x300-200x300	sum	1			
	Rectangular transition - 300x300-250x300	sum	1			
	Rectangular transition - 400x450-300x300	sum	1			
	Round Bend - ø200-ø200	sum	2			
	Round Duct - Takeoff - ø200-ø200	sum	2			
	Round Transition - ø250-ø200	sum	1			
3	Supply and installation of all electrical wiring from isolator to the fan unit and to and from on/off switch at entrance of laboratory.	sum	1			
4	Testing and Commissioning of system and airflow direction	sum	1			
5	All other equipment, not listed, required for a fully working complete system.	sum	1			
<b>Total for Schedule 5 carried forward to summary page</b>						

**SCHEDULE No. 6 : AIR EXTRACT SYSTEMS**

Item	Description	Unit	QTY	Supply Rate	Install Rate	Amount
<b>6.1</b>	<b>AIR EXHAUST SYSTEMS</b>					
<b>6.1.1</b>	<b>DSP Extract System - EAF-01</b>					
1	Procurement, supply, manufacture, delivery to site, storage and installation of:					
1.1	Exhaust Air fan	no	1			
1.2	Variable Speed Drive	no	1			
1.3	Sound Attenuator: AMS 2S	no	2			
1.4	Exhaust Air Grille: 400x300	no	3			
1.5	Stainless Steel Exhaust Canopy - 750 x 2450	no	3			
1.6	Cowl - ø630	no	1			
1.7	200x350 Opposed blade damper	no	3			
1.8	ø315 Opposed blade damper	no	3			
2	Supply and installation of all un-insulated ductwork complete with transformation pieces, flexible connections, duct hangers, supports, anti-vibration mountings, fire dampers, etc, as per the concept design drawings	sum	1			
2.1	Exhaust and install ducting					
	Exhaust:					
	Rectangular Duct - 200x350	m	13			
	Rectangular Duct - 300x400	m	3			
	Rectangular Duct - 300x500	m	2			
	Rectangular Duct - 450x300	m	1			
	Round Duct - ø315	m	4			
	Round Duct - ø450	m	3			
	Round Duct - ø500	m	3			
	Round Duct - ø630	m	12			
2.2	Supply and install transformation pieces: Exhaust:					
	End Cap - 200x350	sum	3			
	End Cap - ø630	sum	1			
	Rectangular 30 Degree Bend - 300x400-200x350	sum	1			
	Rectangular Bend - 350x200-350x200	sum	4			
	Rectangular Duct - Takeoff - 200x350-200x350	sum	2			
	Rectangular Duct - Takeoff - 300x500-300x500	sum	1			
	Rectangular Duct - Takeoff - 450x300-450x300	sum	3			
	Rectangular transition - 300x500-300x400	sum	1			
	Round Bend - ø315-ø315	sum	1			
	Round Bend - ø630-ø630	sum	2			
	Round Duct - Takeoff - ø315-ø315	sum	2			
	Round Duct - Takeoff - ø500-ø500	sum	1			
	Round Transition - ø450-ø315	sum	1			
	Round Transition - ø500-ø450	sum	1			
	Round Transition - ø710-ø630	sum	2			
3	Supply and installation of all electrical wiring from isolator to the fan unit and on/off switch at entrance of laboratory.	sum	1			
4	Testing and Commissioning	sum	1			
5	All other equipment, not listed, required for a fully working complete system.	sum	1			

<b>6.1.2</b>	<b>Reactor Bay Air Extract System - EAF-02</b>				
1	Procurement, supply, manufacture, delivery to site, storage and installation of:				
1.1	Exhaust Air fan	no	1		
1.2	Variable Speed Drive	no	1		
1.3	Sound Attenuator: AMS 2S	no	2		
1.4	Exhaust Air Grille: 250x200	no	8		
1.5	Cowl - ø355	no	1		
2	Supply and installation of all un-insulated ductwork complete with transformation pieces, flexible connections, duct hangers, supports, anti-vibration mountings, fire dampers, etc, as per the concept design drawings				
		sum	1		
2.1	Exhaust and install ducting				
	Exhaust:				
	Rectangular Duct - 250x200	m	2		
	Round Duct - ø160	m	7		
	Round Duct - ø200	m	4		
	Round Duct - ø300	m	3		
	Round Duct - ø355	m	4		
2.2	Supply and install transformation pieces:				
	Exhaust:				
	Rectangular to round transition - 250x200-ø160	sum	8		
	Round Bend - ø160-ø160	sum	8		
	Round Duct - Takeoff - ø200-ø200	sum	4		
	Round Duct - Takeoff - ø355-ø355	sum	1		
	Round Tee - ø300-ø300-ø300	sum	2		
	Round Transition - ø200-ø160	sum	8		
	Round Transition - ø300-ø200	sum	4		
	Round Transition - ø355-ø300	sum	2		
	Round Transition - ø400-ø355	sum	5		
3	Supply and installation of all electrical wiring from isolator to the fan unit and on/off switch at entrance of laboratory.	sum	1		
4	Testing and Commissioning	sum	1		
5	All other equipment, not listed, required for a fully working complete system.	sum	1		
<b>6.1.3</b>	<b>Scale-up/pre-pilot Air Extract System - EAF-03</b>				
1	Procurement, supply, manufacture, delivery to site, storage and installation of:				
1.1	Exhaust Air fan	no	1		
1.2	Variable Speed Drive	no	1		
1.3	Sound Attenuator	no	2		
1.4	Exhaust Air Grille: 600x300	no	2		
1.5	ø315 Opposed blade damper	no	2		
1.6	Cowl - ø400	no	1		
2	Supply and installation of all un-insulated ductwork complete with transformation pieces, flexible connections, duct hangers, supports, anti-vibration mountings, fire dampers, etc, as per the concept design drawings				
		sum	1		
2.1	Exhaust and install ducting				
	Exhaust:				
	Rectangular Duct - 600x300	m	1		
	Round Duct - ø315	m	1		
	Round Duct - ø400	m	5		
2.2	Supply and install transformation pieces:				
	Exhaust:				
	Rectangular to round transition - 600x300-ø315	sum	2		
	Round Bend - ø315-ø315	sum	2		
	Round Duct - Takeoff - ø400-ø400	sum	1		
	Round Transition - ø400-ø315	sum	2		
3	Supply and installation of all electrical wiring from isolator to the fan unit and on/off switch at entrance of laboratory.	sum	1		
4	Testing and Commissioning	sum	1		
5	All other equipment, not listed, required for a fully working complete system.	sum	1		

<b>6.1.4</b>	<b>Waste Air Extract System - EAF-04</b>					
1	Procurement, supply, manufacture, delivery to site, storage and installation of:					
1.1	Exhaust Air fan	no	1			
1.2	Variable Speed Drive	no	1			
1.3	Sound Attenuator	no	2			
1.4	Exhaust Air Grille: 250x200	no	2			
1.5	OBD	no	2			
1.6	Cowl - ø200	no	1			
2	Supply and installation of all un-insulated ductwork complete with transformation pieces, flexible connections, duct hangers, supports, anti-vibration mountings, fire dampers, etc, as per the concept design drawings	sum	1			
2.1	Exhaust and install ducting					
	Exhaust:					
	Rectangular Duct - 200x150	m	2			
	Rectangular Duct - 250x200	m	1			
	Round Duct - ø150	m	1			
2.2	Supply and install transformation pieces:					
	Exhaust:					
	Round Transition - ø400-ø355	sum	1			
	Rectangular Bend - 150x200-150x200	sum	3			
	Rectangular Bend - 200x150-200x150	sum	1			
	Rectangular to round transition - 200x150-ø150	sum	2			
	Rectangular to round transition - ø200-200x150	sum	1			
	Rectangular transition - 250x200-150x200	sum	1			
3	Supply and installation of all electrical wiring from isolator to the fan unit and on/off switch at entrance of laboratory.	sum	1			
4	Testing and Commissioning	sum	1			
5	All other equipment, not listed, required for a fully working complete system.	sum	1			
<b>6.1.5</b>	<b>Wash-Up Wall Mounted Extract Air Fan - WEAFF-01</b>					
1	Procurement, supply, manufacture, delivery to site, storage and installation of:					
1.1	Exhaust Air fan	no	1			
<b>6.1.5</b>	<b>Analytical Lab Wall Mounted Extract Air Fan - WEAFF-02</b>					
1	Procurement, supply, manufacture, delivery to site, storage and installation of:					
1.1	Exhaust Air fan	no	1			
<b>Total for Schedule 6 carried forward to summary page</b>						

**SCHEDULE No. 7 : GENERAL ITEMS**

Item	Description	Unit	QTY	Supply Rate	Install Rate	Amount
7.1	12 month maintenance of all HVAC systems	sum				
7.2	Training of staff	sum				
7.3	Electrical Cost	sum				
7.4	Control ACDB and associated wiring	sum				
7.5	Cold Room refrigeration	sum				
7.6	AHU control system	sum				
<b>Total for Schedule 6 carried forward to summary page</b>						

**SUMMARY OF BILLS OF QUANTITIES**

Item	Description	Sub-Total
	TOTAL FOR SCHEDULE NO. 1	
	TOTAL FOR SCHEDULE NO. 2	
	TOTAL FOR SCHEDULE NO. 3	
	TOTAL FOR SCHEDULE NO. 4	
	TOTAL FOR SCHEDULE NO. 5	
	TOTAL FOR SCHEDULE NO. 6	
	TOTAL FOR SCHEDULE NO. 7	
	<b>TOTAL FOR BILLS OF QUANTITIES (excl. VAT)</b>	

**TENDER SUMMARY**

Item	Description	Unit	Rate			Sub-Total
	<b>AIR CONDITIONING AND VENTILATION INSTALLATION</b>					
A	Price Breakdown Schedules No. 1 TO 7					
	<b>Subtotal</b>					
	<b>Provisional Amounts for :</b>					
B						
C						
D						
E						
	<b>Subtotal for B+C+D+E</b>					
	<b>TOTAL NET CONTRACT SUM (excl vat)</b>					

- 1 Above Total Net contract sum to be carried forward to Principal Contract Form of Tender contained in this document.
- 2 All the rates in this document must be supplied.
- 3 Above amounts to exclude VAT.

**C4021 - CSIR 3457 PHARMA - HVAC - PRICE BREAKDOWN SCHEDULE - BP**  
**SCHEDULE NO.1 : PRELIMINARY AND GENERAL COSTS**

(Note : These prices shall be firm and not subject to price adjustment)

Item	Description	Unit	QTY	Supply Rate	Install Rate	Amount
<b>1.1</b>	<b><u>SITE ESTABLISHMENT</u></b>					
1	Camp and fencing	sum	1			
2	Office	sum	1			
3	Office Equipment	sum	1			
4	Store	sum	1			
5	Workshop	sum	1			
6	Other	sum	1			
<b>1.2</b>	<b><u>ADMINISTRATIVE</u></b>					
1	Site personnel	sum	1			
2	Supervisory staff	sum	1			
3	Guards	sum	1			
4	Transport	sum	1			
5	Insurance	sum	1			
6	Cost of Guarantee	sum	1			
7	Financing of Retention	sum	1			
8	Running costs e.g. telephone, electricity,					
9	cleaning, services, printing, stationery, etc.	sum	1			
<b>1.3</b>	<b><u>GENERAL COSTS</u></b>					
1	Allow an amount if required for expenses incurred to tender.	sum	1			
2	Loading and off loading of material and equipment	sum	1			
3	Setting out of Works.	sum	1			
4	Cleaning of site upon completion of Contract.	sum	1			
5	Critical Path/Schedule.	sum	1			
6	Issuing Cadded Workshop drawings	sum	1			
7	Issuing 3 sets of "As-built" drawings and operational manuals including CD	sum	1			
8	Test and commissioning of complete Works.	sum	1			
9	Inspection and handing over.	sum	1			
10	QC/QA	sum	1			
11	Other items not specifically mentioned	sum	1			
<b>1.4</b>	<b><u>COMPLIANCE</u></b>					
1	Allow for complying with the conditions & requirements of tendering & contract conditions	sum	1			
<b>Total for Schedule No. 1 Carried forward to summary page</b>						

**SCHEDULE NO.2 : AIR HANDLING UNITS**

(Note : These prices shall be firm and not subject to price adjustment)

Item	Description	Unit	QTY	Supply Rate	Install Rate	Amount
<b>2.1</b>	<b>New Air Handling Units</b>					
<b>2.1.1</b>	<b>AHU-01</b>					
1	New Air Options, or equal alternative, air handling unit, as per specifications and schedules	no	1			
2	Supply HEPA Filters: 4 x 600 x 600	no	1			
3	Supply terminal HEPA Grilles: 600x600	no	8			
5	Low Level Stainless Steel Exhasut Air Grilles: 500x200	no	6			
6	Supply and installation of new insulated galvanised steel sheet metal ducting, with thickness as per SANS1238, and fittings complete with all hangers and supports as per specifications and concept design drawings.					
6.1	Supply and install ducting					
	Supply:					
	Rectangular Duct - 150x250	m	2			
	Rectangular Duct - 200x400	m	1			
	Rectangular Duct - 250x150	m	1			
	Rectangular Duct - 300x200	m	1			
	Rectangular Duct - 300x300	m	3			
	Rectangular Duct - 350x500	m	4			
	Rectangular Duct - 400x150	m	2			
	Rectangular Duct - 400x200	m	1			
	Rectangular Duct - 450x250	m	1			
	Rectangular Duct - 500x500	m	2			
	Rectangular Duct - 550x550	m	6			
	Rectangular Duct - 600x550	m	9			
	Rectangular Duct - 900x1050	m	1			
	Round Duct - ø200	m	2			
	Round Duct - ø250	m	16			
	Return:					
	Rectangular Duct - 200x150	m	7			
	Rectangular Duct - 200x250	m	1			
	Rectangular Duct - 200x500	m	1			
	Rectangular Duct - 250x200	m	32			
	Rectangular Duct - 250x250	m	1			
	Rectangular Duct - 250x300	m	2			
	Rectangular Duct - 300x250	m	2			
	Rectangular Duct - 350x150	m	9			
	Rectangular Duct - 350x300	m	5			
	Rectangular Duct - 400x250	m	1			
	Rectangular Duct - 450x400	m	2			
	Rectangular Duct - 450x550	m	1			
	Rectangular Duct - 500x450	m	6			
	Rectangular Duct - 550x450	m	12			
	Rectangular Duct - 900x1050	m	1			
	Round Duct - ø200	m	3			
	Round Duct - ø250	m	1			

6.2	Supply and install transformation pieces:				
	Supply:				
	End Cap - 300x200	sum			
	End Cap - 450x250	sum			
	Rectangular 15 Degree Bend - 600x550-550x550	sum			
	Rectangular 30 Degree Bend - 550x550-300x300	sum			
	Rectangular 30 Degree Bend - 900x1050-600x550	sum			
	Rectangular Bend - 150x250-150x250	sum			
	Rectangular Bend - 150x400-150x400	sum			
	Rectangular Bend - 400x200-400x200	sum			
	Rectangular Bend - 550x600-550x600	sum			
	Rectangular Bend - 600x550-600x550	sum			
	Rectangular Duct - Takeoff - 150x250-150x250	sum			
	Rectangular Duct - Takeoff - 150x400-150x400	sum			
	Rectangular Duct - Takeoff - 500x500-500x500	sum			
	Rectangular Duct Wye - 300x300-250x300-250x300	sum			
	Rectangular Duct Wye - 350x500-350x500-350x500	sum			
	Rectangular Duct Wye - 500x500-350x500-350x500	sum			
	Rectangular to round transition - 250x300-ø250	sum			
	Rectangular to round transition - 400x400-ø200	sum			
	Rectangular to round transition - 400x400-ø250	sum			
	Rectangular to round transition - 600x600-ø250	sum			
	Rectangular transition - 300x300-200x400	sum			
	Rectangular transition - 350x500-300x300	sum			
	Rectangular transition - 400x200-400x150	sum			
	Rectangular transition - 595x595-600x550	sum			
	Round Bend - ø200-ø200	sum			
	Round Bend - ø250-ø250	sum			
	Round Duct - Takeoff - ø200-ø200	sum			
	Round Duct - Takeoff - ø250-ø250	sum			
	Return:				
	End Cap - 250x200	sum	6		
	End Cap - 250x250	sum	1		
	End Cap - 250x300	sum	1		
	End Cap - 400x250	sum	1		
	Rectangular 15 Degree Bend - 200x250-250x200	sum	1		
	Rectangular 15 Degree Bend - 350x300-300x250	sum	2		
	Rectangular 15 Degree Bend - 500x450-250x300	sum	1		
	Rectangular 30 Degree Bend - 400x305-350x300	sum	2		
	Rectangular 30 Degree Bend - 550x450-500x450	sum	1		
	Rectangular Bend - 150x200-150x200	sum	2		
	Rectangular Bend - 150x350-150x350	sum	2		
	Rectangular Bend - 200x150-200x150	sum	1		
	Rectangular Bend - 200x250-200x250	sum	4		
	Rectangular Bend - 250x200-250x200	sum	8		
	Rectangular Bend - 350x150-350x150	sum	1		
	Rectangular Bend - 400x450-400x450	sum	1		
	Rectangular Bend - 450x550-450x550	sum	5		
	Rectangular Bend - 550x450-550x450	sum	3		
	Rectangular Duct - Takeoff - 150x200-150x200	sum	1		
	Rectangular Duct - Takeoff - 150x350-150x350	sum	1		
	Rectangular Duct - Takeoff - 200x150-200x150	sum	1		
	Rectangular Duct - Takeoff - 250x200-250x200	sum	2		
	Rectangular Duct - Takeoff - 350x150-350x150	sum	1		
	Rectangular Duct - Takeoff - 450x400-450x400	sum	1		
	Rectangular Duct - Takeoff - 500x200-500x200	sum	6		
	Rectangular Duct Wye - 300x250-250x250-250x250	sum	2		
	Rectangular Duct Wye - 450x400-305x400-305x400	sum	1		
	Rectangular to round transition - 300x300-ø200	sum	1		
	Rectangular to round transition - 300x300-ø250	sum	1		
	Rectangular transition - 250x200-200x250	sum	1		
	Rectangular transition - 250x250-250x200	sum	4		
	Rectangular transition - 700x450-450x550	sum	1		
	Rectangular transition - 900x1050-550x450	sum	2		
	Round Bend - ø200-ø200	sum	1		
	Round Duct - Takeoff - ø200-ø200	sum	1		
	Round Duct - Takeoff - ø250-ø250	sum	1		

6.3	Supply and install duct accessories:					
	Supply:					
	OBD 150x250	sum	1			
	OBD 400x150	sum	1			
	OBD Ø200 mm	sum	1			
	OBD Ø250 mm	sum	9			
	Attenuator	sum	1			
	Exhaust:					
	OBD 200x150	sum	1			
	OBD 250x200	sum	6			
	OBD 350x150	sum	1			
	OBD Ø200 mm	sum	1			
	OBD Ø250 mm	sum	1			
	Attenuator	sum	1			
7	Testing and Commissioning of System	sum	1			
8	All other equipment, not listed, required for a fully working complete system.	sum	1			
<b>Total for Schedule No. 2 Carried forward to summary page</b>						

**SCHEDULE No. 3 : SPLIT TYPE AIR CONDITONING UNITS**

Item	Description	Unit	QTY	Supply Rate	Install Rate	Amount
<b>3.1 SPLIT TYPE AIR CONDITIONING SYSTEMS</b>						
<b>3.1.1 Laboratory Area - AC-01</b>						
1	Supply and installation of <b>Samsung AR12TSHGAWK/FA</b> midwall, or equal alternative, indoor and outdoor unit, complete with anti-vibration mountings, wall mounted controller, etc.	sum	1			
2	Supply and install wall mounted controller	sum	1			
3	Supply and installation of all electrical wiring from outdoor unit to the indoor unit, complete with an electrical isolator at each unit for a full working installation, as per the technical specifications.	sum	1			
4	Supply and installation of all required copper refrigerant piping, complete with refrigeration gas, brackets, insulation, connection to indoor and outdoor units, for a complete working system.	sum	1			
5	Supply and installation of the complete condensate drainage system using 25mm PVC piping for the unit, reticulated to the nearest foul water drain via a u-trap	sum	1			
6	Supply and install galvanised trunking, painted to architects' specifications, for external refrigerant piping.	sum	1			
7	Apply anti-corrosion treatment to air-conditioning equipment	sum	1			
8	Testing and Commissioning of System	sum	1			
9	All other equipment, not listed, required for a fully working complete system.	sum	1			
<b>3.1.2 Biomass Production and Processing Area - AC-02/03</b>						
1	Supply and installation of <b>Samsung AC090JN4DEH</b> cassette, or equal alternative, indoor and outdoor unit, complete with anti-vibration mountings, wall mounted controller, etc.	sum	2			
2	Supply and install wall mounted controller	sum	2			
3	Supply and installation of all electrical wiring from outdoor unit to the indoor unit, complete with an electrical isolator at each unit for a full working installation, as per the technical specifications.	sum	2			
4	Supply and installation of all required copper refrigerant piping, complete with refrigeration gas, brackets, insulation, connection to indoor and outdoor units, for a complete working system.	sum	2			
5	Supply and installation of the complete condensate drainage system using 25mm PVC piping for the unit, reticulated to the nearest foul water drain via a u-trap	sum	2			
6	Supply and install galvanised trunking, painted to architects' specifications, for external refrigerant piping.	sum	2			
7	Apply anti-corrosion treatment to air-conditioning equipment	sum	2			
8	Testing and Commissioning of System	sum	2			
9	All other equipment, not listed, required for a fully working complete system.	sum	2			

3.1.3 Open Plan Office - AC-04					
1	Supply and installation of <b>Samsung AC052JN4DEH</b> cassette, or equal alternative, indoor and outdoor unit, complete with insulated plenum box, safeties, supports, drip trays, anti-vibration mountings, wall fixed unit controller, etc.	No	1		
2	Supply and install wall mounted controller	No	1		
3	Supply and installation of all electrical wiring from outdoor unit to the indoor unit, complete with an electrical isolator at each unit for a full working installation, as per the technical specifications.	No	1		
4	Supply and installation of all required copper refrigerant piping, complete with refrigeration gas, brackets, insulation, connection to indoor and outdoor units, for a complete working system.	No	1		
5	Supply and installation of the complete condensate drainage system using 25mm PVC piping for the unit, reticulated to the nearest foul water drain via a u-trap	No	1		
6	Supply and install galvanised trunking, painted to architects' specifications, for external refrigerant piping.	No	1		
7	Apply anti-corrosion treatment to air-conditioning equipment	No	1		
8	Testing and Commissioning of System	No	1		
9	All other equipment, not listed, required for a fully working complete system.	No	1		
3.1.4 Laboratory Area - AC-05					
1	Supply and installation of <b>Samsung AR12TSHGAWK/FA</b> midwall, or equal alternative, indoor and outdoor unit, complete with anti-vibration mountings, wall mounted controller, etc.	sum	1		
2	Supply and install wall mounted controller	sum	1		
3	Supply and installation of all electrical wiring from outdoor unit to the indoor unit, complete with an electrical isolator at each unit for a full working installation, as per the technical specifications.	sum	1		
4	Supply and installation of all required copper refrigerant piping, complete with refrigeration gas, brackets, insulation, connection to indoor and outdoor units, for a complete working system.	sum	1		
5	Supply and installation of the complete condensate drainage system using 25mm PVC piping for the unit, reticulated to the nearest foul water drain via a u-trap	sum	1		
6	Supply and install galvanised trunking, painted to architects' specifications, for external refrigerant piping.	sum	1		
7	Apply anti-corrosion treatment to air-conditioning equipment	sum	1		
8	Testing and Commissioning of System	sum	1		
9	All other equipment, not listed, required for a fully working complete system.	sum	1		
3.1.5 Laboratory Area - AC-06					
1	Supply and installation of <b>Samsung AR12TSHGAWK</b> midwall, or equal alternative, indoor and outdoor unit, complete with anti-vibration mountings, wall mounted controller, etc.	sum	1		
2	Supply and install wall mounted controller	sum	1		
3	Supply and installation of all electrical wiring from outdoor unit to the indoor unit, complete with an electrical isolator at each unit for a full working installation, as per the technical specifications.	sum	1		
4	Supply and installation of all required copper refrigerant piping, complete with refrigeration gas, brackets, insulation, connection to indoor and outdoor units, for a complete working system.	sum	1		
5	Supply and installation of the complete condensate drainage system using 25mm PVC piping for the unit, reticulated to the nearest foul water drain via a u-trap	sum	1		
6	Supply and install galvanised trunking, painted to architects' specifications, for external refrigerant piping.	sum	1		
7	Apply anti-corrosion treatment to air-conditioning equipment	sum	1		
8	Testing and Commissioning of System	sum	1		
9	All other equipment, not listed, required for a fully working complete system.	sum	1		

3.1.6 Break-away Space Unit - AC-07					
1	Supply and installation of <b>Samsung AC035JNMDEH</b> ducted hide-away, or equal alternative, indoor and outdoor unit, complete with insulated plenum box, safeties, supports, drip trays, anti-vibration mountings, wall fixed unit controller, etc.	sum	1		
2	Supply and install wall mounted controller	sum	1		
3	Supply and installation of all electrical wiring from outdoor unit to the indoor unit, complete with an electrical isolator at indoor unit for a full working installation, as per the technical specifications.	sum	1		
4	Supply and installation of all required copper refrigerant piping, complete with brackets, insulation, connection to indoor and outdoor units, for a complete working system.	sum	1		
5	Supply and installation of new insulated galvanised steel sheet metal ducting, with thickness as per SANS1238, and fittings complete with all hangers and supports as per specifications and concept design drawings.				
5.1	Supply and install ducting				
	Supply:				
	Rectangular Duct - 300x250	m	2		
	Round Duct - ø200	m	2		
	Return:				
	Rectangular Duct - 600x600	m	1		
	Rectangular Duct - 700x250	m	1		
5.2	Supply and install transformation pieces:				
	Supply:				
	End Cap - 300x250	sum	1		
	Rectangular 30 Degree Bend - 700x170-300x250	sum	1		
	Rectangular Bend - 300x250-300x250	sum	1		
	Round Duct - Takeoff - ø200-ø200	sum	2		
	Return:				
	End Cap - 700x250	sum	1		
	Rectangular transition - 700x250-700x235	sum	1		
	Round Duct - Takeoff - ø150-ø150	sum	1		
6	Supply and installation of all required diffusers and grills complete with, required spigots and insulated flexible connections as per the drawings.				
6.1	CCD Ø250	no	2		
6.2	RA 600x600	no	1		
7	Supply and installation of the complete condensate drainage system using 25mm PVC piping for the unit, reticulated to the nearest foul water drain via a u-trap.	sum	1		
8	Apply anti-corrosion treatment to air-conditioning equipment	sum	1		
9	Testing and Commissioning of System	sum	1		
10	All other equipment, not listed, required for a fully working complete system.	sum	1		
3.1.7 Break-away Space Unit - AC-08					
1	Supply and installation of <b>Samsung AC071JNMDEH</b> ducted hide-away, or equal alternative, indoor and outdoor unit, complete with insulated plenum box, safeties, supports, drip trays, anti-vibration mountings, wall fixed unit controller, etc.	sum	1		
2	Supply and install wall mounted controller	sum	1		
3	Supply and installation of all electrical wiring from outdoor unit to the indoor unit, complete with an electrical isolator at indoor unit for a full working installation, as per the technical specifications.	sum	1		
4	Supply and installation of all required copper refrigerant piping, complete with brackets, insulation, connection to indoor and outdoor units, for a complete working system.	sum	1		

5	Supply and installation of new insulated galvanised steel sheet metal ducting, with thickness as per SANS1238, and fittings complete with all hangers and supports as per specifications and concept design drawings.					
5.1	Supply and install ducting					
	Supply:					
	Rectangular Duct - 300x300	m	3			
	Round Duct - ø250	m	3			
	Return:					
	Rectangular Duct - 400x200	m	1			
	Rectangular Duct - 700x250	m	1			
	Round Duct - ø300	m	2			
5.2	Supply and install transformation pieces:					
	Supply:					
	End Cap - 300x300	sum	1			
	Rectangular 30 Degree Bend - 700x170-300x300	sum	1			
	Round Duct - Takeoff - ø250-ø250	sum	2			
	Round Transition - ø250-ø200	sum	2			
	Return:					
	End Cap - 700x250	sum	1			
	Rectangular 30 Degree Bend - 700x250-700x235	sum	1			
	Rectangular Duct - Takeoff - 400x200-400x200	sum	1			
	Rectangular to round transition - 350x600-ø300	sum	1			
	Rectangular to round transition - 400x200-ø300	sum	1			
	Round Bend - ø300-ø300	sum	1			
	Round Duct - Takeoff - ø200-ø200	sum	1			
6	Supply and installation of all required diffusers and grills complete with, required spigots and insulated flexible connections as per the drawings.					
6.1	CCD Ø250	no	2			
6.2	RA 600x350	no	1			
7	Supply and installation of the complete condensate drainage system using 25mm PVC piping for the unit, reticulated to the nearest foul water drain via a u-trap.	sum	1			
8	Apply anti-corrosion treatment to air-conditioning equipment	sum	1			
9	Testing and Commissioning of System	sum	1			
10	All other equipment, not listed, required for a fully working complete system.	sum	1			
<b>Total for Schedule 3 carried forward to summary page</b>						R -

**SCHEDULE No. 4 : FRESH AIR SUPPLY SYSTEMS**

Item	Description	Unit	QTY	Supply Rate	Install Rate	Amount
<b>4.1</b>	<b>FRESH AIR SUPPLY SYSTEMS</b>					
<b>4.1.1</b>	<b>Fresh Air Supply System - FAF-01</b>					
1	Procurement, supply, manufacture, delivery to site, storage and installation of:					
1.1	Fresh Air fan	no	1			
1.2	Speed Controller	no	1			
1.3	Sound Attenuator: AMS S2	no	2			
1.5	Supply Air Diffuser					
	SAG 200x200	no	2			
	SAG 250x250	no	1			
	SAG 300x300	no	1			
	CCD 300	no	2			
1.6	Weather Louvre	no	1			
1.7	Washable Filter c/w slide in panel and box	no	1			
1.8	ø150 Opposed blade damper	no	2			
1.9	ø200 Opposed blade damper	no	1			
1.10	ø250 Opposed blade damper	no	1			
1.11	ø300 Opposed blade damper	no	2			

2	Supply and installation of all ductwork complete with transformation pieces, flexible connections, duct hangers, supports, anti-vibration mountings, etc, as per the concept design drawings					
2.1	Supply and install ducting					
	Supply:					
	Rectangular Duct - 300x300	m	1			
	Rectangular Duct - 350x350	m	3			
	Rectangular Duct - 400x350	m	2			
	Rectangular Duct - 400x400	m	8			
	Rectangular Duct - 450x200	m	5			
	Rectangular Duct - 550x600	m	1			
	Round Duct - $\phi$ 150	m	3			
	Round Duct - $\phi$ 200	m	9			
	Round Duct - $\phi$ 250	m	2			
	Round Duct - $\phi$ 300	m	2			
	Round Duct - $\phi$ 355	m	1			
2.2	Supply and install transformation pieces:					
	Supply:					
	End Cap - 300x300	sum	1			
	Rectangular Bend - 200x450-200x450	sum	3			
	Rectangular Bend - 350x350-350x350	sum	2			
	Rectangular Bend - 400x400-400x400	sum	3			
	Rectangular Bend - 450x200-450x200	sum	2			
	Rectangular to round transition - 200x200- $\phi$ 150	sum	2			
	Rectangular to round transition - 250x250- $\phi$ 200	sum	1			
	Rectangular to round transition - 300x300- $\phi$ 250	sum	1			
	Rectangular to round transition - 400x400- $\phi$ 400	sum	2			
	Rectangular transition - 350x350-450x200	sum	1			
	Rectangular transition - 400x350-350x350	sum	1			
	Rectangular transition - 400x400-400x350	sum	1			
	Rectangular transition - 450x200-300x300	sum	1			
	Rectangular transition - 550x600-400x400	sum	1			
	Round Bend - $\phi$ 150- $\phi$ 150	sum	2			
	Round Bend - $\phi$ 200- $\phi$ 200	sum	3			
	Round Bend - $\phi$ 250- $\phi$ 250	sum	1			
	Round Duct - Takeoff - $\phi$ 150- $\phi$ 150	sum	2			
	Round Duct - Takeoff - $\phi$ 200- $\phi$ 200	sum	1			
	Round Duct - Takeoff - $\phi$ 250- $\phi$ 250	sum	1			
	Round Duct - Takeoff - $\phi$ 300- $\phi$ 300	sum	2			
	Round Transition - $\phi$ 300- $\phi$ 200	sum	2			
	Round Transition - $\phi$ 400- $\phi$ 355	sum	4			
3	Supply and installation of all electrical wiring from isolator to the fan unit and to and from on/off switch at entrance of laboratory.	sum	1			
4	Testing and Commissioning of system and airflow direction	sum	1			
5	All other equipment, not listed, required for a fully working complete system.	sum	1			
<b>4.1.2</b>	<b>Fresh Air Supply System - FAF-02</b>					
1	Procurement, supply, manufacture, delivery to site, storage and installation of:					
1.1	Fresh Air fan	no	1			
1.2	Speed Controller	no	1			
1.3	Sound Attenuator: AMS S2	no	1			
1.5	Supply Air Diffuser					
	SAG 200x200	no	2			
1.6	Weather Louvre	no	1			
1.7	Washable Filter c/w slide in panel and box	no	1			
1.8	OBD					
	$\phi$ 150- $\phi$ 150	no	4			
	$\phi$ 200- $\phi$ 200	no	1			

2	Supply and installation of all ductwork complete with transformation pieces, flexible connections, duct hangers, supports, anti-vibration mountings, etc, as per the concept design drawings					
2.1	Supply and install ducting					
	Supply:					
	Rectangular Duct - 250x250	m	7			
	Rectangular Duct - 300x250	m	12			
	Rectangular Duct - 400x300	m	1			
	Round Duct - ø150	m	4			
	Round Duct - ø200	m	2			
	Round Duct - ø355	m	1			
2.2	Supply and install transformation pieces:					
	Supply:					
	Rectangular 30 Degree Bend - 300x250-250x250	sum	1			
	Rectangular Bend - 300x250-300x250	sum	1			
	Rectangular to round transition - 200x200-ø150	sum	2			
	Rectangular to round transition - 250x250-ø200	sum	1			
	Rectangular to round transition - ø355-300x250	sum	2			
	Rectangular transition - 400x300-300x250	sum	1			
	Round Bend - ø150-ø150	sum	2			
	Round Duct - Takeoff - ø150-ø150	sum	4			
	Round Transition - ø355-ø350	sum	2			
3	Supply and installation of all electrical wiring from isolator to the fan unit and to and from on/off switch at entrance of laboratory.	sum	1			
4	Testing and Commissioning of system and airflow direction	sum	1			
5	All other equipment, not listed, required for a fully working complete system.	sum	1			
<b>Total for Schedule 4 carried forward to summary page</b>						R -

**SCHEDULE No. 5 : AIR EXTRACT SYSTEMS**

Item	Description	Unit	QTY	Supply Rate	Install Rate	Amount
<b>5.1</b>	<b>AIR EXHAUST SYSTEMS</b>					
<b>5.1.1</b>	<b>Lab Air Extract System - EAF-05</b>					
1	Procurement, supply, manufacture, delivery to site, storage and installation of:					
1.1	Exhaust Air fan	no	1			
1.2	Variable Speed Drive	no	1			
1.3	Sound Attenuator: AMS S2	no	2			
1.4	Exhaust Air Grille:					
	SAG 200x200	no	1			
	SAG 250x250	no	1			
	SAG 300x300	no	1			
	SAG 600x400	no	1			
1.5	Weather Louvre	no	1			

2	Supply and installation of all un-insulated ductwork complete with transformation pieces, flexible connections, duct hangers, supports, anti-vibration mountings, fire dampers, etc, as per the concept design drawings					
2.1	Exhaust and install ducting					
	Exhaust:					
	Rectangular Duct - 300x350	m	2			
	Rectangular Duct - 350x350	m	1			
	Rectangular Duct - 400x350	m	3			
	Round Duct - $\phi$ 150	m	7			
	Round Duct - $\phi$ 200	m	11			
	Round Duct - $\phi$ 250	m	5			
	Round Duct - $\phi$ 315	m	5			
	Round Duct - $\phi$ 355	m	1			
	Round Duct - $\phi$ 600	m	1			
2.2	Supply and install transformation pieces:					
	Exhaust:					
	End Cap - 300x350	sum	1			
	Rectangular 15 Degree Bend - 350x350-300x350	sum	1			
	Rectangular 15 Degree Bend - 400x350-350x350	sum	1			
	Rectangular Bend - 400x350-400x350	sum	1			
	Rectangular to round transition - 200x200- $\phi$ 150	sum	1			
	Rectangular to round transition - 250x250- $\phi$ 200	sum	1			
	Rectangular to round transition - 300x300- $\phi$ 250	sum	1			
	Rectangular to round transition - 400x350- $\phi$ 400	sum	1			
	Rectangular to round transition - 400x600- $\phi$ 315	sum	1			
	Rectangular to round transition - 600x500- $\phi$ 600	sum	1			
	Round Bend - $\phi$ 150- $\phi$ 150	sum	3			
	Round Bend - $\phi$ 200- $\phi$ 200	sum	4			
	Round Bend - $\phi$ 250- $\phi$ 250	sum	1			
	Round Bend - $\phi$ 315- $\phi$ 315	sum	1			
	Round Duct - Takeoff - $\phi$ 150- $\phi$ 150	sum	1			
	Round Duct - Takeoff - $\phi$ 200- $\phi$ 200	sum	1			
	Round Duct - Takeoff - $\phi$ 250- $\phi$ 250	sum	1			
	Round Duct - Takeoff - $\phi$ 315- $\phi$ 315	sum	1			
	Round Transition - $\phi$ 400- $\phi$ 355	sum	4			
	Round Transition - $\phi$ 600- $\phi$ 400	sum	1			
3	Supply and installation of all electrical wiring from isolator to the fan unit and on/off switch at entrance of laboratory.	sum	1			
4	Testing and Commissioning	sum	1			
5	All other equipment, not listed, required for a fully working complete system.	sum	1			
<b>5.1.2</b>	<b>Kitchen Air Extract System - KAF-01</b>					
1	Procurement, supply, manufacture, delivery to site, storage and installation of:					
1.1	Exhaust Air fan	no	1			
1.2	Variable Speed Drive	no	1			
1.3	Sound Attenuator: AMS S2	no	2			
1.4	Exhaust Air Grille: SAG 250x250	no	1			
1.5	Weather Louvre	no	1			
2	Supply and installation of all un-insulated ductwork complete with transformation pieces, flexible connections, duct hangers, supports, anti-vibration mountings, fire dampers, etc, as per the concept design drawings					
2.1	Exhaust and install ducting					
	Exhaust:					
	Rectangular Duct - 200x200	m	1			
	Round Duct - $\phi$ 150	m	2			
2.2	Supply and install transformation pieces:					
	Exhaust:					
	Rectangular to round transition - 200x200- $\phi$ 150	sum	1			
	Rectangular to round transition - 250x250- $\phi$ 150	sum	1			
	Round Bend - $\phi$ 150- $\phi$ 150	sum	1			
3	Supply and installation of all electrical wiring from isolator to the fan unit and on/off switch at entrance of laboratory.	sum	1			
4	Testing and Commissioning	sum	1			
5	All other equipment, not listed, required for a fully working complete system.	sum	1			
<b>Total for Schedule 5 carried forward to summary page</b>						R -

**SCHEDULE No. 6 : GENERAL ITEMS**

Item	Description	Unit	QTY	Supply Rate	Install Rate	Amount
6.1	12 month maintenance of all HVAC systems	sum				
6.2	Training of staff	sum				
6.3	Electrical ACDB and associated wiring	sum				
6.4	Control Systems, as per the specifications	sum				
<b>Total for Schedule 6 carried forward to summary page</b>						R -

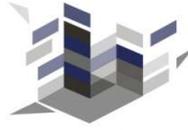
**SUMMARY OF BILLS OF QUANTITIES**

Item	Description	Sub-Total
	TOTAL FOR SCHEDULE NO. 1	
	TOTAL FOR SCHEDULE NO. 2	
	TOTAL FOR SCHEDULE NO. 3	
	TOTAL FOR SCHEDULE NO. 4	
	TOTAL FOR SCHEDULE NO. 5	
	TOTAL FOR SCHEDULE NO. 6	
	<b>TOTAL FOR BILLS OF QUANTITIES (excl. VAT)</b>	

**TENDER SUMMARY**

Item	Description	Unit	Rate	Sub-Total
	<b>AIR CONDITIONING AND VENTILATION INSTALLATION</b>			
A	Price Breakdown Schedules No. 1 TO 6			R -
	<b>Subtotal</b>			R -
	<b>Provisional Amounts for :</b>			
B	Provisional Amount for fire suppression system			
C				
D				
E				
	<b>Subtotal for B+C+D+E</b>			R -
	<b>TOTAL NET CONTRACT SUM (excl vat)</b>			R -

- 1 Above Total Net contract sum to be carried forward to Principal Contract Form of Tender contained in this document.
- 2 All the rates in this document must be supplied.
- 3 Above amounts to exclude VAT.



**HVAC Bills of Quantities**

**Bill  
No**

**Amount**

5.6 HVAC Bills of Quantities

R

Main Contractors percentage for all mark-ups,  
attendance, etc on specialist domestic contractor

R

**Carried Forward To Section 5.10 : Final Summary**

R

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**CSIR Future PHARMA Facility**