

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

SCHEDULE NO.1 : PRELIMINARY AND GENERAL COSTS

tem	Description	Unit	QTY	Supply Rate	Install Rate	Amount
1.1	SITE ESTABLISHMENT Camp and fencing	aum	1			
	Office	sum	1			1
		sum				
	Office Equipment	sum	1			1
	Store	sum	1			
	Workshop	sum				
6	Other	sum	1			
	ADMINISTRATIVE					
1	Site personnel	sum	1			
2	Supervisory staff	sum	1			
3	Guards	sum	1			
	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			
13	GENERAL COSTS	_				
	Allow an amount if required for expenses incurred					
	to tender.	sum	1			
2	Loading and off loading of material and equipment	sum	1			
2	Setting out of Works.	sum	1			
	Cleaning of site upon completion of Contract.	sum	1			
	Critical Path/Schedule.	sum	1			
	Issuing Cadded Workshop drawings	sum	1			
0		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			
	Inspection and handing over.	sum	1			
	QĊ/QA	sum	1			
	Other items not specifically mentioned	sum	1			
1.4	COMPLIANCE					
	Allow for complying with the conditions & requirements of					
1	tendering & contract conditions	-	1			
	tendening & contract conditions	sum	1			



## SCHEDULE NO.2 : EXISTING EVAPORATIVE COOLING UNIT

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

em	Description	Unit	QTY	Supply Rate	Install Rate	Amount
21	Existing Evaporative Cooler System					
2.1						
211	EVAP-01 - Evaporative Cooler System					
			4			
	Replace primary fan CFW 30" BCC-2 DIDW (15 kW / 1120 rpm)	no	1			
	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			
	Supply and installation of new insulated galvanised steel sheet metal ducting,					
Ŭ	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			
	V		4			
	Rectangular Duct - 400x400	m				
	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:					
		aum	1			
	End Cap - 300x350	sum				
	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			
			1			
	Rectangular 15 Degree Bend - 600x500-500x450	sum				
	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			
			1			
	Rectangular transition - 1200x1000-800x800	sum				
	Round Bend - ø300-ø300	sum	2			
	Round Bend - ø315-ø315	sum	2			
	Round Bend - ø355-ø355	sum	3			
	Round Bend - Ø400-Ø400	sum	18			
		-	2			
		sum				
	Round Duct - Takeoff - ø300-ø300					
	Round Duct - Takeoff - ø315-ø315	sum	2			
	Round Duct - Takeoff - ø315-ø315 Round Duct - Takeoff - ø355-ø355	sum sum	3			
	Round Duct - Takeoff - ø315-ø315					



	1			1
	_			
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		
	_		 	
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SCHEDULE NO.3 : FUME HOOD EXHAUST SYSTEMS

em	Description	Unit	QTY	Supply Rate	Install Rate	Amount
3.1	Fume Hood Exhuast Systems					
2 4 4	Synthetics Laboratory Fume Hoods					
	Synthetics Laboratory rune noods Service and repair existing fume hoods, as per specifications					
- 1	2m Airvolutioon Bench Top Fume Hood	no	4			
	Walk in Fume Hood		4			
	Waik III Fullie Hood	no	2			
	Supply and installation of all PVC ductwork complete with transformation					
2	pieces, flexible connections, duct hangers, supports, anti-vibration mountings,					
2	etc, as per the concept design drawings					
2.1	Supply and install PVC ducting:					
2.1	Ø315 mm	m	15			
	Ø450 mm	m	11			
	Ø560 mm	m	24			
	2500 mm		24			
22	Supply and install transformation pieces:					
2.2	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			
		Jum	~			
23	Supply and install duct accessories:					
2.0	Cowl Ø560 mm	sum	2			
	OBD Ø315 mm	sum	4			
	OBD Ø450 mm	sum	2			
3	Supply and install PVC fan	no	2			
	Supply and installation of all electrical wiring, complete with an electrical					
4	isolator for a full working installation, as per the technical specifications.	sum	2			
5	Testing and Commisioning of System	sum	2			
6						
6	All other equipment, not listed, required for a fully working complete system.	sum	1			
3.1.2	Flow Laboratory Fume Hoods					
1	Service and repair existing fume hoods, as per specifications					
	2m Airvolutioon 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			
	Supply and installation of all PVC ductwork complete with transformation					
3	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		
	Supply and installation of all electrical wiring, complete with an electrical				
5	isolator for a full working installation, as per the technical specifications.	sum	3		
	Testing and Commisioning 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		
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## SCHEDULE No. 4 : SPLIT TYPE AIR CONDITONING UNITS

em	Description	Unit	QTY	Supply Rate	Install Rate	Amount
4.1	SPLIT TYPE AIR CONDITIONING SYSTEMS					
	Analvtical Lab Unit - AC-01					
	Supply and installation of Samsung AR12TSHGAWK midwall, or equal					
1	alternative, indoor and outdoor unit, complete with anti-vibration mountings,					
	wall mounted controller, etc.	sum	1			
0	Supply and install wall mounted controller	sum	1			
	Supply and installation of all electrical wiring from outdoor unit to the indoor	sum	1			
3	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			
4.1.2	Scale-up/pre-pilot Unit - AC-02					
	Supply and installation of Samsung AC120JNMDEH ducted hide-away, or					
	equal alternative, indoor and outdoor unit, complete with insulated plenum					
1	box, safeties, supports, drip trays, anti-vibration mountings, wall fixed unit					
	controller. etc.	sum	1			
2	Supply and install wall mounted controller	sum	1			
	Supply and installation of all electrical wiring from outdoor unit to the indoor					
3	unit, complete with an electrical isolator at indoor unit for a full working					
	installation, as per the technical specifications.	sum	1			
	Supply and installation of all required copper refrigerant piping, complete with					
4	brackets, insulation, connection to indoor and outdoor units, for a complete					
	working system.	sum	1			
	Supply and installation of new insulated galvanised steel sheet metal ducting,					
5	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			
		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 ø350-ø350	sum	2			
	Round Transition - ø350-ø200	sum	2			
	Return:		-			
			4			
	End Cap - 1280x235	sum	1			
	Rectangular Duct - Takeoff - 600x700-600x700	sum	1			
	Supply and installation of all required diffusers and grills complete with,					
6						
	required spigots and insulated flexible connections as per the drawings.		_			
6.1		no	2			
6.2	RA 600x700	no	1			
	Supply and installation of the complete condensate drainage system using					
7	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			
	Testing and Commisioning of System	sum	1			
5		Jum				
10						
	All other equipment, not listed, required for a fully working complete system.	sum	1			
412	Flow Lab Unit - AC-03				1	
4.1.3						
	Supply and installation of Samsung AC160JNMDEH ducted hide-away, or					
4	equal alternative, indoor and outdoor unit, complete with insulated plenum					
1	box, safeties, supports, drip trays, anti-vibration mountings, wall fixed unit					
	controller. etc.	sum	1			
~						
2	Supply and install wall mounted controller	sum	1			
	Supply and installation of all electrical wiring from outdoor unit to the indoor					
3	unit, complete with an electrical isolator at indoor unit for a full working					
	installation, as per the technical specifications.		1			
		sum	1			
	Supply and installation of all required copper refrigerant piping, complete with					
4	brackets, insulation, connection to indoor and outdoor units, for a complete					
	working system.	sum	1			
	Supply and installation of new insulated galvanised steel sheet metal ducting,					
5	with thickness as per SANS1238, and fittings complete with all hangers and					
	supports as per specifications and concept design drawings.	sum	1			
51	Supply and install ducting					
5.1	Supply and install ducting					
5.1	Supply:		0.4			
5.1	Supply: Rectangular Duct - 450x400	m	0.4			
5.1	Supply:	m	0.4 1			
5.1	Supply: Rectangular Duct - 450x400 Round Duct - ø350					
5.1	Supply: Rectangular Duct - 450x400 Round Duct - ø350 Return:	m	1			
5.1	Supply: Rectangular Duct - 450x400 Round Duct - ø350 Return: Rectangular Duct - 450x400	m m	1			
5.1	Supply: Rectangular Duct - 450x400 Round Duct - ø350 Return:	m	1			
	Supply: Rectangular Duct - 450x400 Round Duct - ø350 Return: Rectangular Duct - 450x400 Rectangular Duct - 1280x235	m m	1			
	Supply: Rectangular Duct - 450x400 Round Duct - ø350 Return: Rectangular Duct - 450x400 Rectangular Duct - 1280x235	m m	1			
	Supply: Rectangular Duct - 450x400 Round Duct - ø350 Return: Rectangular Duct - 450x400 Rectangular Duct - 1280x235 Supply and install transformation pieces:	m m	1			
	Supply: Rectangular Duct - 450x400 Round Duct - ø350 Return: Rectangular Duct - 450x400 Rectangular Duct - 1280x235 Supply and install transformation pieces: Supply:	m m m	1 2 0.6			
	Supply: Rectangular Duct - 450x400 Round Duct - ø350 Return: Rectangular Duct - 450x400 Rectangular Duct - 1280x235 Supply and install transformation pieces: Supply: Rectangular Duct Wye - 450x400-350x400-350x400	m m	1 2 0.6			
	Supply: Rectangular Duct - 450x400 Round Duct - ø350 Return: Rectangular Duct - 450x400 Rectangular Duct - 1280x235 Supply and install transformation pieces: Supply:	m m m	1 2 0.6			
	Supply:         Rectangular Duct - 450x400         Round Duct - ø350         Return:         Rectangular Duct - 450x400         Rectangular Duct - 1280x235         Supply and install transformation pieces:         Supply:         Rectangular Duct Wye - 450x400-350x400         Rectangular Duct Wye - 450x400-350x400	m m m sum	1 2 0.6 1 2			
	Supply:         Rectangular Duct - 450x400         Round Duct - ø350         Return:         Rectangular Duct - 450x400         Rectangular Duct - 1280x235         Supply and install transformation pieces:         Supply:         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular to round transition - 350x400-350         Rectangular to round transition - 600x600-ø350	m m m sum sum	1 2 0.6 1 2 2			
	Supply:         Rectangular Duct - 450x400         Round Duct - ø350         Return:         Rectangular Duct - 450x400         Rectangular Duct - 1280x235         Supply and install transformation pieces:         Supply:         Rectangular Duct Wye - 450x400-350x400         Rectangular Duct Wye - 450x400-350x400	m m m sum	1 2 0.6 1 2			
	Supply:         Rectangular Duct - 450x400         Round Duct - ø350         Return:         Rectangular Duct - 450x400         Rectangular Duct - 1280x235         Supply and install transformation pieces:         Supply:         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular to round transition - 350x400-350x400         Rectangular to round transition - 600x600-ø350	m m m sum sum	1 2 0.6 1 2 2			
	Supply:         Rectangular Duct - 450x400         Round Duct - ø350         Return:         Rectangular Duct - 450x400         Rectangular Duct - 1280x235         Supply and install transformation pieces:         Supply:         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular to round transition - 350x400-350x400         Rectangular to round transition - 600x600-ø350	m m m sum sum	1 2 0.6 1 2 2			
	Supply:         Rectangular Duct - 450x400         Round Duct - ø350         Return:         Rectangular Duct - 450x400         Rectangular Duct - 1280x235         Supply and install transformation pieces:         Supply:         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular to round transition - 350x400-9350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 1200x170-450x400         Return:	m m sum sum sum	1 2 0.6 1 2 2 1			
	Supply:         Rectangular Duct - 450x400         Round Duct - ø350         Return:         Rectangular Duct - 450x400         Rectangular Duct - 1280x235         Supply and install transformation pieces:         Supply:         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular to round transition - 350x400-ø350         Rectangular to round transition - 600x600-ø350         Rectangular transition - 1200x170-450x400         Return:         Rectangular Bend - 450x400-450x400	m m sum sum sum sum	1 2 0.6 1 2 2 1 2 2			
	Supply:         Rectangular Duct - 450x400         Round Duct - ø350         Return:         Rectangular Duct - 450x400         Rectangular Duct - 1280x235         Supply and install transformation pieces:         Supply:         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular to round transition - 350x400-350         Rectangular to round transition - 600x600-ø350         Rectangular transition - 1200x170-450x400         Return:         Rectangular Bend - 450x400-450x400         Rectangular to round transition - 450x400	m m m sum sum sum sum sum	1 2 0.6 1 2 2 1 2 1			
	Supply:         Rectangular Duct - 450x400         Round Duct - ø350         Return:         Rectangular Duct - 450x400         Rectangular Duct - 1280x235         Supply and install transformation pieces:         Supply:         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular to round transition - 350x400-9350         Rectangular to round transition - 600x600-ø350         Rectangular transition - 1200x170-450x400         Return:         Rectangular Bend - 450x400-450x400         Rectangular to round transition - 450x400         Rectangular to round transition - 450x400	m m sum sum sum sum	1 2 0.6 1 2 2 1 1 2 1 1			
	Supply:         Rectangular Duct - 450x400         Round Duct - ø350         Return:         Rectangular Duct - 450x400         Rectangular Duct - 1280x235         Supply and install transformation pieces:         Supply:         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular to round transition - 350x400-350         Rectangular to round transition - 600x600-ø350         Rectangular transition - 1200x170-450x400         Return:         Rectangular Bend - 450x400-450x400         Rectangular to round transition - 450x400	m m m sum sum sum sum sum	1 2 0.6 1 2 2 1 2 1			
	Supply:         Rectangular Duct - 450x400         Round Duct - ø350         Return:         Rectangular Duct - 450x400         Rectangular Duct - 1280x235         Supply and install transformation pieces:         Supply:         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular to round transition - 350x400-9350         Rectangular to round transition - 600x600-ø350         Rectangular transition - 1200x170-450x400         Return:         Rectangular Bend - 450x400-450x400         Rectangular to round transition - 450x400         Rectangular to round transition - 450x400	m m m sum sum sum sum sum sum	1 2 0.6 1 2 2 1 1 2 1 1			
	Supply:         Rectangular Duct - 450x400         Round Duct - ø350         Return:         Rectangular Duct - 450x400         Rectangular Duct - 1280x235         Supply and install transformation pieces:         Supply:         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular to round transition - 350x400-9350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 1200x170-450x400         Return:         Rectangular Bend - 450x400-450x400         Rectangular to round transition - 450x400-ø450         Rectangular to round transition - 450x400-ø450         Rectangular to round transition - 1280x235-450x400	m m m sum sum sum sum sum sum	1 2 0.6 1 2 2 1 1 2 1 1			
5.2	Supply:         Rectangular Duct - 450x400         Round Duct - ø350         Return:         Rectangular Duct - 450x400         Rectangular Duct - 1280x235         Supply and install transformation pieces:         Supply:         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular to round transition - 350x400-ø350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 1200x170-450x400         Return:         Rectangular Bend - 450x400-450x400         Rectangular to round transition - 450x400-ø450         Rectangular to round transition - 450x400-ø450         Rectangular to round transition - 1280x235-450x400         Supply and installation of all required diffusers and grills complete with,	m m m sum sum sum sum sum sum	1 2 0.6 1 2 2 1 1 2 1 1			
	Supply:         Rectangular Duct - 450x400         Round Duct - ø350         Return:         Rectangular Duct - 450x400         Rectangular Duct - 1280x235         Supply and install transformation pieces:         Supply:         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular to round transition - 350x400-350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 450x400         Return:         Rectangular Bend - 450x400-450x400         Rectangular to round transition - 900x600-ø450         Rectangular to round transition - 900x600-ø450         Rectangular to round transition - 900x600-ø450         Rectangular to round transition - 1280x235-450x400         Supply and installation of all required diffusers and grills complete with, required spigots and insulated flexible connections as per the drawings.	m m m sum sum sum sum sum sum	1 2 0.6 1 2 2 1 1 1 1			
5.2	Supply:         Rectangular Duct - 450x400         Round Duct - ø350         Return:         Rectangular Duct - 450x400         Rectangular Duct - 1280x235         Supply and install transformation pieces:         Supply:         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular to round transition - 350x400-ø350         Rectangular to round transition - 600x600-ø350         Rectangular transition - 1200x170-450x400         Rectangular Bend - 450x400-450x400         Rectangular to round transition - 450x400-ø450         Rectangular to round transition - 900x600-ø450         Rectangular transition - 1280x235-450x400         Supply and installation of all required diffusers and grills complete with, required spigots and insulated flexible connections as per the drawings.	m m m sum sum sum sum sum sum	1 2 0.6 1 2 2 1 1 2 1 1			
5.2	Supply:         Rectangular Duct - 450x400         Round Duct - ø350         Return:         Rectangular Duct - 450x400         Rectangular Duct - 1280x235         Supply and install transformation pieces:         Supply:         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular to round transition - 350x400-350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 450x400         Rectangular to round transition - 900x600-ø450         Rectangular to round transition - 900x600-ø450         Rectangular transition - 1280x235-450x400         Supply and installation of all required diffusers and grills complete with, required spigots and insulated flexible connections as per the drawings.         SAG 600x600	m m sum sum sum sum sum sum sum	1 2 0.6 1 2 2 1 1 1 1 1 2 2 2			
5.2	Supply:         Rectangular Duct - 450x400         Round Duct - ø350         Return:         Rectangular Duct - 450x400         Rectangular Duct - 1280x235         Supply and install transformation pieces:         Supply:         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular to round transition - 350x400-9350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 450x400         Return:         Rectangular Bend - 450x400-450x400         Rectangular to round transition - 450x400-ø450         Rectangular to round transition - 900x600-ø450         Rectangular to round transition - 1280x235-450x400         Supply and installation of all required diffusers and grills complete with, required spigots and insulated flexible connections as per the drawings.         SAG 600x600         RA 600x900	m m sum sum sum sum sum	1 2 0.6 1 2 2 1 1 1 1			
5.2 6 6.1 6.2	Supply:         Rectangular Duct - 450x400         Round Duct - ø350         Return:         Rectangular Duct - 450x400         Rectangular Duct - 1280x235         Supply and install transformation pieces:         Supply:         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular to round transition - 350x400-9350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 900x600-ø450         Rectangular to round transition - 900x600-ø450         Rectangular to round transition - 900x600-ø450         Rectangular to round transition - 1280x235-450x400         Supply and installation of all required diffusers and grills complete with, required spigots and insulated flexible connections as per the drawings.         SAG 600x600         RA 600x900         Supply and installation of the complete condensate drainage system using	m m sum sum sum sum sum sum sum	1 2 0.6 1 2 2 1 1 1 1 1 2 2 2			
5.2 6 6.1 6.2	Supply:         Rectangular Duct - 450x400         Round Duct - ø350         Return:         Rectangular Duct - 450x400         Rectangular Duct - 1280x235         Supply and install transformation pieces:         Supply:         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular to round transition - 350x400-9350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 450x400         Return:         Rectangular Bend - 450x400-450x400         Rectangular to round transition - 450x400-ø450         Rectangular to round transition - 900x600-ø450         Rectangular to round transition - 1280x235-450x400         Supply and installation of all required diffusers and grills complete with, required spigots and insulated flexible connections as per the drawings.         SAG 600x600         RA 600x900	m m sum sum sum sum sum sum sum	1 2 0.6 1 2 2 1 1 1 1 1 2 2 2			
5.2 6 6.1 6.2	Supply:         Rectangular Duct - 450x400         Round Duct - ø350         Return:         Rectangular Duct - 450x400         Rectangular Duct - 1280x235         Supply and install transformation pieces:         Supply:         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular to round transition - 350x400-9350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 900x600-ø450         Rectangular to round transition - 900x600-ø450         Rectangular to round transition - 900x600-ø450         Rectangular to round transition - 1280x235-450x400         Supply and installation of all required diffusers and grills complete with, required spigots and insulated flexible connections as per the drawings.         SAG 600x600         RA 600x900         Supply and installation of the complete condensate drainage system using	m m sum sum sum sum sum sum sum	1 2 0.6 1 2 2 1 1 1 1 1 2 2 2			
5.2 6 6 6.1 6.2 7	Supply:         Rectangular Duct - 450x400         Round Duct - ø350         Return:         Rectangular Duct - 1280x235         Supply and install transformation pieces:         Supply:         Rectangular Duct Vye - 450x400-350x400-350x400         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular to round transition - 350x400-ø350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 450x400         Rectangular to round transition - 900x600-ø450         Rectangular to round transition - 900x600-ø450         Rectangular to round transition - 900x600-ø450         Rectangular transition - 1280x235-450x400         Supply and installation of all required diffusers and grills complete with, required spigots and insulated flexible connections as per the drawings.         SAG 600x600         RA 600x900         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.	m m sum sum sum sum sum sum sum sum sum	1 2 0.6 1 2 2 1 1 1 1 1 2 1 1 1 1 1 2 1			
5.2 6 6.1 6.2 7 8	Supply:         Rectangular Duct - 450x400         Round Duct - ø350         Return:         Rectangular Duct - 450x400         Rectangular Duct - 1280x235         Supply and install transformation pieces:         Supply:         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular to round transition - 350x400-350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 900x600-ø450         Rectangular to round transition - 1280x235-450x400         Supply and installation of all required diffusers and grills complete with, required spigots and insulated flexible connections as per the drawings.         SAG 600x600         RA 600x900         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.         Apply anti-corrosion treatment to air-conditioning equipment	m m sum sum sum sum sum sum sum sum sum	1 2 0.6 1 2 2 1 1 1 1 1 2 1 1 1 1 1			
5.2 6 6.1 6.2 7 8	Supply:         Rectangular Duct - 450x400         Round Duct - ø350         Return:         Rectangular Duct - 1280x235         Supply and install transformation pieces:         Supply:         Rectangular Duct Vye - 450x400-350x400-350x400         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular to round transition - 350x400-ø350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 450x400         Rectangular to round transition - 900x600-ø450         Rectangular to round transition - 900x600-ø450         Rectangular to round transition - 900x600-ø450         Rectangular transition - 1280x235-450x400         Supply and installation of all required diffusers and grills complete with, required spigots and insulated flexible connections as per the drawings.         SAG 600x600         RA 600x900         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.	m m sum sum sum sum sum sum sum sum sum	1 2 0.6 1 2 2 1 1 1 1 1 2 1 1 1 1 1 2 1			
5.2 6 6 6.1 6.2 7 8 8 9	Supply:         Rectangular Duct - 450x400         Round Duct - ø350         Return:         Rectangular Duct - 1280x235         Supply and install transformation pieces:         Supply:         Rectangular Duct Vye - 450x400-350x400-350x400         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular to round transition - 350x400-9350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 600x600-ø350         Rectangular to round transition - 600x600-ø450         Rectangular to round transition - 450x400         Rectangular to round transition - 450x400-ø450         Rectangular to round transition - 900x600-ø450         Rectangular to round transition - 900x600-ø450         Rectangular transition - 1280x235-450x400         Supply and installation of all required diffusers and grills complete with, required spigots and insulated flexible connections as per the drawings.         SAG 600x600         RA 600x900         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.         Apply anti-corrosion treatment to air-conditioning equipment         Testing and Commisioning of Sys	m m sum sum sum sum sum sum sum sum sum	1 2 0.6 1 2 2 1 1 1 1 1 2 1 1 1 1 1			
5.2 6 6.1 6.2 7 8	Supply:         Rectangular Duct - 450x400         Round Duct - ø350         Return:         Rectangular Duct - 1280x235         Supply and install transformation pieces:         Supply:         Rectangular Duct Vye - 450x400-350x400-350x400         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular Duct Wye - 450x400-350x400-350x400         Rectangular to round transition - 350x400-9350         Rectangular to round transition - 600x600-9350         Rectangular to round transition - 600x600-9350         Rectangular to round transition - 900x600-9450         Rectangular transition - 1280x235-450x400         Supply and installation of all required diffusers and grills complete with, required spigots and insulated flexible connections as per the drawings.         SAG 600x600         RA 600x900         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.         Apply anti-corrosion treatment to air-conditioning equipment         Testing and Commisioning of System	m m sum sum sum sum sum sum sum sum sum	1 2 0.6 1 2 2 1 1 1 1 1 2 1 1 1 1 1			



4.1.4	Synthetic Lab Unit - AC-04					
	Supply and installation of Samsung AC160JNMDEH ducted hide-away, or					
1	equal alternative, indoor and outdoor unit, complete with insulated plenum					
1	box, safeties, supports, drip trays, anti-vibration mountings, wall fixed unit					
	controller, etc.	sum	1			
2	Supply and install wall mounted controller	sum	1			
	Supply and installation of all electrical wiring from outdoor unit to the indoor					
2	unit, complete with an electrical isolator at indoor unit for a full working					
5	, , , , , , , , , , , , , , , , , , , ,		4			
	installation, as per the technical specifications.	sum	1			
	Supply and installation of all required copper refrigerant piping, complete with					
4	brackets, insulation, connection to indoor and outdoor units, for a complete					
	working system.	sum	1			
	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			
51	Supply and install ducting	Jam				
5.1						
	Supply:		4.5			
	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			
			0.1			
E 0	Supply and install transformation pieces:					
<u>э.</u> 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:	Juli				
	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			
		Juin				
6	Supply and installation of all required diffusers and grills complete with,					
5	required spigots and insulated flexible connections as per the drawings.					
6.1	SAG 600x600	no	2			
6.2	RA 600x900	no	1			
	Supply and installation of the complete condensate drainage system using					
7	25mm PVC piping for the unit, reticulated to the nearest foul water drain via a					
·	u-trap.	sum				
0	Apply anti-corrosion treatment to air-conditioning equipment		4			
		sum	1			
9	Testing and Commisioning of System	sum	1			
10						
10	All other equipment, not listed, required for a fully working complete system.	sum	1			
4.1.5	Synthetic Lab Unit - AC-LAN-05 & AC-LAN-06					
	Supply and installation of Samsung AM056KNQDEH midwall, or equal					
1						
	alternative, indoor and outdoor unit, complete with anti-vibration mountings,		_			
	wall mounted controller, etc.	sum	2			
-	Supply and install wall mounted controller	sum	2			
			1			
3	Supply and install standby/duty control panel.	sum				
3	Supply and install standby/duty control panel. Supply and installation of all electrical wiring from outdoor unit to the indoor	sum				
3		sum				
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		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			
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. Supply and installation of all required copper refrigerant piping, complete with		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. Supply and installation of all required copper refrigerant piping, complete with refrigeration gas, brackets, insulation, connection to indoor and outdoor units,	sum				
3 4 5	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. 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.		2			
3 4 5	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. 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. Supply and installation of the complete condensate drainage system using	sum				
3 4 5	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. 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				
3 4 5 6	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. 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. 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				
3 4 5 6	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. 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. 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 sum	2			
3 4 5 6	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. 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. 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. Supply and install galvanised trunking, painted to architects' specifications, for	sum sum sum	2			
3 4 5 6 7	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. 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. 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. Supply and install galvanised trunking, painted to architects' specifications, for external refrigerant piping.	sum sum sum	2 2 2			
3 4 5 6 7 8	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. 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. 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. Supply and install galvanised trunking, painted to architects' specifications, for external refrigerant piping. Apply anti-corrosion treatment to air-conditioning equipment	sum sum sum sum	2 2 2 2			
3 4 5 6 7 8 9	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. 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. 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. Supply and install galvanised trunking, painted to architects' specifications, for external refrigerant piping. Apply anti-corrosion treatment to air-conditioning equipment Testing and Commissioning of System	sum sum sum	2 2 2			
3 4 5 6 7 8	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. 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. 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. Supply and install galvanised trunking, painted to architects' specifications, for external refrigerant piping. Apply anti-corrosion treatment to air-conditioning equipment Testing and Commissioning of System	sum sum sum sum sum	2 2 2 2 2			
3 4 5 6 7 8 9	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. 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. 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. Supply and install galvanised trunking, painted to architects' specifications, for external refrigerant piping. Apply anti-corrosion treatment to air-conditioning equipment Testing and Commissioning of System	sum sum sum sum	2 2 2 2			
3 4 5 6 7 8 9	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. 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. 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. Supply and install galvanised trunking, painted to architects' specifications, for external refrigerant piping. Apply anti-corrosion treatment to air-conditioning equipment Testing and Commissioning of System	sum sum sum sum sum	2 2 2 2 2			
3 4 5 6 7 8 9	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. 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. 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. Supply and install galvanised trunking, painted to architects' specifications, for external refrigerant piping. Apply anti-corrosion treatment to air-conditioning equipment Testing and Commissioning of System	sum sum sum sum sum	2 2 2 2 2			
3 4 5 6 7 8 9 10	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. 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. 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. Supply and install galvanised trunking, painted to architects' specifications, for external refrigerant piping. Apply anti-corrosion treatment to air-conditioning equipment Testing and Commissioning of System All other equipment, not listed, required for a fully working complete system.	sum sum sum sum sum	2 2 2 2 2			
3 4 5 6 7 7 8 9 10 4.1.6	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. 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. 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. Supply and install galvanised trunking, painted to architects' specifications, for external refrigerant piping. Apply anti-corrosion treatment to air-conditioning equipment Testing and Commissioning of System All other equipment, not listed, required for a fully working complete system.	sum sum sum sum sum	2 2 2 2 1			
3 4 5 6 7 7 8 9 10 4.1.6	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. 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. 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. Supply and install galvanised trunking, painted to architects' specifications, for external refrigerant piping. Apply anti-corrosion treatment to air-conditioning equipment Testing and Commissioning of System All other equipment, not listed, required for a fully working complete system.	sum sum sum sum sum	2 2 2 2 2			



# SCHEDULE No. 5 : FRESH AIR SUPPLY SYSTEMS

em	Description	Unit	QTY	Supply Rate	Install Rate	Amount
5.1	FRESH AIR SUPPLY SYSTEMS					
5.1.1	Fresh Air Supply System - FAF-01					
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			
	Supply Air Grilles:	no	2			
	SAG 600x300 c/w OBD	no	3			
	SAG 200x200	no	2			
16	Weather Louvre: 700 x 700	no	1			
	700 x 700 Washable Filter c/w slide in panel and box	no	1			
	250 x 150 opposed blade damper	no	1			
	200 x 200 opposed blade damper	no	1			
	Supply and installation of all ductwork complete with transformation pieces,					
2	flexible connections, duct hangers, supports, anti-vibration mountings, etc, as					
ļ						
0.1	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			
		Sum	-			
2	Supply and installation of all electrical wiring from isolator to the fan unit and					
5	to and from on/off switch at entrance of laboratory.	sum	1			
4	Testing and Commissioning of system and airflow direction	sum	1			
		Sum	1			
5	All other equipment, not listed, required for a fully working complete system		1			
	All other equipment, not listed, required for a fully working complete system.	sum	1			
- 4 0	French Air Ownstein FAE 00					
	Fresh Air Supply System - FAF-02					
1	Provincement comply manufacture deficiencies and the second state of the second state					
	Procurement, supply, manufacture, delivery to site, storage and installation of:					
1.1	Fresh Air fan	no	1			
1.1 1.2	Fresh Air fan Speed Controller	no	1			
1.1 1.2 1.3	Fresh Air fan Speed Controller Sound Attenuator - AMS S2	no no	1 2			
1.1 1.2 1.3	Fresh Air fan Speed Controller Sound Attenuator - AMS S2 Supply Air Diffuser	no no no	1 2 2			
1.1 1.2 1.3	Fresh Air fan Speed Controller Sound Attenuator - AMS S2 Supply Air Diffuser CCD Ø150	no no	1 2 2 1			
1.1 1.2 1.3	Fresh Air fan Speed Controller Sound Attenuator - AMS S2 Supply Air Diffuser CCD Ø150 CCD Ø200	no no no	1 2 2 1			
1.1 1.2 1.3 1.5	Fresh Air fan Speed Controller Sound Attenuator - AMS S2 Supply Air Diffuser CCD Ø150 CCD Ø200 CCD Ø250	no no no no	1 2 1 1 1			
1.1 1.2 1.3 1.5	Fresh Air fan Speed Controller Sound Attenuator - AMS S2 Supply Air Diffuser CCD Ø150 CCD Ø200 CCD Ø250 Weather Louvre: 400 x 450	no no no no	1 2 1 1 1 1			
1.1 1.2 1.3 1.5 1.6 1.7	Fresh Air fan Speed Controller Sound Attenuator - AMS S2 Supply Air Diffuser CCD Ø150 CCD Ø200 CCD Ø250 Weather Louvre: 400 x 450 400 x 450 Washable Filter c/w slide in panel and box	no no no no no	1 2 1 1 1			
1.1 1.2 1.3 1.5 1.5 1.6 1.7 1.8	Fresh Air fan Speed Controller Sound Attenuator - AMS S2 Supply Air Diffuser CCD Ø150 CCD Ø200 CCD Ø250 Weather Louvre: 400 x 450 400 x 450 Washable Filter c/w slide in panel and box Ø150 opposed blade damper	no no no no no no	1 2 1 1 1 1			
1.1 1.2 1.3 1.5 1.5 1.6 1.7 1.8	Fresh Air fan Speed Controller Sound Attenuator - AMS S2 Supply Air Diffuser CCD Ø150 CCD Ø200 CCD Ø250 Weather Louvre: 400 x 450 400 x 450 Washable Filter c/w slide in panel and box	no no no no no no no	1 2 1 1 1 1 1			
1.1 1.2 1.3 1.5 1.5 1.6 1.7 1.8 1.9	Fresh Air fan Speed Controller Sound Attenuator - AMS S2 Supply Air Diffuser CCD Ø150 CCD Ø200 CCD Ø250 Weather Louvre: 400 x 450 400 x 450 Washable Filter c/w slide in panel and box Ø150 opposed blade damper	no no no no no no no no	1 2 1 1 1 1 1 1 1 1			
1.1 1.2 1.3 1.5 1.6 1.6 1.7 1.8 1.9 1.10	Fresh Air fan Speed Controller Sound Attenuator - AMS S2 Supply Air Diffuser CCD Ø150 CCD Ø200 CCD Ø250 Weather Louvre: 400 x 450 400 x 450 Washable Filter c/w slide in panel and box Ø150 opposed blade damper Ø200 opposed blade damper	no no no no no no no no no no	1 2 1 1 1 1 1 1 1 1 1			
1.1 1.2 1.3 1.5 1.6 1.6 1.7 1.8 1.9 1.10	Fresh Air fan Speed Controller Sound Attenuator - AMS S2 Supply Air Diffuser CCD Ø150 CCD Ø200 CCD Ø250 Weather Louvre: 400 x 450 400 x 450 Washable Filter c/w slide in panel and box Ø150 opposed blade damper Ø200 opposed blade damper Ø250 opposed blade damper Supply and installation of all ductwork complete with transformation pieces,	no no no no no no no no no no	1 2 1 1 1 1 1 1 1 1 1			
1.1 1.2 1.3 1.5 1.6 1.6 1.7 1.8 1.9 1.10	Fresh Air fan Speed Controller Sound Attenuator - AMS S2 Supply Air Diffuser CCD Ø150 CCD Ø200 CCD Ø250 Weather Louvre: 400 x 450 400 x 450 Washable Filter c/w slide in panel and box Ø150 opposed blade damper Ø200 opposed blade damper Ø200 opposed blade damper Supply and installation of all ductwork complete with transformation pieces, flexible connections, duct hangers, supports, anti-vibration mountings, etc, as	no no no no no no no no no no	1 2 1 1 1 1 1 1 1 1 1			
1.1 1.2 1.3 1.5 1.6 1.7 1.8 1.9 1.10 2	Fresh Air fan Speed Controller Sound Attenuator - AMS S2 Supply Air Diffuser CCD Ø150 CCD Ø200 CCD Ø200 CCD Ø250 Weather Louvre: 400 x 450 400 x 450 Washable Filter c/w slide in panel and box Ø150 opposed blade damper Ø200 opposed blade damper Ø250 opposed blade damper 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	no no no no no no no no no no	1 2 1 1 1 1 1 1 1 1 1			
1.1 1.2 1.3 1.5 1.6 1.7 1.8 1.9 1.10 2	Fresh Air fan Speed Controller Sound Attenuator - AMS S2 Supply Air Diffuser CCD Ø150 CCD Ø200 CCD Ø200 CCD Ø250 Weather Louvre: 400 x 450 400 x 450 Washable Filter c/w slide in panel and box Ø150 opposed blade damper Ø200 opposed blade damper Ø250 opposed blade damper 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 Supply and install ducting	no no no no no no no no no no	1 2 1 1 1 1 1 1 1 1 1			
1.1 1.2 1.3 1.5 1.6 1.7 1.8 1.9 1.10 2	Fresh Air fan Speed Controller Sound Attenuator - AMS S2 Supply Air Diffuser CCD Ø150 CCD Ø200 CCD Ø250 Weather Louvre: 400 x 450 400 x 450 Washable Filter c/w slide in panel and box Ø150 opposed blade damper Ø200 opposed blade damper Ø250 opposed blade damper 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 Supply and install ducting Supply:	no no no no no no no no	1 2 1 1 1 1 1 1 1 1			
1.1 1.2 1.3 1.5 1.6 1.7 1.8 1.9 1.10 2	Fresh Air fan Speed Controller Sound Attenuator - AMS S2 Supply Air Diffuser CCD Ø150 CCD Ø200 CCD Ø250 Weather Louvre: 400 x 450 400 x 450 Washable Filter c/w slide in panel and box Ø150 opposed blade damper Ø250 opposed blade damper Ø250 opposed blade damper 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 Supply and install ducting Supply: Rectangular Duct - 200x300	no no no no no no no no no mo	1 2 1 1 1 1 1 1 1 1 6			
1.1 1.2 1.3 1.5 1.6 1.7 1.8 1.9 1.10 2	Fresh Air fan Speed Controller Sound Attenuator - AMS S2 Supply Air Diffuser CCD Ø150 CCD Ø200 CCD Ø250 Weather Louvre: 400 x 450 400 x 450 Washable Filter c/w slide in panel and box Ø150 opposed blade damper Ø250 opposed blade damper Ø250 opposed blade damper 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 Supply and install ducting Supply: Rectangular Duct - 200x300 Rectangular Duct - 250x300	no no no no no no no no no no mo mo m	1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 6 4			
1.1 1.2 1.3 1.5 1.6 1.7 1.8 1.9 1.10 2	Fresh Air fan Speed Controller Sound Attenuator - AMS S2 Supply Air Diffuser CCD Ø150 CCD Ø200 CCD Ø250 Weather Louvre: 400 x 450 400 x 450 Washable Filter c/w slide in panel and box Ø150 opposed blade damper Ø200 opposed blade damper Ø200 opposed blade damper 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 Supply and install ducting Supply: Rectangular Duct - 200x300 Rectangular Duct - 250x300	no no no no no no no no no no mo mo m	1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
1.1 1.2 1.3 1.5 1.6 1.7 1.8 1.9 1.10 2	Fresh Air fan Speed Controller Sound Attenuator - AMS S2 Supply Air Diffuser CCD Ø150 CCD Ø200 CCD Ø250 Weather Louvre: 400 x 450 400 x 450 Washable Filter c/w slide in panel and box Ø150 opposed blade damper Ø250 opposed blade damper Ø250 opposed blade damper 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 Supply and install ducting Supply: Rectangular Duct - 200x300 Rectangular Duct - 250x300	no no no no no no no no no no mo mo m	1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 6 4			



2.2	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		
Ę	5				
	All other equipment, not listed, required for a fully working complete system.	sum	1		

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

tem	Description	Unit	QTY	Supply Rate	Install Rate	Amoun
		_				
6.1	AIR EXHAUST SYSTEMS					
611	DSP Extract System - EAF-01					
0.1.1	DSF Extract System - EAF-01					
	Procurement, supply, manufacture, delivery to site, storage and installation of:					
1 1	Exhaust Air fan	no	1			
	Variable Speed Drive	no	1			
	Sound Attenuator: AMS 2S	no	2			
	Exhaust Air Grille: 400x300	no	3			
	Stainless Steel Exhuast Canopy - 750 x 2450	no	3			
	Cowl - ø630	no	1			
	200x350 Opposed blade damper	no	3			
1.7	ø315 Opposed blade damper	no	3			
	Supply and installation of all un-insulated ductwork complete with		5			
2	transformation pieces, flexible connections, duct hangers, supports, anti-					
	vibration mountings, fire dampers, etc, as per the concept design drawings					
	vibration mountings, me dampers, etc, as per me concept design drawings	sum	1			
2.1	Exhaust and install ducting	Sum	1			
2.1	Exhaust					
	Rectangular Duct - 200x350	m	13			
	Rectangular Duct - 300x400	m	3			
	Rectangular Duct - 300x500	m	2			
	Rectangular Duct - 450x300	m	1			
	Rectangular Duct - 450x300 Round Duct - ø315		4			
	Round Duct - Ø315	m	4			
	Round Duct - Ø450	m m	3			
	Round Duct - Ø500 Round Duct - Ø630	m	12			
	Round Duct - Ø030		12			
2.2	Supply and install transformation pieces:					
2.2	Exhaust:					
	End Cap - 200x350	sum	3			
	End Cap - 200300	sum	1			
	Rectangular 30 Degree Bend - 300x400-200x350	sum	1			
	Rectangular So Degree Dend - 300x400-200x330	sum	4			
	Rectangular Duct - Takeoff - 200x350-200x350	sum	2			
	Rectangular Duct - Takeoff - 300x500-300x500	sum	1			
	Rectangular Duct - Takeoff - 450x300-450x300	sum	3			1
	Rectangular transition - 300x500-300x400	sum	1			1
	Round Bend - Ø315-Ø315	sum	1			
	Round Bend - Ø630-Ø630	sum	2			
	Round Duct - Takeoff - ø315-ø315	sum	2			
	Round Duct - Takeoff - Ø510-Ø510	sum	1			
	Round Transition - Ø450-Ø315	sum	1			
	Round Transition - Ø400-Ø450 Round Transition - Ø500-Ø450	sum	1			
	Round Transition - Ø500-Ø450 Round Transition - Ø710-Ø630	sum	2			
		Sum	2			
0	Supply and installation of all electrical wiring from isolator to the fan unit and					
3	Supply and installation of all electrical wiring from isolator to the fan unit and	0.100	1			
4	on/off switch at entrance of laboratory.	sum	1			
4	Testing and Commissioning	sum				
5	All other equipment, not listed, required for a fully working complete system	0	4			
	All other equipment, not listed, required for a fully working complete system.	sum	1			



6.1.2	Reactor Bay Air Extract System - EAF-02					
1	Procurement, supply, manufacture, delivery to site, storage and installation of:					
	Exhaust Air fan		1			
	Variable Speed Drive	no	1			
	Sound Attenuator: AMS 2S	no	2			
		no				
	Exhaust Air Grille: 250x200	no	8			
	Cowl - ø355	no	1			
	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			
		Juin	0			
2	Supply and installation of all electrical wiring from isolator to the fan unit and					
			1			
	on/off switch at entrance of laboratory.	sum	1			
	Testing and Commissioning	sum	I			
5						
	All other equipment, not listed, required for a fully working complete system.	sum	1			
6.1.3	Scale-up/pre-pilot Air Extract System - EAF-03					
1						
	Procurement, supply, manufacture, delivery to site, storage and installation of:					
	Exhaust Air fan	no	1			
	Variable Speed Drive	no	1			
	Sound Attenuator	no	2			
	Exhaust Air Grille: 600x300	no	2			
	ø315 Opposed blade damper	no	2			
-	Cowl - ø400	no	1			
	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			
				1	1	
2.1	Exhaust and install ducting					
2.1	Exhaust:					
2.1	Exhaust: Rectangular Duct - 600x300	m	1			
2.1	Exhaust: Rectangular Duct - 600x300 Round Duct - ø315	m m	1			
2.1	Exhaust: Rectangular Duct - 600x300					
2.1	Exhaust: Rectangular Duct - 600x300 Round Duct - ø315	m	1			
	Exhaust: Rectangular Duct - 600x300 Round Duct - ø315 Round Duct - ø400 Supply and install transformation pieces:	m	1			
	Exhaust: Rectangular Duct - 600x300 Round Duct - ø315 Round Duct - ø400	m	1			
	Exhaust: Rectangular Duct - 600x300 Round Duct - ø315 Round Duct - ø400 Supply and install transformation pieces:	m	1			
	Exhaust: Rectangular Duct - 600x300 Round Duct - ø315 Round Duct - ø400 Supply and install transformation pieces: Exhaust:	m	1 5			
	Exhaust: Rectangular Duct - 600x300 Round Duct - ø315 Round Duct - ø400 Supply and install transformation pieces: Exhaust: Rectangular to round transition - 600x300-ø315	m m sum	1 5 2			
	Exhaust: Rectangular Duct - 600x300 Round Duct - ø315 Round Duct - ø400 Supply and install transformation pieces: Exhaust: Rectangular to round transition - 600x300-ø315 Round Bend - ø315-ø315	m m sum	1 5 2 2			
	Exhaust: Rectangular Duct - 600x300 Round Duct - ø315 Round Duct - ø400 Supply and install transformation pieces: Exhaust: Rectangular to round transition - 600x300-ø315 Round Bend - ø315-ø315 Round Duct - Takeoff - ø400-ø400	m m sum sum	1 5 2 2 1			
2.2	Exhaust: Rectangular Duct - 600x300 Round Duct - ø315 Round Duct - ø400 Supply and install transformation pieces: Exhaust: Rectangular to round transition - 600x300-ø315 Round Bend - ø315-ø315 Round Duct - Takeoff - ø400-ø400 Round Transition - ø400-ø315	m m sum sum	1 5 2 2 1			
2.2	Exhaust: Rectangular Duct - 600x300 Round Duct - ø315 Round Duct - ø400 Supply and install transformation pieces: Exhaust: Rectangular to round transition - 600x300-ø315 Round Bend - ø315-ø315 Round Duct - Takeoff - ø400-ø400 Round Transition - ø400-ø315 Supply and installation of all electrical wiring from isolator to the fan unit and	m m sum sum sum	1 5 2 2 1 2			
2.2	Exhaust: Rectangular Duct - 600x300 Round Duct - ø315 Round Duct - ø400 Supply and install transformation pieces: Exhaust: Rectangular to round transition - 600x300-ø315 Round Bend - ø315-ø315 Round Duct - Takeoff - ø400-ø400 Round Transition - ø400-ø315 Supply and installation of all electrical wiring from isolator to the fan unit and on/off switch at entrance of laboratory.	m m sum sum sum sum	1 5 2 2 1 2 1 2			
2.2	Exhaust: Rectangular Duct - 600x300 Round Duct - ø315 Round Duct - ø400 Supply and install transformation pieces: Exhaust: Rectangular to round transition - 600x300-ø315 Round Bend - ø315-ø315 Round Duct - Takeoff - ø400-ø400 Round Transition - ø400-ø315 Supply and installation of all electrical wiring from isolator to the fan unit and	m m sum sum sum	1 5 2 2 1 2			
2.2	Exhaust: Rectangular Duct - 600x300 Round Duct - ø315 Round Duct - ø400 Supply and install transformation pieces: Exhaust: Rectangular to round transition - 600x300-ø315 Round Bend - ø315-ø315 Round Duct - Takeoff - ø400-ø400 Round Transition - ø400-ø315 Supply and installation of all electrical wiring from isolator to the fan unit and on/off switch at entrance of laboratory.	m m sum sum sum sum	1 5 2 2 1 2 1 2			



2 4 4	Waste Air Extract System - EAF-04	1			1
0.1.4	Waste All Extract System - EAF-04				
'	Procurement, supply, manufacture, delivery to site, storage and installation of:				
	Exhaust Air fan	no	1		
	Variable Speed Drive	no	1		
	Sound Attenuator	no	2		
	Exhaust Air Grille: 250x200		2		
	OBD	no no	2		-
	Cowl - ø200		2		
	Supply and installation of all un-insulated ductwork complete with	no	1		
	transformation pieces, flexible connections, duct hangers, supports, anti-				
	vibration mountings, fire dampers, etc, as per the concept design drawings				
	vibration mountings, fire dampers, etc, as per the concept design drawings		4		
0.4	Exhaust and install ducting	sum	1		
2.1					
	Exhaust:		0		
	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		
	Testing and Commissioning	sum	1		
5	5				
-	All other equipment, not listed, required for a fully working complete system.	sum	1		
6.1.5	Wash-Up Wall Mounted Extract Air Fan - WEAF-01				
1	• • • • • • • •				
·	Procurement, supply, manufacture, delivery to site, storage and installation of:				
	Exhaust Air fan	no	1		
			-		
6.1.5	Analytical Lab Wall Mounted Extract Air Fan - WEAF-02				
1					
	Procurement, supply, manufacture, delivery to site, storage and installation of:				
1.1	Exhaust Air fan	no	1		
				1	1

#### SCHEDULE No. 7 : GENERAL ITEMS

Description	Unit	QTY	Supply Rate	Install Rate	Amount
12 month maintenance of all HVAC systems	sum				
Training of staff	sum				
Electrical Cost	sum				
Control ACDB and associated wiring	sum				
Cold Room refrigeration	sum				
AHU control system	sum				
	12 month maintenance of all HVAC systems Training of staff Electrical Cost Control ACDB and associated wiring Cold Room refrigeration	12 month maintenance of all HVAC systems     sum       Training of staff     sum       Electrical Cost     sum       Control ACDB and associated wiring     sum       Cold Room refrigeration     sum	12 month maintenance of all HVAC systems     sum       Training of staff     sum       Electrical Cost     sum       Control ACDB and associated wiring     sum       Cold Room refrigeration     sum	12 month maintenance of all HVAC systems     sum       12 month maintenance of all HVAC systems     sum       Training of staff     sum       Electrical Cost     sum       Control ACDB and associated wiring     sum       Cold Room refrigeration     sum	12 month maintenance of all HVAC systems     sum       12 month maintenance of all HVAC systems     sum       Training of staff     sum       Electrical Cost     sum       Control ACDB and associated wiring     sum       Cold Room refrigeration     sum

#### 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	
	TOTAL FOR BILLS OF QUANTITIES (excl. VAT)	



## TENDER SUMMARY

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

1 Above Total Net contract sum to be carried forward to Principal Contract Form of Tender 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

em	Description	Unit	QTY	Supply Rate	Install Rate	Amount
	SITE ESTABLISHMENT					
	Camp and fencing	sum	1			
	Office	sum	1			
	Office Equipment		1			
	Store	sum sum	1			
	Workshop		1			
	Other	sum	1			
0	Other	sum	1			
	ADMINISTRATIVE					
	Site personnel	sum	1			
	Supervisory staff	sum	1			
3	Guards	sum	1			
4	Transport	sum	1			
	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			
1.3	GENERAL COSTS					
1	Allow an amount if required for expenses incurred					
	to tender.	sum	1			
2	Loading and off loading of material and equipment	sum	1			
	Setting out of Works.	sum	1			
	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			
	Inspection and handing over.	sum	1			
	QC/QA	sum	1			
	Other items not specifically mentioned	sum	1			
	COMPLIANCE					
1	Allow for complying with the conditions & requirements of					
	tendering & contract conditions	sum	1			



# 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
2.1	New Air Handling Units	-				
2.1.1	AHU-01					
	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			
	Supply terminal HEPA Grilles: 600x600	no	8			
	Low Level Stainless Steel Exhasut Air Grilles: 500x200	no	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.					
61	Supply and install ducting					
5.1	Supply:	1				
	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:	L				
	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 - 90001000	m	3			
	Round Duct - Ø250	m	1			
		1				



6 21 Sunn	ly and install transformation pieces:				1
	ipply:				
3u		sum			
	End Cap - 300x200				
	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			
	<b>v</b>				
	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			
	V				
	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			
Re	eturn:				
	End Cap - 250x200	sum	6		
	End Cap - 250x250	sum	1		
	•		1		
	End Cap - 250x300	sum		 	
	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		
	v		2		
	Rectangular Bend - 150x200-150x200	sum		 	
	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		1		
	0	sum			
	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 - 250x100-250x200	sum	2		
			2	 	
	Rectangular Duct - Takeoff - 350x150-350x150	sum			
	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	 	
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 Bend - ø200-ø200 Round Duct - Takeoff - ø200-ø200	sum			
	Round Bend - ø200-ø200 Round Duct - Takeoff - ø200-ø200 Round Duct - Takeoff - ø250-ø250	sum sum sum	1 1 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		
Total for Schedule No. 2 Carried forward to summary page				

# SCHEDULE No. 3 : SPLIT TYPE AIR CONDITONING UNITS

em	Description	Unit	QTY	Supply Rate	Install Rate	Amount
3.1	SPLIT TYPE AIR CONDITIONING SYSTEMS					
	Laboratory Area - AC-01					
1	Supply and installation of Samsung AR12TSHGAWK/FA midwall, or equal					
	alternative, indoor and outdoor unit, complete with anti-vibration mountings,					
	wall mounted controller, etc.	sum	1			
	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			
	Testing and Commissioning of System	sum	1			
9						
	All other equipment, not listed, required for a fully working complete system.	sum	1			
3.1.2	Biomass Production and Processing Area - AC-02/03					
1	Supply and installation of Samsung AC090JN4DEH 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			
	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	1	_			
0	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		1		1	
6	Supply and install galvanised trunking, painted to architects' specifications, for external refrigerant piping	sum	2			
	external refrigerant piping.	sum	2			
7	external refrigerant piping. Apply anti-corrosion treatment to air-conditioning equipment	sum	2			
7	external refrigerant piping. Apply anti-corrosion treatment to air-conditioning equipment Testing and Commissioning of System					
7	external refrigerant piping. Apply anti-corrosion treatment to air-conditioning equipment Testing and Commissioning of System	sum	2			



242	Open Plan Office - AC-04	<u>г т</u>			1	1
	Supply and installation of Samsung AC052JN4DEH cassette, or equal					
1						
	alternative, indoor and outdoor unit, complete with insulated plenum box,					
	safeties, supports, drip trays, anti-vibration mountings, wall fixed unit					
	controller, etc.	No	1			
	Supply and install wall mounted controller	No	1	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	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	1		
F	Supply and installation of the complete condensate drainage system using	140				
5						
	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	1		
7	Apply anti-corrosion treatment to air-conditioning equipment	No	1	1		
8	Testing and Commissioning of System	No	1	I		
9						
5	All other equipment, not listed, required for a fully working complete system.	No	1	l l		
	a la carlor oquipriorit, not notou, required for a funy working complete system.					
		$\vdash$				
	Laboratory Area - AC-05					
1	Supply and installation of Samsung AR12TSHGAWK/FA midwall, or equal					
	alternative, indoor and outdoor unit, complete with anti-vibration mountings,					
	wall mounted controller, etc.	sum	1	1		
2	Supply and install wall mounted controller	sum	1	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	1		
4	Supply and installation of all required copper refrigerant piping, complete with	oum				
4	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	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			
	Testing and Commissioning of System	sum	1			
		Sum				
9						
	All other equipment, not listed, required for a fully working complete system.	sum	1			
	Laboratory Area - AC-06					
1	Supply and installation of Samsung AR12TSHGAWK midwall, or equal	ΙT				
	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			
	Supply and installation of all electrical wiring from outdoor unit to the indoor					
3	unit, complete with an electrical isolator at each unit for a full working					
	, i			.]		
	installation, as per the technical specifications.	sum	1			
	Supply and installation of all required copper refrigerant piping, complete with					
4						
4	refrigeration gas, brackets, insulation, connection to indoor and outdoor units,		1			
	for a complete working system.	sum				
		sum				
	for a complete working system.	sum				
	for a complete working system. 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					
5	for a complete working system. 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 sum	1			
5	for a complete working system. 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 Supply and install galvanised trunking, painted to architects' specifications, for	sum	1			
5	for a complete working system. 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 Supply and install galvanised trunking, painted to architects' specifications, for external refrigerant piping.	sum sum	1			
5 6 7	for a complete working system. 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 Supply and install galvanised trunking, painted to architects' specifications, for external refrigerant piping. Apply anti-corrosion treatment to air-conditioning equipment	sum sum sum	1			
5 6 7 8	for a complete working system. 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 Supply and install galvanised trunking, painted to architects' specifications, for external refrigerant piping. Apply anti-corrosion treatment to air-conditioning equipment Testing and Commissioning of System	sum sum	1			
5 6 7	for a complete working system. 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 Supply and install galvanised trunking, painted to architects' specifications, for external refrigerant piping. Apply anti-corrosion treatment to air-conditioning equipment Testing and Commissioning of System	sum sum sum	1 1 1 1			
5 6 7 8	for a complete working system. 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 Supply and install galvanised trunking, painted to architects' specifications, for external refrigerant piping. Apply anti-corrosion treatment to air-conditioning equipment Testing and Commissioning of System	sum sum sum	1			



3.1.6	Break-away Space Unit - AC-07				
1	Supply and installation of Samsung AC035JNMDEH 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		
	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.				
51	Supply and install ducting				
0.1	Supply:				
	Rectangular Duct - 300x250	m	2		
	Round Duct - Ø200	m	2		
	Return:				
	Rectangular Duct - 600x600	m	1		
	Rectangular Duct - 700x250	m	1		
52	Supply and install transformation pieces:				
0.2	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:	oann	-		
	End Cap - 700x250	sum	1		
	Rectangular transition - 700x250-700x235	sum	1		
	Round Duct - Takeoff - ø150-ø150	sum	1		
		Jun			
6	Supply and installation of all required diffusers and grills complete with,				
0	required spigots and insulated flexible connections as per the drawings.				
6.1	CCD Ø250	no	2		
6.2		no	1		
	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		
	Testing and Commisioning of System	sum	1		
10		Joann	-		
10	All other equipment, not listed, required for a fully working complete system.	sum	1		
	The other equipment, not listed, required for a fully working complete system.	Sum			
317	Break-away Space Unit - AC-08				
	Supply and installation of Samsung AC071JNMDEH 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		
r	Supply and install wall mounted controller	sum	1		
	Supply and install wall mounted controller Supply and installation of all electrical wiring from outdoor unit to the indoor	Jun			
3	unit, complete with an electrical isolator at indoor unit for a full working				
	installation, as per the technical specifications.	sum	1		
1	Supply and installation of all required copper refrigerant piping, complete with	Journ		 	
4					
	Ibrackets insulation connection to indoor and outdoor units for a complete				
	brackets, insulation, connection to indoor and outdoor units, for a complete working system.	sum	1		



F	Supply and installation of new insulated galvanised steel sheet metal ducting,	<u> </u>		1	1	1
	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			
	Round Duct - Takeon - 0200-0200	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			
	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			
	Apply anti-corrosion treatment to air-conditioning equipment	sum	1			
	Testing and Commisioning of System	sum	1			
10	<u> </u>					
	All other equipment, not listed, required for a fully working complete system.	sum	1			
for S	chedule 3 carried forward to summary page					R

## SCHEDULE No. 4 : FRESH AIR SUPPLY SYSTEMS

Item	Description	Unit	QTY	Supply Rate	Install Rate	Amount
4.1	FRESH AIR SUPPLY SYSTEMS					
4.1.1	Fresh Air Supply System - FAF-01					
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 Oppsed 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				
	Supply and install ducting				
2.1					
	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 - ø150	m	3		
	Round Duct - ø200	m	9		
	Round Duct - ø250	m	2		
	Round Duct - ø300	m	2		
	Round Duct - ø355	m	1		
	Nound Duct - 6000				
2.0	Quanty and install transformation biogen				
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-ø150	sum	2		
	Rectangular to round transition - 250x250-ø200	sum	1		
	Rectangular to round transition - 300x300-ø250	sum	1		
	Rectangular to round transition - 400x400-ø400	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 - ø150-ø150	sum	2		
	Round Bend - Ø200-Ø200	sum	3		
	Round Bend - ø250-ø250	sum	1		
		sum	2		
	Round Duct - Takeoff - ø150-ø150				
	Round Duct - Takeoff - ø200-ø200	sum	1		
	Round Duct - Takeoff - ø250-ø250	sum	1		
	Round Duct - Takeoff - ø300-ø300	sum	2		
	Round Transition - ø300-ø200	sum	2		
	Round Transition - ø400-ø355	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		
412	Fresh Air Supply System - FAF-02				
1	······································				
'	Procurement, supply, manufacture, delivery to site, storage and installation of:				
	Fresh Air fan	no	1		
1.1	Speed Controller	no	1		
	Speed Contoller Sound Attenuator: AMS S2	no	1	 	
	Supply Air Diffuser	10		 	
1.J	SAG 200x200		2		
4.0	Weather Louvre	no			
		no	1		
	Washable Filter c/w slide in panel and box	no	1		
1.8	OBD				
	ø150-ø150	no	4		
	ø200-ø200	no	1		



		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		
otal for S	chedule 4 carried forward to summary page			I I	R -

# SCHEDULE No. 5 : AIR EXTRACT SYSTEMS

ltem	Description	Unit	QTY	Supply Rate	Install Rate	Amount
= 4						
5.1	AIR EXHAUST SYSTEMS					
5.1.1	Lab Air Extract System - EAF-05					
1						
	Procurement, supply, manufacture, delivery to site, storage and installation of:					
1.1	Exhaust Air fan	no	1			
	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			



t		1		1	1
	Supply and installation of all un-insulated ductwork complete with				
N	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		1		
		m			
	Rectangular Duct - 400x350	m	3		
	Round Duct - ø150	m	7		
	Round Duct - ø200	m	11		
	Round Duct - ø250	m	5		
	Round Duct - ø315	m	5		
	Round Duct - ø355	m	1		
	Round Duct - ø600	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-ø150	sum	1		
	Rectangular to round transition - 250x250-ø200	sum	1		
		-			
	Rectangular to round transition - 300x300-ø250	sum	1	 	l
	Rectangular to round transition - 400x350-ø400	sum	1	 	
	Rectangular to round transition - 400x600-ø315	sum	1		
	Rectangular to round transition - 600x500-ø600	sum	1		
	Round Bend - ø150-ø150	sum	3		
	Round Bend - Ø200-Ø200		4		
		sum			
	Round Bend - ø250-ø250	sum	1		
	Round Bend - ø315-ø315	sum	1		
	Round Duct - Takeoff - ø150-ø150	sum	1		
	Round Duct - Takeoff - ø200-ø200	sum	1		
	Round Duct - Takeoff - Ø250-Ø250	sum	1		
		-			
	Round Duct - Takeoff - ø315-ø315	sum	1	 	
	Round Transition - ø400-ø355	sum	4		
	Round Transition - ø600-ø400	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		
5.1.2	Kitchen Air Extract System - KAF-01				
1					
' ,	Dreament comply manufacture delivery to site stores and installation of				
	Procurement, supply, manufacture, delivery to site, storage and installation of:			 	
	Exhaust Air fan	no	1		
1.2 \	Variable Speed Drive	no	1		
1.3	Sound Attenuator: AMS S2	no	2		
	Exhaust Air Grille:	1			
	SAG 250x250		1		
		no			
	Weather Louvre	no	1		
2	Supply and installation of all un-insulated ductwork complete with	1			
1	transformation pieces, flexible connections, duct hangers, supports, anti-	1			1
	vibration mountings, fire dampers, etc, as per the concept design drawings	1			
ľ	naraan meaninge, me aampere, etc, as per the concept design drawings	1			
	Exhaust and install dusting				
Z.11	Exhaust and install ducting			 	
	Exhaust:	I		 	
	Rectangular Duct - 200x200	m	1		
	Devent Duct at 50	m	2		
	Round Duct - ø150	1			
	Round Duct - Ø150				1
	Supply and install transformation pieces:				
	Supply and install transformation pieces: Exhaust:				
	Supply and install transformation pieces: Exhaust: Rectangular to round transition - 200x200-ø150	sum	1		
	Supply and install transformation pieces: Exhaust: Rectangular to round transition - 200x200-ø150	sum sum	1		
	Supply and install transformation pieces: Exhaust: Rectangular to round transition - 200x200-ø150 Rectangular to round transition - 250x250-ø150	sum	1		
	Supply and install transformation pieces: Exhaust: Rectangular to round transition - 200x200-ø150				
2.2 \$	Supply and install transformation pieces: Exhaust: Rectangular to round transition - 200x200-ø150 Rectangular to round transition - 250x250-ø150 Round Bend - ø150-ø150	sum	1		
2.2 \$	Supply and install transformation pieces: Exhaust: Rectangular to round transition - 200x200-ø150 Rectangular to round transition - 250x250-ø150 Round Bend - ø150-ø150 Supply and installation of all electrical wiring from isolator to the fan unit and	sum sum	1		
2.2 \$	Supply and install transformation pieces: Exhaust: Rectangular to round transition - 200x200-ø150 Rectangular to round transition - 250x250-ø150 Round Bend - ø150-ø150 Supply and installation of all electrical wiring from isolator to the fan unit and on/off switch at entrance of laboratory.	sum	1		
2.2 \$	Supply and install transformation pieces: Exhaust: Rectangular to round transition - 200x200-ø150 Rectangular to round transition - 250x250-ø150 Round Bend - ø150-ø150 Supply and installation of all electrical wiring from isolator to the fan unit and	sum sum	1		
2.2 \$	Supply and install transformation pieces: Exhaust: Rectangular to round transition - 200x200-ø150 Rectangular to round transition - 250x250-ø150 Round Bend - ø150-ø150 Supply and installation of all electrical wiring from isolator to the fan unit and on/off switch at entrance of laboratory. Testing and Commissioning	sum sum sum sum	1 1 1 1		
2.2 \$	Supply and install transformation pieces: Exhaust: Rectangular to round transition - 200x200-ø150 Rectangular to round transition - 250x250-ø150 Round Bend - ø150-ø150 Supply and installation of all electrical wiring from isolator to the fan unit and on/off switch at entrance of laboratory.	sum sum sum	1 1 1		
2.2 \$	Supply and install transformation pieces: Exhaust: Rectangular to round transition - 200x200-ø150 Rectangular to round transition - 250x250-ø150 Round Bend - ø150-ø150 Supply and installation of all electrical wiring from isolator to the fan unit and on/off switch at entrance of laboratory. Testing and Commissioning	sum sum sum sum	1 1 1 1		



#### SCHEDULE No. 6 : GENERAL ITEMS

Item	Description	Unit	QTY	Supply Rate	Install Rate	Amour	ıt
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					
Total for S	chedule 6 carried forward to summary page					R	-

#### SUMMARY OF BILLS OF QUANTITIES

Item	Description			
	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 BILLS OF QUANTITIES (excl. VAT)	•		

#### **TENDER SUMMARY**

ltem	Description	Unit	Rate		Sub-Total
	AIR CONDITIONING AND VENTILATION INSTALLATION				
А	Price Breakdown Schedules No. 1 TO 6				R -
	Subtotal				R -
	Provisional Amounts for :				
В	Provisional Amount for fire supression system				
С					
D					
E					
	Subtotal for B+C+D+E				R -
	TOTAL NET CONTRACT SUM (excl vat)				
					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.

		-	Du Toit Pienaa			
	HVAC Bills of Quantities		Q	UANTITY SURVEY	ORS	
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	-		
	CSIR Future PHARMA Facility					