Qty	Items	Rating	Supply	Notes
11	Double socket outlets	10 A	1-phase	
2	Single socket outlets	10 A	1-phase	
3	Single socket outlets	15 A	1-phase	
1	Single socket outlet	20 A	3-phase	
1	Air conditioning unit	25 A	3-phase	
1	Instantaneous HWS	15 A	3-phase	
1	Storage HWS	20 A	1-phase	
9	Twin fluorescent fittings	36 W	1-phase	0.42 A per fitting
2	Exit lights	20 W	1-phase	0.3 A per fitting
2	Quade (4) tube fluorescent fittings	36 W	1-phase	0.84 A per fitting
4	Bayonet light points		1-phase	60 W
2	Exhaust fans	0.25 A	1-phase	

Light	30m	PVC V-90	- Enclosed and fixed vertically on walls (unsheathed) and, - Unenclosed supported on catenary in roof space (sheathed), - 4 cables per catenary system. - Cables supplying air-con are run individually (not grouped)
S/O 10 A	35m		
S/O 15 A	35m		
S/O 20 A	20m		
Air-con	18m		
Instant HWS	16m	PVC V-90	- Enclosed and fixed vertically to the metal frame of the internal walls with thermal insulation (sheathed) and, - Unenclosed supported on catenary in roof space (sheathed).
Storage HWS	20m		

Maximum Demand Calculations commercial

Load Group	Load	Remarks	Allocation of Points			Calculations	Current (A)		
			Red	White	Blue		Red	White	Blue
a	Full load	9* Twin fluorescent fittings 36W	4	1	4	9*0.42A=3.78A	1.68	0.42	1.68
a	Full load	2* Exit lights 20W			2	2*0.3A=0.6A	0	0	0.6
a	Full load	2* Quade (4) tube fluorescent fittings 36W	1	1		2*0.84A=1.68A	0.84	0.84	0
a	Full load	4* Bayonet light points 60W			4	(Full load) 4*(60W/230VAC)=1.0434A	0	0	1.0434
a	Full load	2* Exhaust Fan 0.25A	2			2*0.25A=0.5A	0.5	0	0
b(ii)	1000W+100W	11* Double socket outlets 10A	1(2)	1(2)	9(18)	(11*2)+2=24 Points 1000W+(100W*23)=3300W 3300W/230=14.34A 14.34A/24=0.5978A Per Point	1.195	1.195	10.755
b(ii)	1000W+100W	2* Single socket outlets 10A	2				1.195	0	0
b(iii)	F/L+(F/L*0.75)	3* Single socket outlets 15A		2	1	20A+ (3*15*0.75)=33.75A 33.75/3Points=11.25A 20A PerPhase+11.25A per GPO	0	22.5	11.25
b(iii)	F/L+(F/L*0.75)	1* Single socket outlets 3 phase 20A	1	1	1		20	20	20
c(i)	F/L+(F/L*0.75)	1* Air conditioning unit 3 phase 25A	1	1	1	25A+(15A*0.75)=36.25A 25A for AC 11.25A for HWS	25	25	25
c(i)	F/L+(F/L*0.75)	1* Instant HWS 15A 3 Phase	1	1	1		11.25	11.25	11.25
g	Full load	1* Storage HWS 20A	1			20A Per HWS Unit	20	0	0
Maximum Demand of							81.66	81.205	81.578

Maximum Demand	Table	Item	Table	Column	Selected cable	
					Size (mm^2)	Capacity (A)
81.66A	3(2)	8	14	11	35mm^2	114

Voltage Drop Calculation	Table	Column	Cable size	Volt drop	
				(V)	(%)
	n/a	n/a	35mm^2	2.08	0.52

Utilising Circuit impedance Calculation Refer to AS3008.1.1-2017 4.3 *learn this method, its good!		
	Cable XLPE-90 35mm^2 (multicore)	Length 20m
	AS3008.11-2017 Table 30 XLPE-90 35mm^2 XC=0.0982 Ω/KM	AS3008.11-2017 Table 35 XLPE-90 35mm^2 RC=0.669Ω/KM
	$Zc=\sqrt{RC^2+XC^2}$ $Zc=\sqrt{0.669^2+0.0982^2}$ Zc=0.7387	Vd=(I*Zc*L*√3)/1000 Vd=(81.66*0.7387*20*√3)/1000 Vd=2.08VAC or 0.52%

Circuits	Current Capacity Cable				Co-ordination		Verification of EFLI			Voltage Drop			Comments
	(A)	Table	A (mm^2)	E (mm^2)	I_N (A)	Type	Length (m)	L_{max} (m)	RCD $I_{\Delta n}$ (mA)	1ϕ (V)	3ϕ (V)	Table	
L1	11.52A	Table 10 +Table 22	1.5mm^2	1.5mm^2	10A	RCBO	30m	82m	30mA	3.7Vd/0.94%		Vd=(I*Zc*L*√3)/1000	
L2	11.52A	Table 10 +Table 22	1.5mm^2	1.5mm^2	10A	RCBO	30m	82m	30mA	3.7Vd/0.94%		Vd=(I*Zc*L*√3)/1000	
S/O1 10A	16.56A	Table 10 +Table 22	2.5 mm^2	2.5mm^2	16A	RCBO	35m	85m	30mA	6.3Vd/1.57%		Vd=(I*Zc*L*√3)/1000	
S/O2 10A	16.56A	Table 10 +Table 22	2.5mm^2	2.5mm^2	16A	RCBO	35m	85m	30mA	6.3Vd/1.57%		Vd=(I*Zc*L*√3)/1000	
S/O3 15A	16.56A	Table 10 +Table 22	2.5mm^2	2.5mm^2	16A	RCBO	35m	85m	30mA	9.4Vd/2.36%		Vd=(I*Zc*L*√3)/1000	
S/O4 20A 3 ϕ	21.6A	Table 13 +Table 22	4mm^2	2.5mm^2	20A	RCBO	20m	68m	30mA		3.88Vd/0.97%	Vd=(I*Zc*L*2)/1000	
S/O5 15A	28.08A	Table 10 +Table 22	6mm^2	2.5mm^2	25A	RCBO	35m	76.96m	30mA	6.09Vd/1.52%		Vd=(I*Zc*L*√3)/1000	
AC 25A 3ϕ	30A	Table 13 +Table 22	4 mm^2	2.5mm^2	25A	RCBO	18m	67.09m	30mA		4.37Vd/1.09%	Vd=(I*Zc*L*2)/1000	
HWS (instant) 3 ϕ	18.4A	Table 10 +Table 22	2.5 mm^2	2.5mm^2	16A	RCBO	16m	85m	30mA		3.74Vd/0.93%	Vd=(I*Zc*L*2)/1000	
HWS (storage)	24A	Table 13 +Table 22	4 mm^2	2.5mm^2	20A	RCBO	20m	83.87m	30mA	4.48Vd/1.11%		Vd=(I*Zc*L*√3)/1000	