

SAMPLE DATA CENTRE DESIGN

2.1 Solution Specifications

• The specification of all services and individual components are attached as Appendix A

2.2 Works Out of Scope

The following responsibilities and tasks fall outside of the Subcontractor's Price List scope and design.

2.34.1 Common Infrastructure

Item	Required for	Requirement
I	Total Solution	Supply and fit Main AC supply-breaker of 600A@400V 3-phase inside main buildings DB.

2.34.2 IM Infrastructure

Item	Required for	Requirement		
1	IM	All network cabling beyond those that will be supplied for the NetBotz Environmental Monitoring System		
II	IM	Relocation of any existing equipment		
III	IM	Powers cords between PDU's and servers		
IV	IM	Termination of BMS and NetBotz systems to Eskom LAN/WAN		
V	IM	Workstation/s for communication with BMS and/or NetBotz		

2.34.3 SCADA Infrastructure

Item	Required for	Requirement
ı	Scada	All network cabling beyond those that will be supplied for the NetBotz Environmental Monitoring System
II	Scada	Power reticulation to lights and work-stations and PC's from new UPS- DB in call-center on 1 st floor's, to be done by Eskom
II	Scada	Relocation of any existing equipment

2.34.4 Telecom Infrastructure

Item	Required for	Requirement
I	Telecom	All network cabling beyond those that will be supplied for the NetBotz Environmental Monitoring System
II	Telecom	Relocation of any existing equipment
III	Telecom	All DC cabling or DC terminations

2.3 Services and other things to be provided by Contractor

220VAC within 15 meters from where the data centre, generator and condensers will be installed Water within 15 meters from where the data centre, generator and condensers will be installed Storage space for building material where data centre will be erected

Storage space for building material where plinths for generator and condensers will be erected Secure storage space for new data centre equipment and condensers

Parking and sanitary facilities for Subcontractor's workers

Access to a knowledgeable Contractor representative on site at all times.

3 x Mobile SIM-cards for NetBotz modems (IM, Scada and Telecom)

3 Site Information

3.1 Access limitations

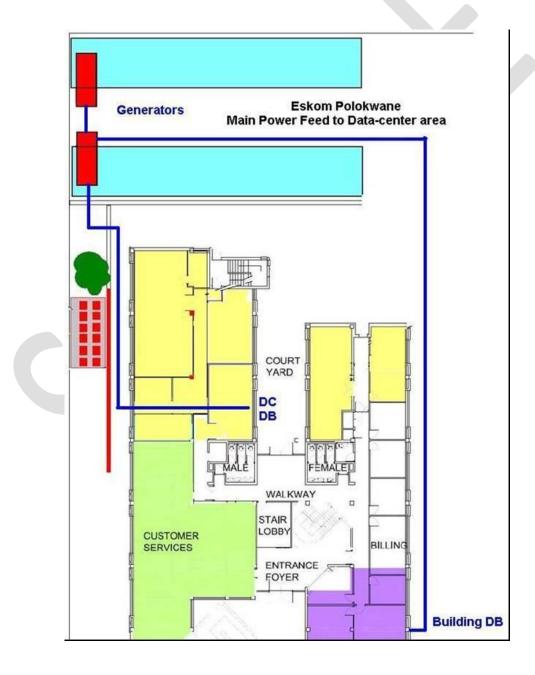
No access restrictions have been identified by the Contractor. The Contractor will clearly point out access restrictions prior to the execution of this contract, which might have an impact ton the execution of this contract.

3.2 Hidden and other services within the site

No hidden or other services identified by the Contractor The Contractor will clearly point out any hidden electrical, water and/or other hidden services, pipes and cables that might have to be bridged during the execution of this contract.

3.3 Details of existing buildings / facilities which subcontractor is required to work on

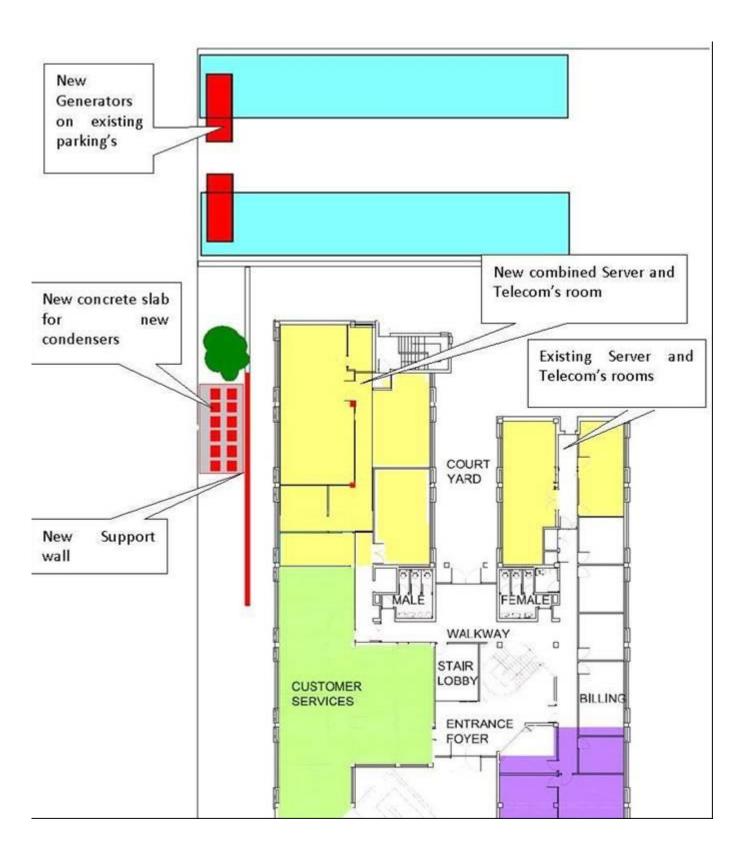
The subcontractor agreed to take photographs and supply it to the subcontractor prior to commencing the subcontract work.



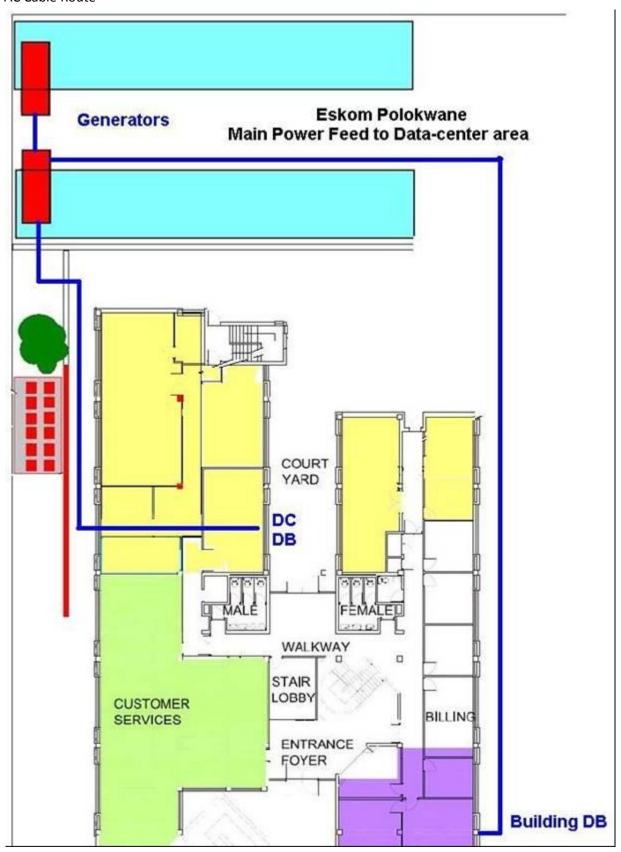
3.5 List of Drawings

Drawing Description	Revision	Point
Site Plan	Final	2.33.1
AC Cable Route	Final	2.33.2
Area Plan	Final	2.33.3
Cable-tray Plan	Final	2.33.4
New IM server room layout	Final	2.33.5
3-D IM Server room layout	Final	2.33.6
IM Environmental and Security System Diagram	Final	2.33.7
New Telecoms room layout	Final	2.33.8
Telecoms Environmental & Security System Diagram	Final	2.33.9
New Scada room layout	Final	2.33.10
Scada Environmental and Security System Diagram	Final	2.33.11
3-D Scada Server room layout	Final	2.33.12
Electrical and Cooling Redundancy Diagram	Final	2.33.13
AC Power Distribution Diagram	Final	2.33.14

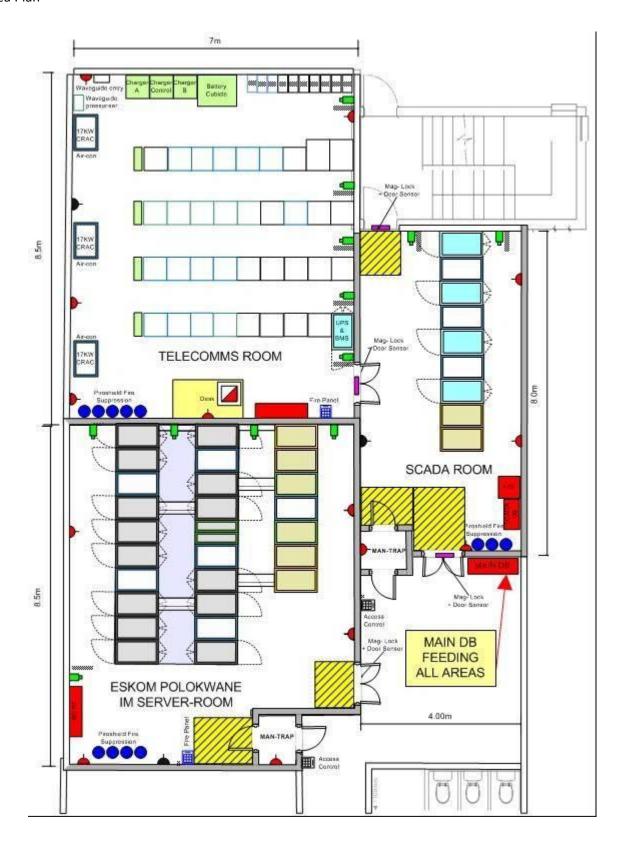
Site Plan



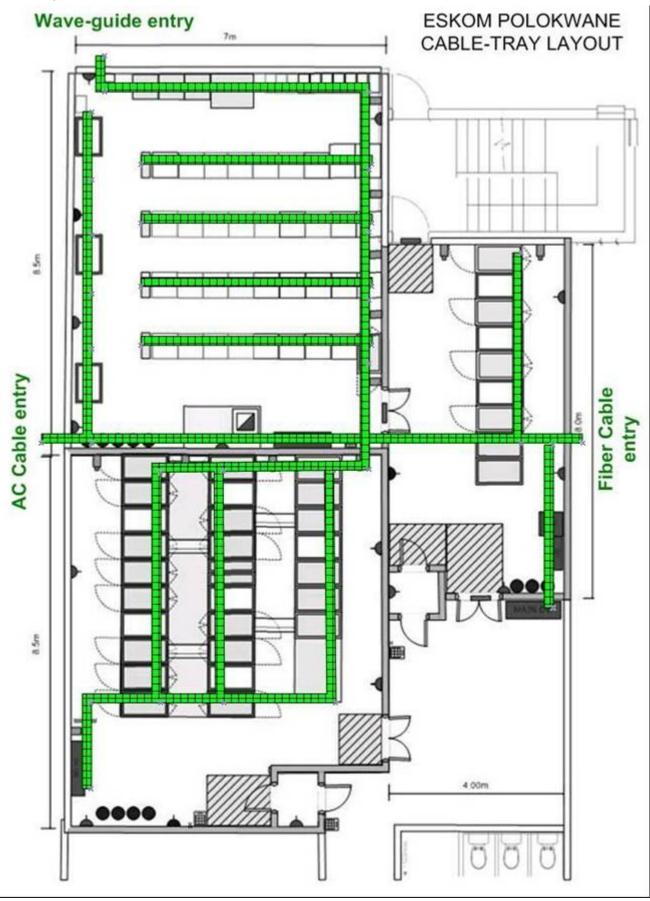
AC Cable Route



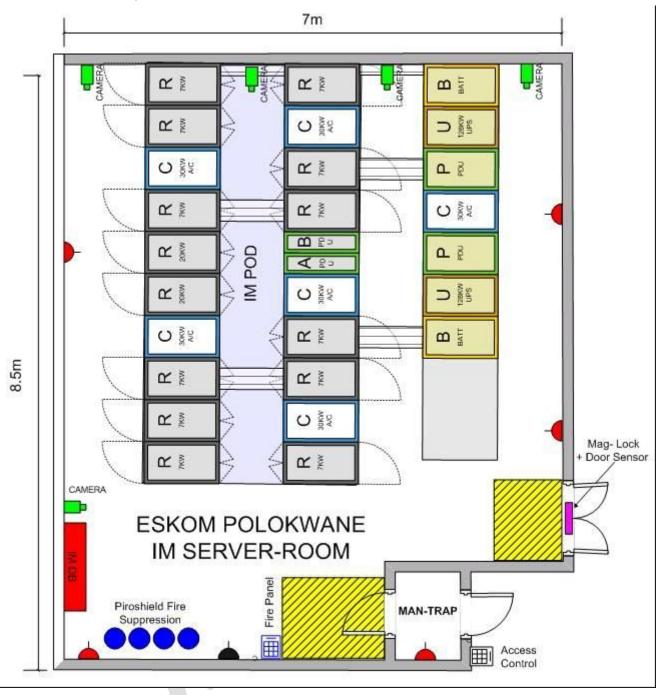
Area Plan



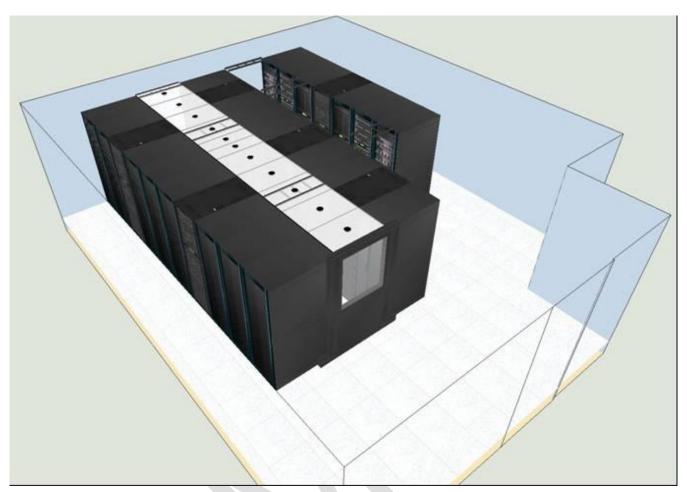
Cable-tray Plan

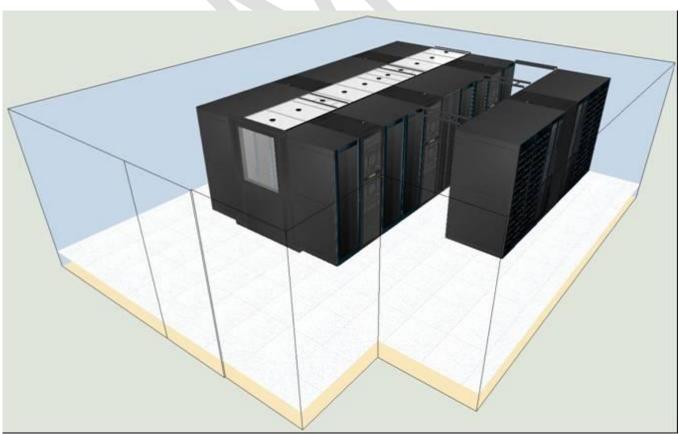


New IM server room layout

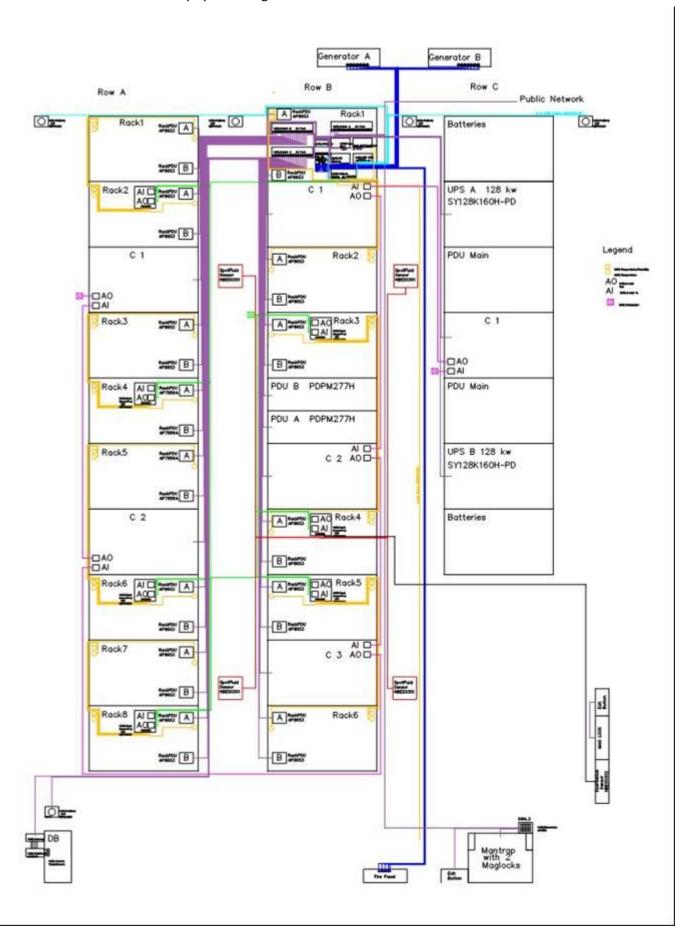


3-D IM Server room layout

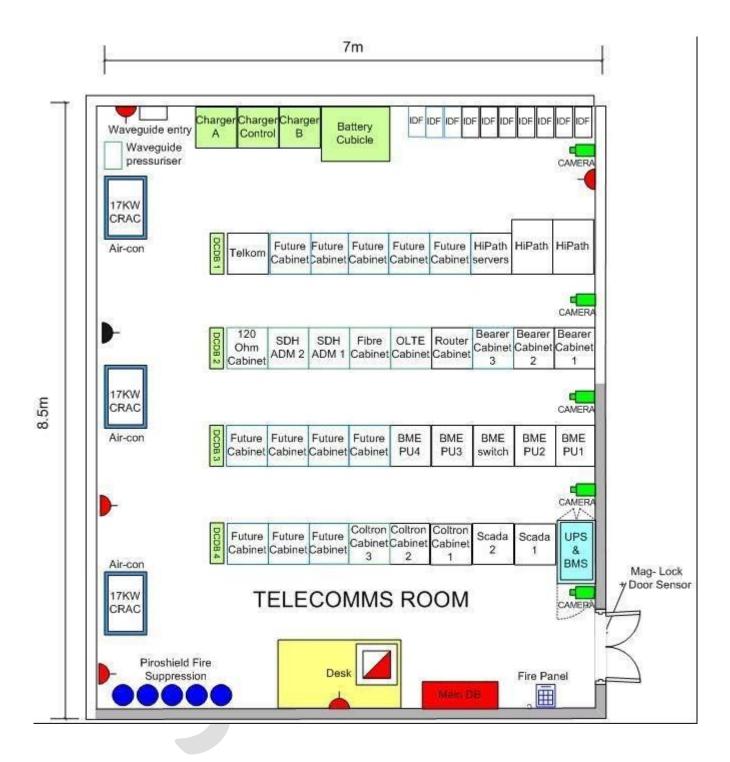




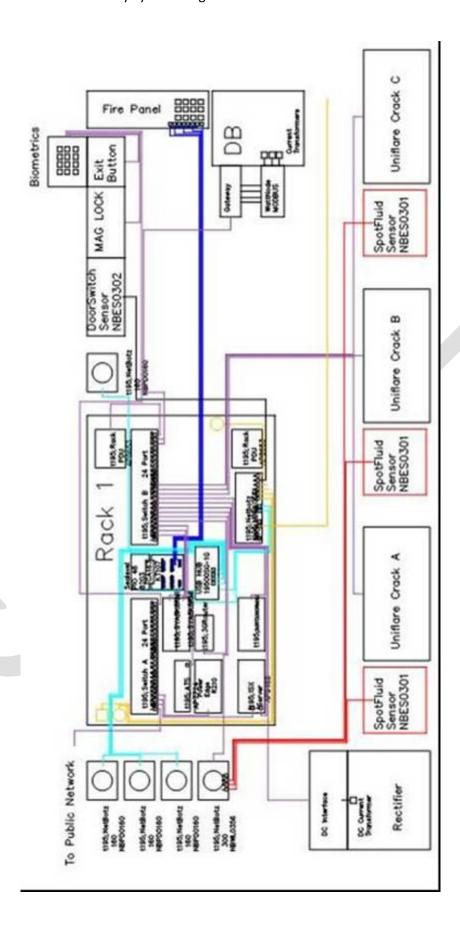
IM Environmental and Security System Diagram



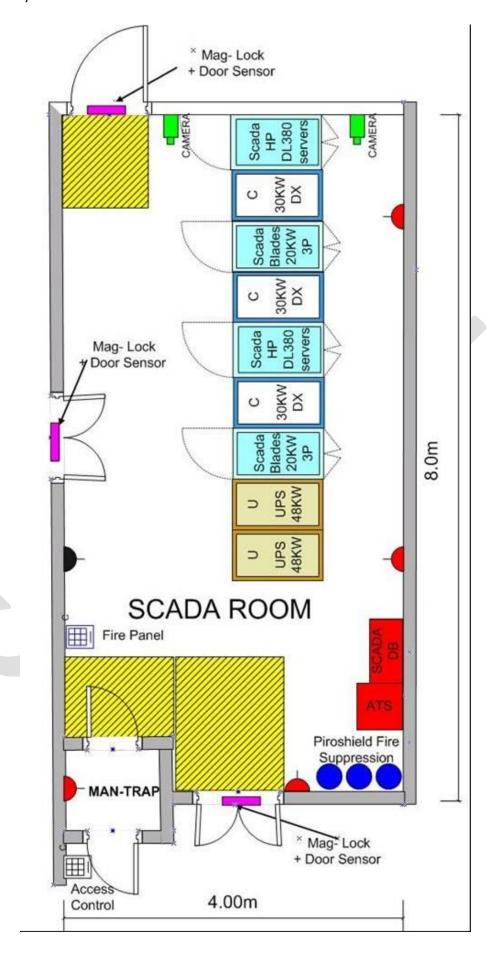
New Telecoms room layout



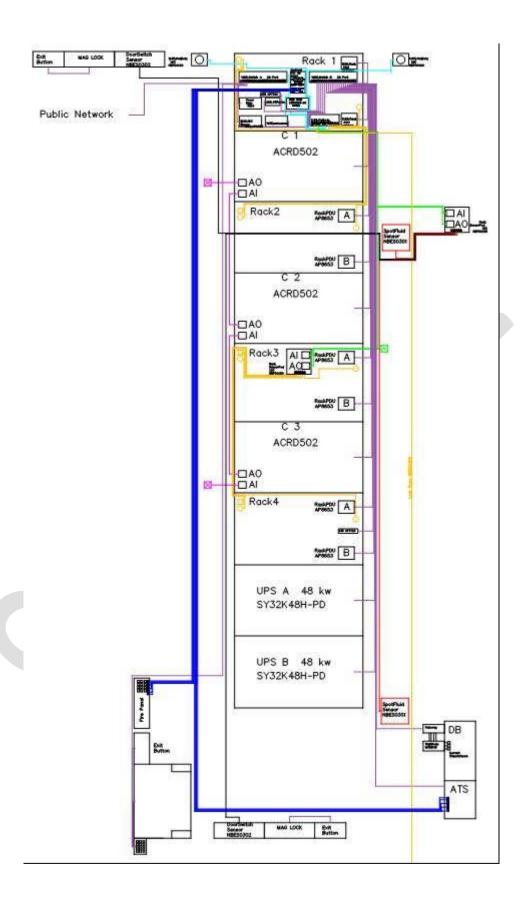
Telecoms Environmental and Security System Diagram



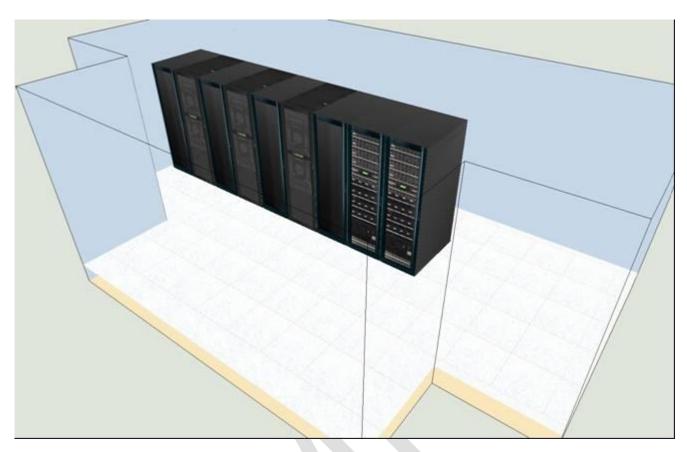
New Scada room layout

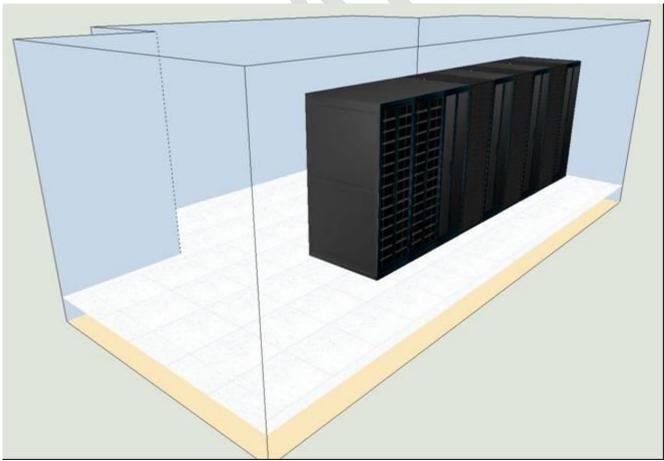


Telecoms Environmental and Security System Diagram

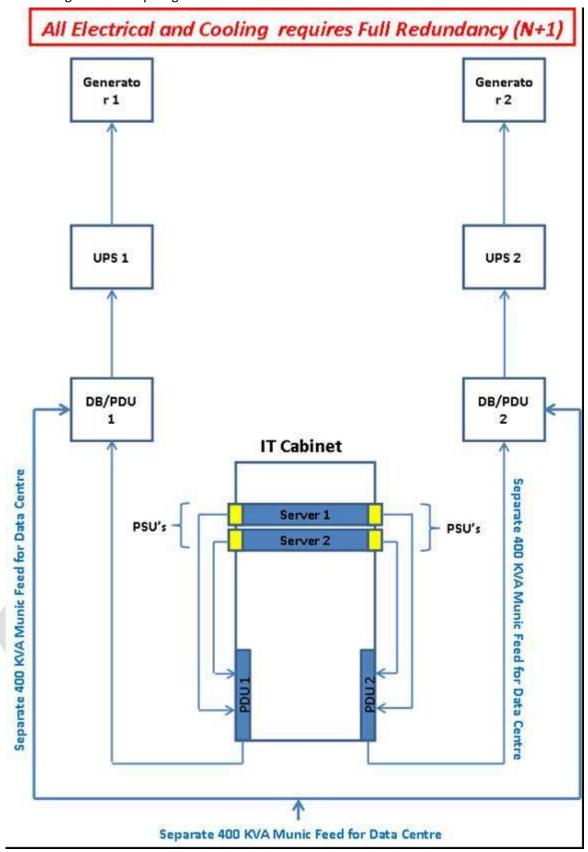


3-D Scada Server room layout

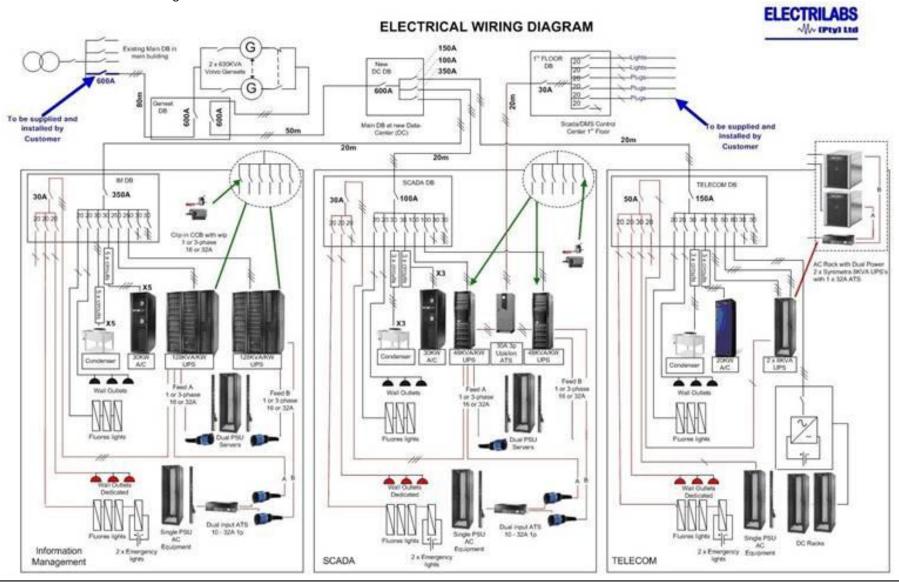


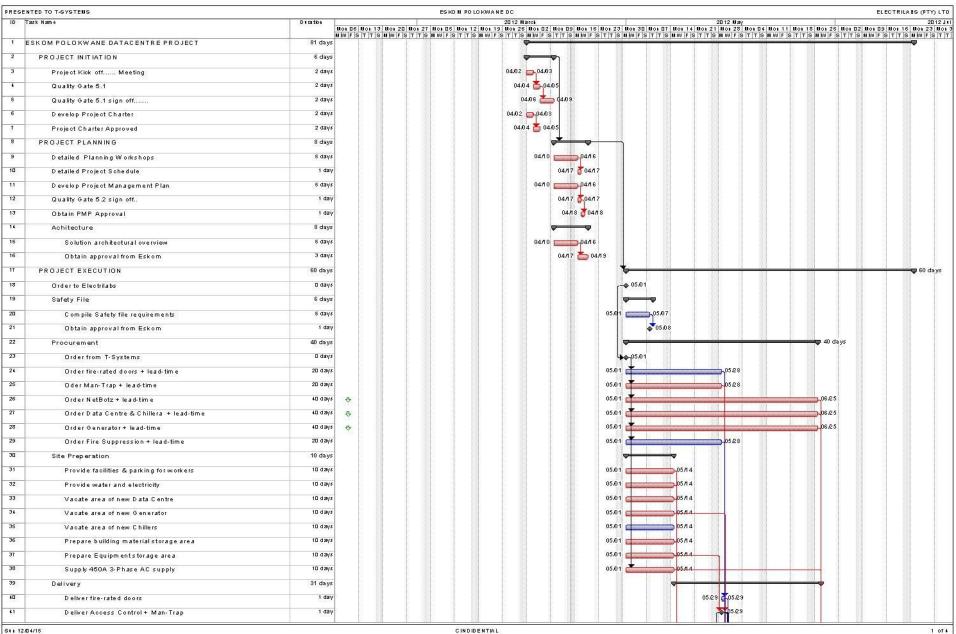


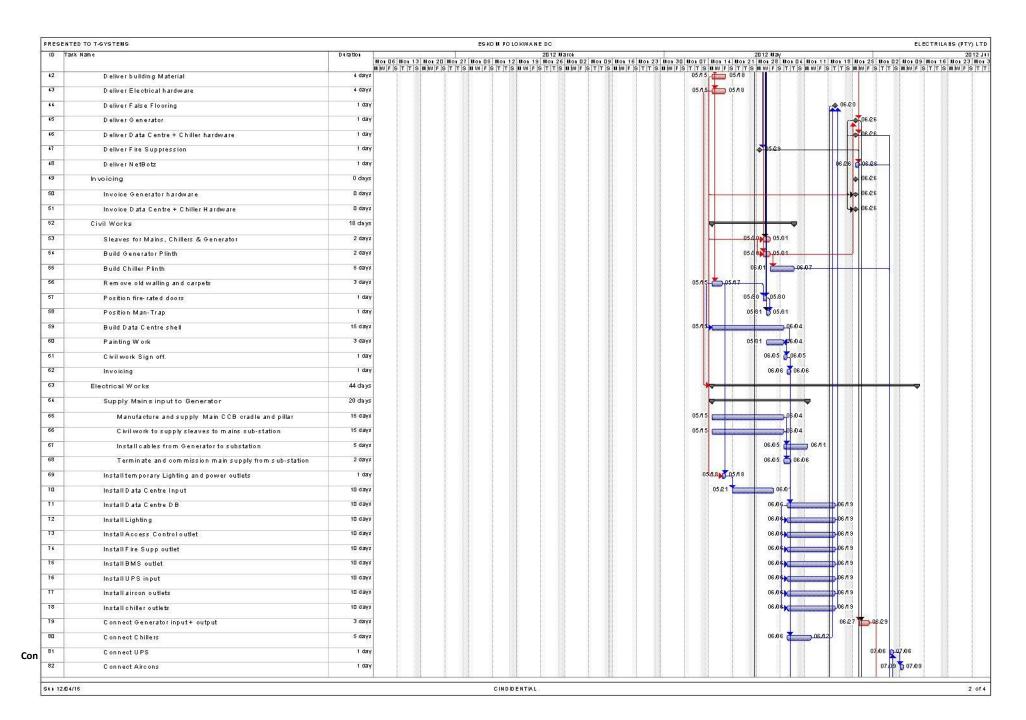
Electrical and Cooling Redundancy Diagram



2.33.11 AC Power Distribution Diagram







RESENT	ED TO T-SYSTEMS		ES KO M PO LO KWA NE DC	ELECTR
ID Tas	k. Nam e	Diration Mon 06	2012 March Ion 13 Mon 20 Mon 27 Mon 05 Mon 12 Mon 19 Mon 26 Mon 02 Mon 09 Mon 16 Mon 23 Mon 30	2012 May Moi 07 Moi 14 Moi 21 Moi 28 Moi 04 Moi 11 Moi 18 Moi 25 Moi 02 Moi 09 Moi
83	C om missioning	III W F S	T T S M W F S T T S M W F S T T S M W F S T T S M W F S T T S M W F S T T S M W F S	T T S N W F S T T S N W W F S T T S N W F S T T S N W F S T T S N W F S T T S N W F S T T S N W W W F S T T S N W W W F S T T S N W W W W W W W W W W W W W W W W W W
84	Labeling	1 day		07/13bg 07/12
86	Provide as-build drawings & documentation	1 day		07/13b0 07/12
86	Training to Customer	1 day		07.7. 2 00 07.7.2
87	Supply COC	1 day		07/12
88	Invoicing	1 day		3 07/13
89	Generator	13 days		
90	Position on plinth	1 day		06.27-706-67
91	Supply comms cable to NetBotz BMS	1 day		06.2 140 06 47
92	Cold-test	1 day		06.2 kg 06.47
93	W arm-test	1 day		q7.02 5 07.02
94	Commissioning	1 day		q7.02 07.02
95	Labeling	1 day		q7.02 3 00 07.02
96	Training to W orkers	1 day		d7.02→0 07.02
97	Provide as-build drawings & documentation	1 day		07/12bg 07/12
98	Training to Customer	1 day		07/12 ₀₀₋ 07/12
99	Invoicing (Hardware already paid)	1 day		3 07/13
100	Cooling	28 days		
01	Position Chillers on Plinth	1 day		07,06 07,06
102	(Install Piping	1 day		90.90 \$_30.90
п3	Connect piping to chillers	1 day		06.0610 06.06
104	Connect piping to aircons	1 day		07.06 07.06
105	Testing Chillers & Aircons	1 day		07.09 5 07.09
106	Labeling	1 day		07.0 <mark>042</mark> 0.70
107	Commission Chillers & Aircons	1 day		07/12 <mark>>0</mark> 07/12
108	Provide as-build drawings & documentation	1 day		97/13 3 00 07/12
109	Training to Customer	1 day		07/13 ₀₀₀₋ 07/12
110	Invoicing	1 day		₹ 07#3
111	False flooring	18 days		
112	Installs upport pillars	5 days		06.20
113	Install False Flooring	5 days		06.20
14	Install R amp	5 days		0620
15	Provide as-build drawings & documentation	1 day		07/12 07/12
116	Training to Customer	1 day		07/12
117	Invoicing	1 day		○ 07/13
118	Access Control	28 days		
19	Install hardware	2 days		<u>06.0</u> 6.07
120	T esting	2 days		06.0 \$ 06.07
121	Labeling	2 days		06.0 😘 06.07
122	Training to Workers	2 days		06.0 06.07
123	Commissioning	1 day		07/12 b 0 07/12

PRESENTED TO T-SYSTEMS ID Task Name Dt		B	ES KO M PO LO KWA NE DC 2012 March 2012 March 2012 March	ELECTR
ID Task N	diii t	Deration	2012 May 2012 May Hot D5 Mot 13 Mot 20 Mot 27 Mot D5 Mot 12 Mot 13 Mot 26 Mot D2 Mot D3 Mot D3 Mot D3 Mot D7 Mot D4 Mot D4 Mot D4 Mot D4 Mot D5 Mot D2 Mot D2 Mot D5 Mot D7 Mot D4	Uoi 09 Uoi
124	Provide as-build drawings & documentation	1 day	γ	200 7/12
125	Training to Customer	1 day	vj	200-07/12
126	Invoicing	1 day	v	07/13
127	Fire suppression	27 days	s 	-
128	Install piping for cylinders and detectors	3 days	rs 06.06 <u>t</u> 06.08	
129	Install Control Panel	3 days	06.27 1 06.29	
130	Instal detectors	3 дауз	06.29 06.29	
131	Install cylinders	3 дауз	06.2 140 06.29	
132	T esting	3 дауз	062	
133	Labeling	3 days	06.2 1	
134	Training to Workers	3 дауз	06.2 1	
135	Commissioning	1 day	V 107.71	207/12
136	Provide as-build drawings & documentation	1 day	N.50	07/12
137	Training to Customer	1 day	V 0724	07/12
138	Invoicing	1 day	$\overline{m{ec{v}}}$	07/12
139	Data Centre	12 days	5	-
140	Position equipment	2 days	06.27 <u>\$ 16.28 </u>	
41	Assemble equipment	5 days	06,29,200,07.	15
12	Populate racks	5 days	06.2 9 07.6	15
43	Connect cables between UPS and PDU's	5 days	06.29 07.7	15
	Populate UPS	5 days	06.29 077.	15
45	Commission UPS	2 days	07.09	07.09
166	Commission PDU's	5 days	07.0	07/12
47	Labeling	2 days	07.06	07.09
148	Provide as-build drawings & documentation	1 day	v.v.	200 07/12
49	Training to Customer	1 day	▼	07/12
150	Invoicing (Hardware already paid)	1 day		07/12
51	NetBotz BMS	5 days	2	
152	Install H ardware	€ days	07.05	07/11
153	Install comms cables	∔ daγa	07.06	07/11
154	C onfigure system	∔ daγa	07.04	07/11
155	Testing	∔ daγa	07.06	07/11
156	Labeling	. I daγa	07.06	07/11
157	Commissioning	1 day		3-07/12
158	Provide as-build drawings & documentation	1 day	W.00	07/12
159	Training to Customer	1 day	v 07A	20 07/12
160	Invoicing	1 day		7/12
161	Solution Testing and documentation pre-approval	↓ daγs	97.	43 -
162	Client Witness Acceptance	1 day		l l
163	Final Invoices to TSSA	1 day		07