



Kenya Electricity Generating Company Limited  
Tender for Supply, Installation & Commissioning of SCADA Wide Area Network & Backup Control Centre Hardware for KenGen Hydroelectric Power Plants

APPENDIX III: DRAWINGS

SPECIFICATION DRAWINGS

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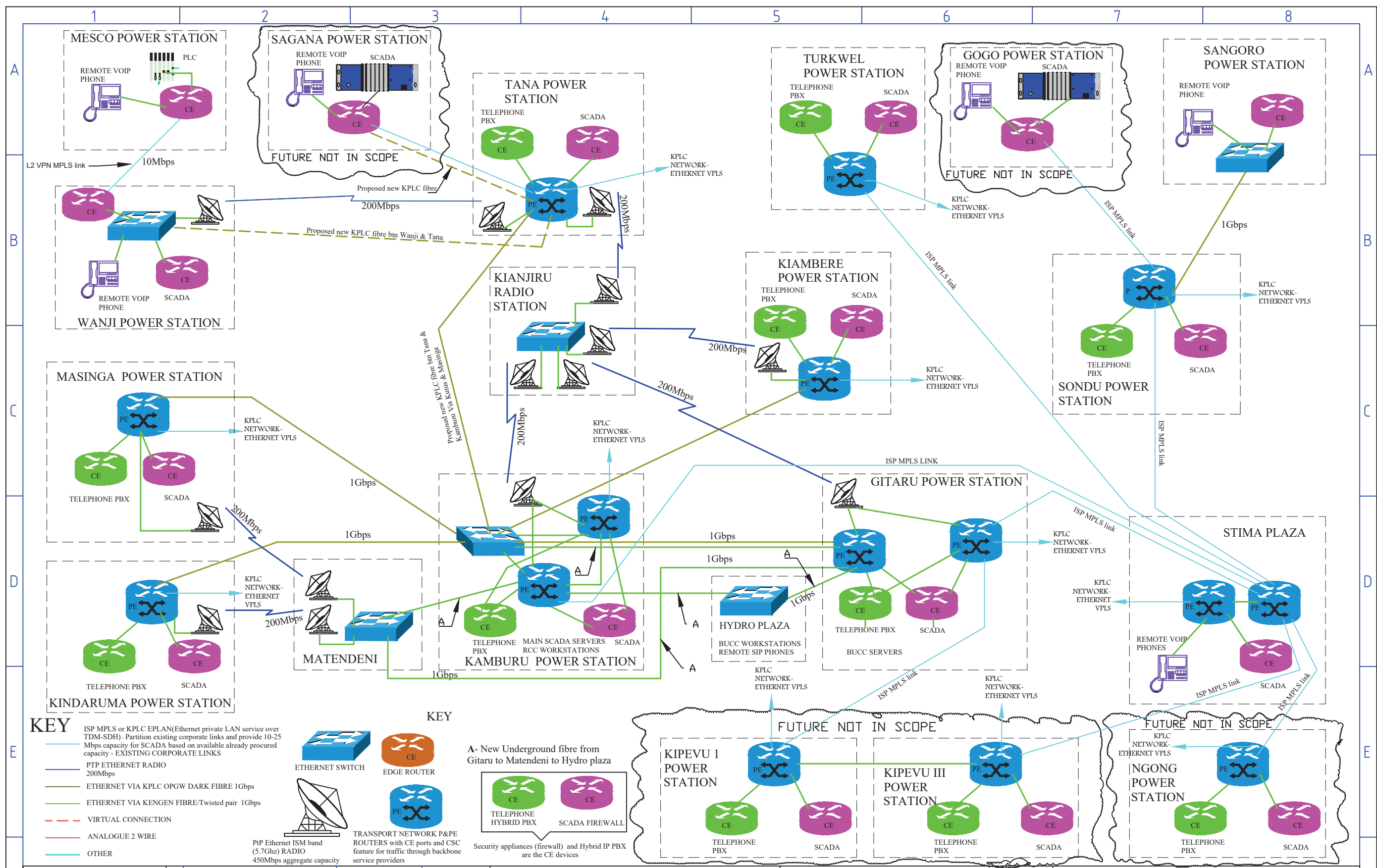
APPENDIX III (attachment)

Specification drawings

INSTRUCTIONS

- a. These drawings are intended to illustrate the basic requirements to be satisfied. They do not cover all the requirements
- b. It is the responsibility of the contractor to prepare a detailed layout/schematic for the new system, any errors or losses arising from use of these drawings for equipment manufacture, installation or commissioning shall be borne by the contractor.
- c. These drawings shall not be used for any other purpose other than understanding the employer's requirements
- d. Bidder shall prepare their own single line, layout and block diagrams as per requirements in clause 1.5 of employer's requirements. These drawings shall only be used for reference
- e. In case of conflict between these drawings and the employer requirements, employer requirements shall prevail
- f. In case of conflict between these drawings and the existing equipment's drawings, the existing equipment drawings shall prevail

				DATE	NAME	SHEET TITLE	PROJECT TITLE
				Designed	22/05/2021 D WANGARIRIA	COVER PAGE INSTRUCTIONS	TENDER FOR UPGRADE OF SCADA WAN & BUCC PHYSICAL CONNECTIONS LAYOUT DIAGRAMS & SLD
				Checked	03/08/2021 J MUOKA		
1	TENDER	28/04/2022	DMUYA	DRAWN FOR TENDER ILLUSTRATION PURPOSE ONLY		DRAWING NO. KGN-HYD-SCD-01-21	SHEETS 00 OF 16
0	CONCEPT	11/10/2021	DMUYA	SHALL NOT BE USED FOR EQUIPMENT MANUFACTURE			
No:	Revision	Date	By	SCALE	NOT TO SCALE	SHEET SIZE A3	FILENAME COVER PAGE



**KEY**

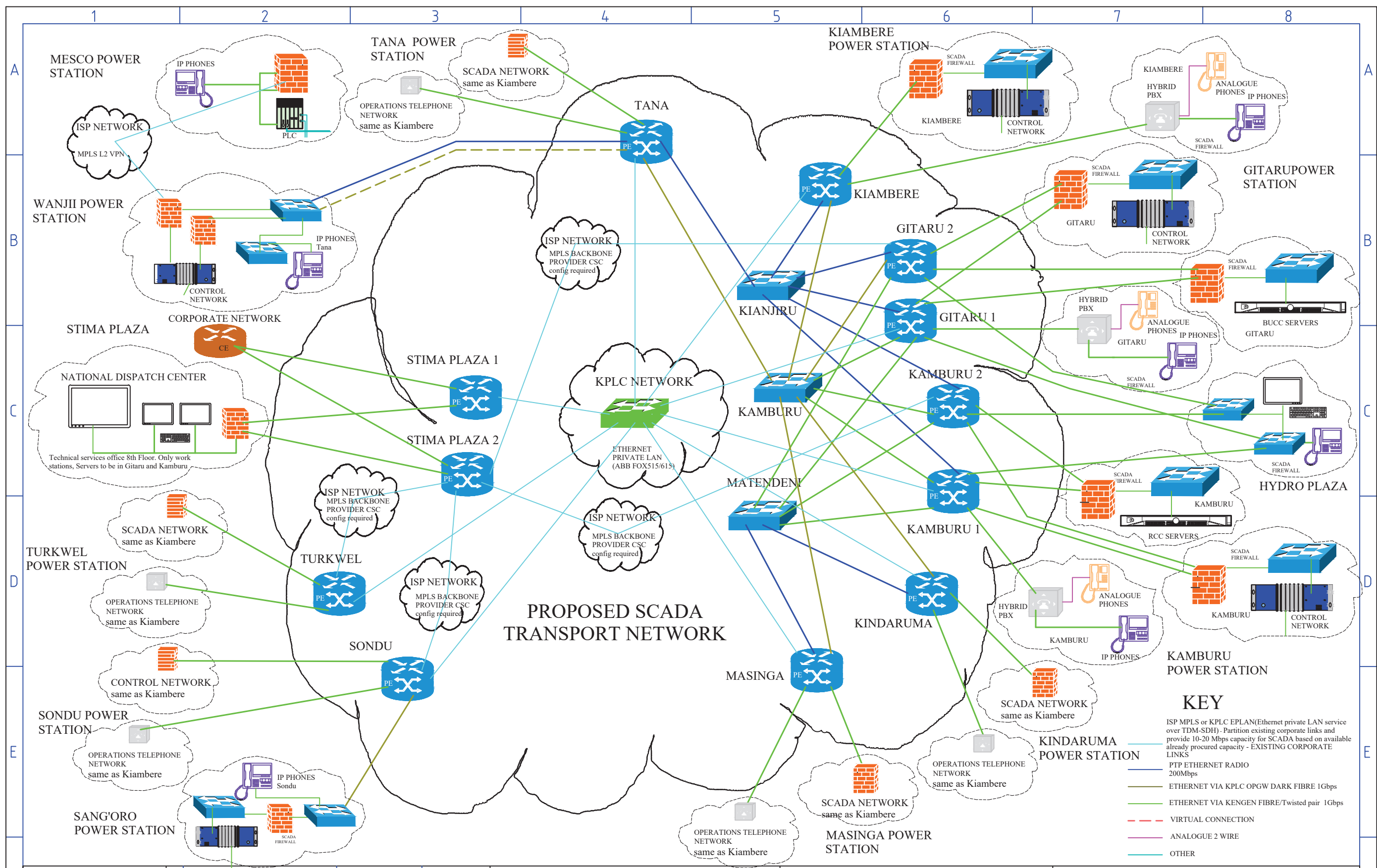
- ISP MPLS or KPLC EPLAN (Ethernet private LAN service over TDM-SDH) - Partition existing corporate links and provide 10-25 Mbps capacity for SCADA based on available already procured capacity - EXISTING CORPORATE LINKS
- PTP ETHERNET RADIO 200Mbps
- ETHERNET VIA KPLC OPGW DARK FIBRE 1Gbps
- ETHERNET VIA KENGEN FIBRE/TWISTED PAIR 1Gbps
- VIRTUAL CONNECTION
- ANALOGUE 2 WIRE
- OTHER

**KEY**

- ETHERNET SWITCH
- EDGE ROUTER
- TRANSPORT NETWORK P&PE ROUTERS with CE ports and CSC feature for traffic through backbone service providers
- PE
- TELEPHONE HYBRID PBX
- SCADA FIREWALL
- Security appliances (firewall) and Hybrid IP PBX are the CE devices

A- New Underground fibre from Gitaru to Matendeni to Hydro plaza

			<b>DATE</b>		<b>NAME</b>		<b>SHEET TITLE</b>		<b>PROJECT TITLE</b>		
			Designed	22/05/2021	D.WANGARIRIA		PROPOSED SCADA WAN FOR KENGEN HEP'S		TENDER FOR UPGRADE OF SCADA WAN & BUCC		
			Checked	03/08/2021	J.MUOKA		OVERALL NETWORK LAYOUT		PHYSICAL CONNECTIONS LAYOUT DIAGRAMS & SLD		
			DRAWN FOR TENDER ILLUSTRATION PURPOSE ONLY				SCALE NOT TO SCALE		SHEET SIZE A3		
		SHALL NOT BE USED FOR EQUIPMENT MANUFACTURE						DRAWING NO. KGN-HYD-SCD-01-21		SHEETS	
		No: Revision		Date		By				01 OF 16	

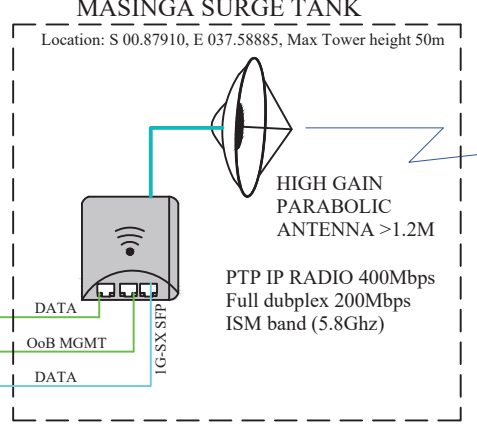
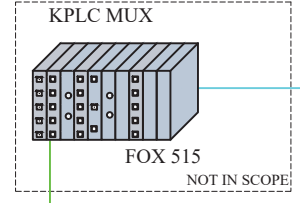
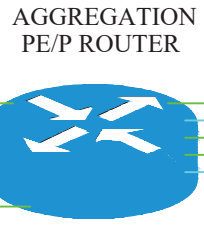
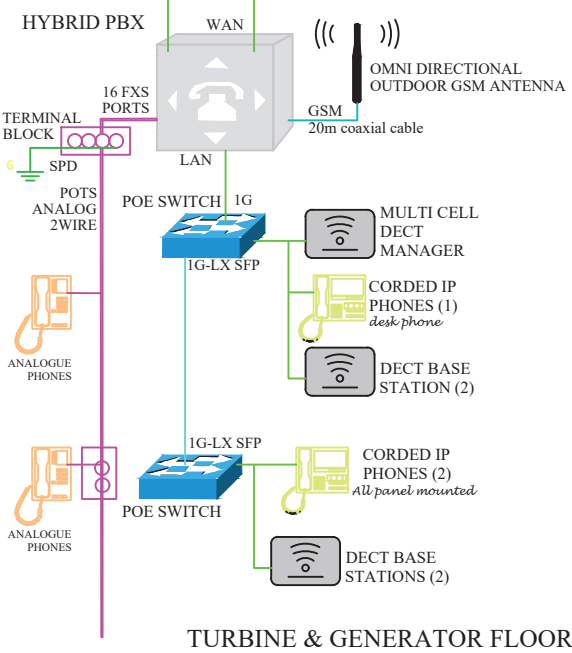
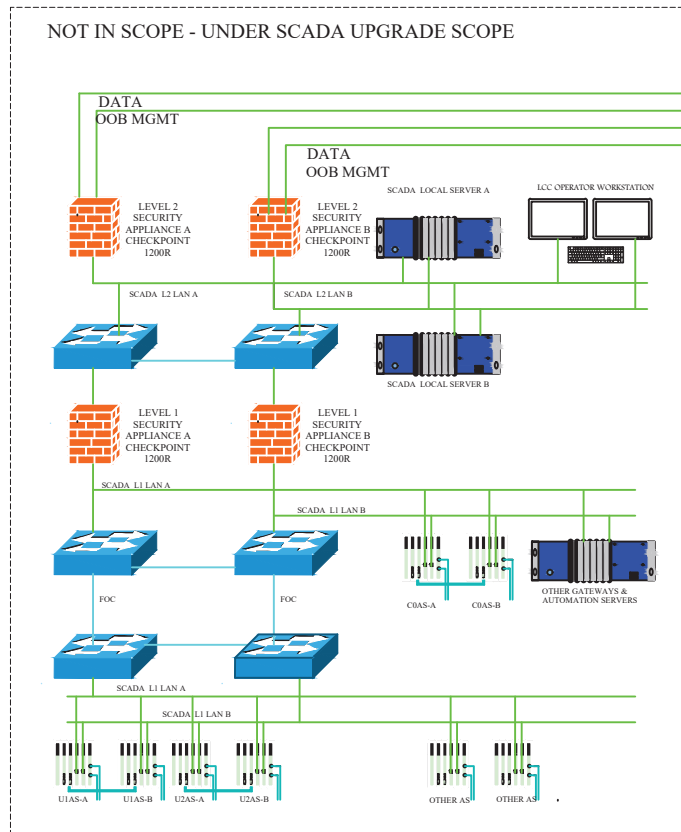
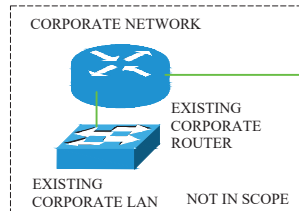


**KEY**

- ISP MPLS or KPLC EPLAN (Ethernet private LAN service over TDM-SDH) - Partition existing corporate links and provide 10-20 Mbps capacity for SCADA based on available already procured capacity - EXISTING CORPORATE LINKS
- PTP ETHERNET RADIO 200Mbps
- ETHERNET VIA KPLC OPGW DARK FIBRE 1Gbps
- ETHERNET VIA KENGEN FIBRE/TWISTED PAIR 1Gbps
- VIRTUAL CONNECTION
- ANALOGUE 2 WIRE
- OTHER

			DATE		NAME		SHEET TITLE		PROJECT TITLE												
			Designed 22/05/2021		D.WANGARIRIA		PROPOSED SCADA WAN FOR KENGEN HEP'S TRANSPORT NETWORK LAYOUT		TENDER FOR UPGRADE OF SCADA WAN & BUCC PHYSICAL CONNECTIONS LAYOUT DIAGRAMS & SLD												
			Checked 03/08/2021		J.MUOKA																
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		SHALL NOT BE USED FOR EQUIPMENT MANUFACTURE																			
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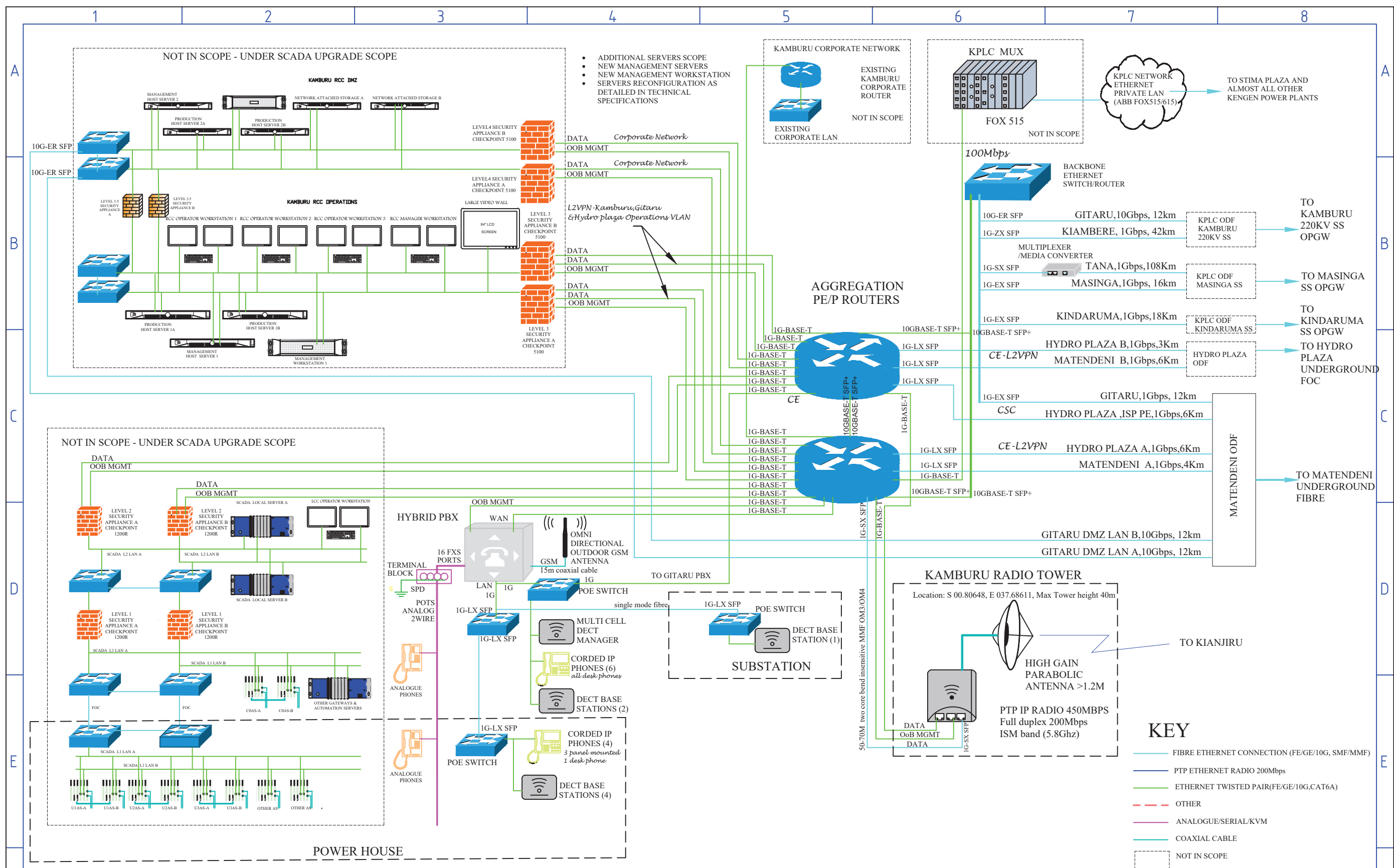




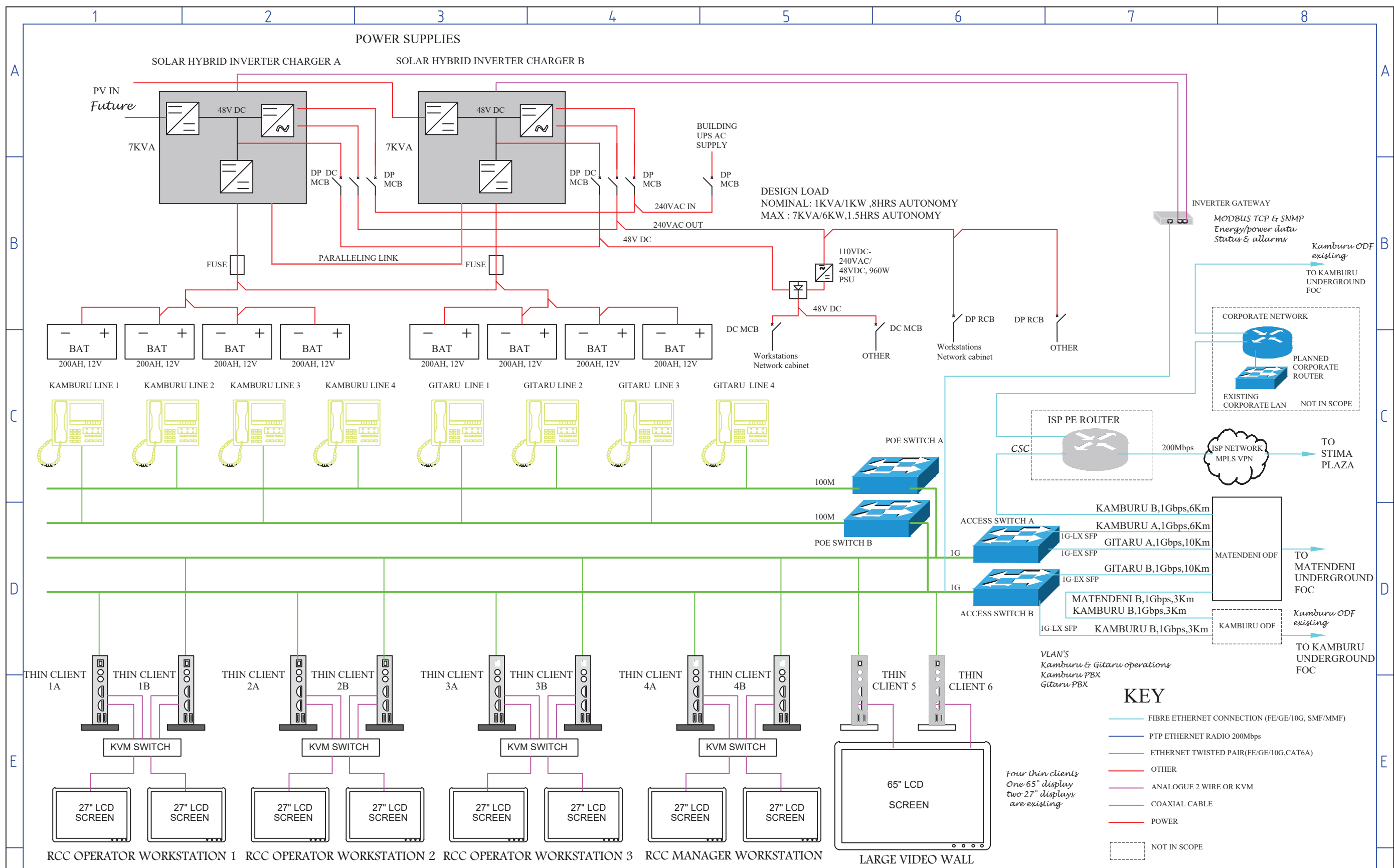
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  - PTP ETHERNET RADIO 200Mbps
  - ETHERNET TWISTED PAIR(FE/GE/10G,CAT6A)
  - VIRTUAL CONNECTION
  - ANALOGUE 2 WIRE
  - COAXIAL CABLE
  - NOT IN SCOPE

				<b>DATE</b>	<b>NAME</b>	<b>SHEET TITLE</b>	<b>PROJECT TITLE</b>	
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				DRAWN FOR TENDER ILLUSTRATION PURPOSE ONLY				
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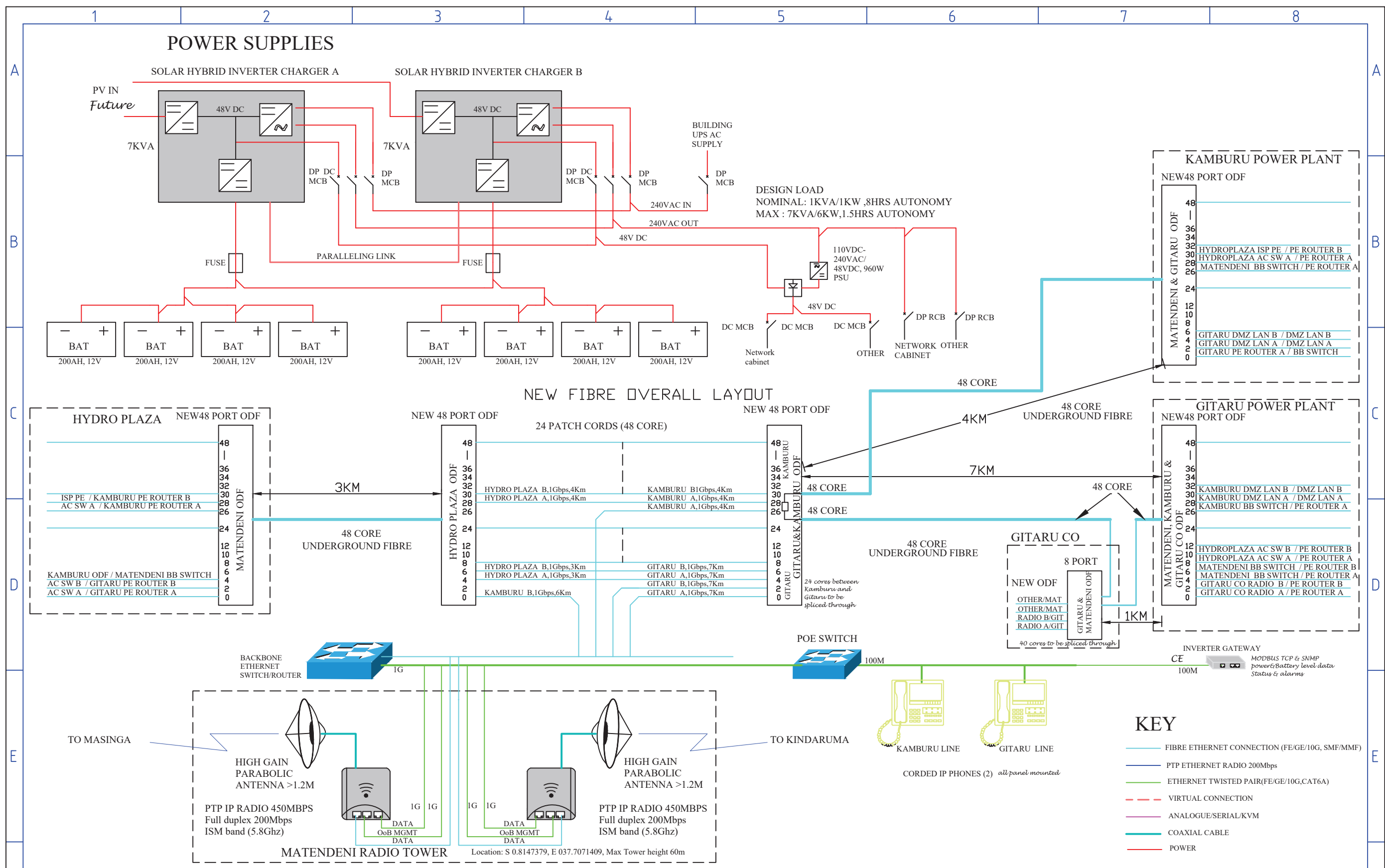




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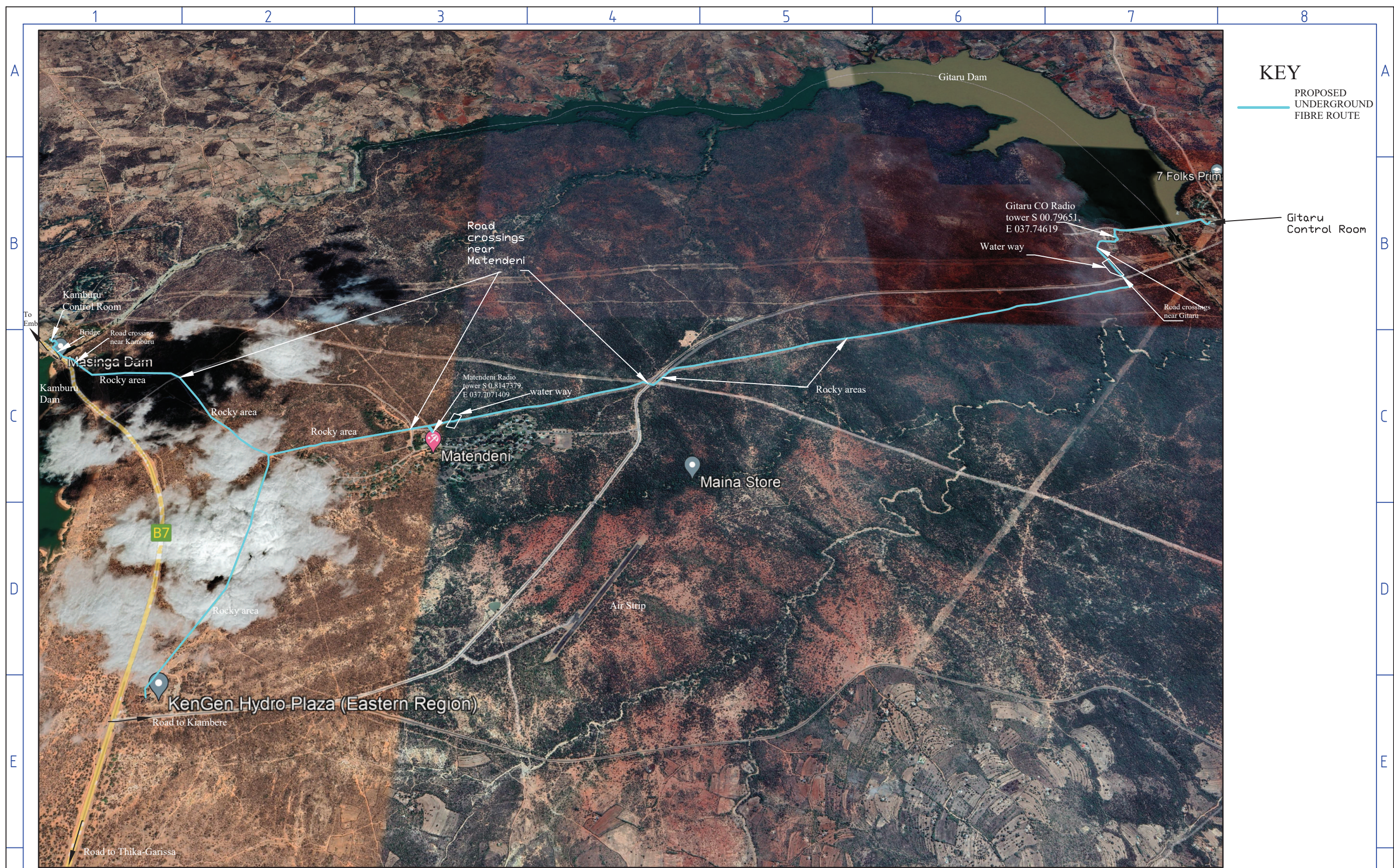


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				Checked 03/08/2021	J.MUOKA	PHYSICAL CONNECTIONS LAYOUT DIAGRAMS & SLD		
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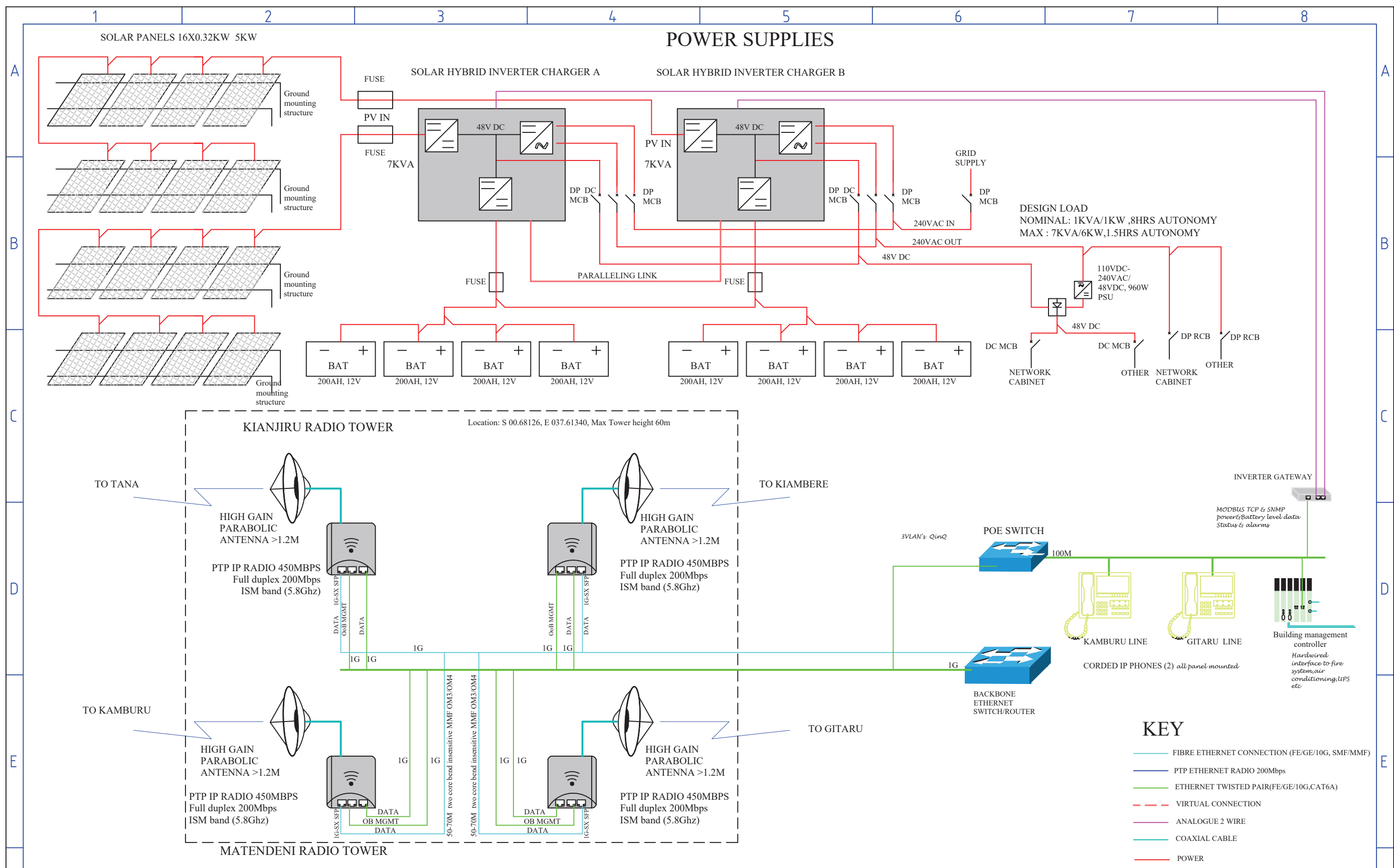




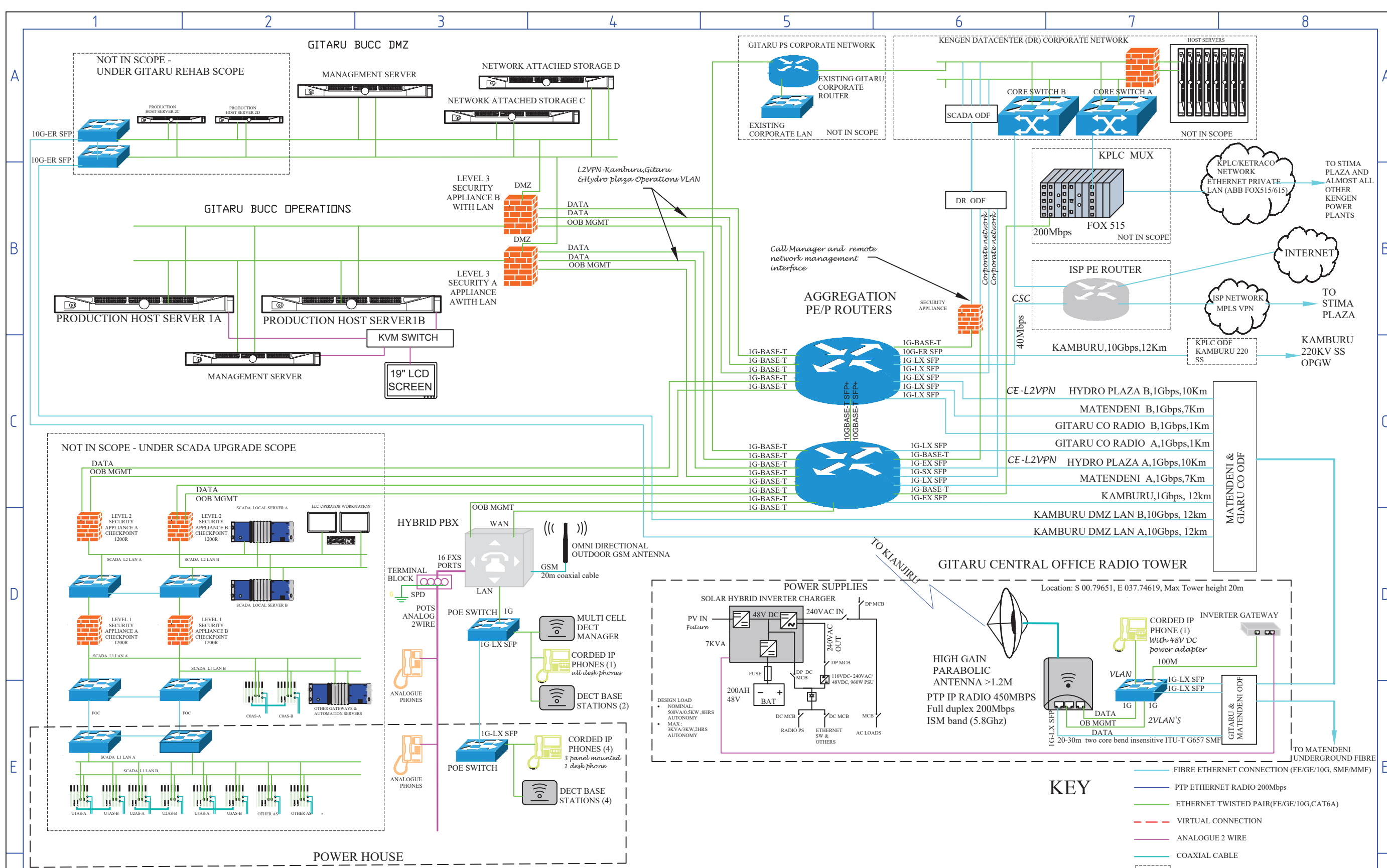
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				Checked	03/08/2021 J.MUOKA	PHYSICAL ARCHITECTURE LAYOUT DIAGRAM		PHYSICAL CONNECTIONS LAYOUT DIAGRAMS & SLD	
				DRAWN FOR TENDER ILLUSTRATION PURPOSE ONLY				DRAWING NO. KGN-HYD-SCD-01-21	
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				Checked	03/08/2021 J.MUOKA			PHYSICAL CONNECTIONS LAYOUT DIAGRAMS & SLD	
				DRAWN FOR TENDER ILLUSTRATION PURPOSE ONLY			DRAWING NO. KGN-HYD-SCD-01-21		
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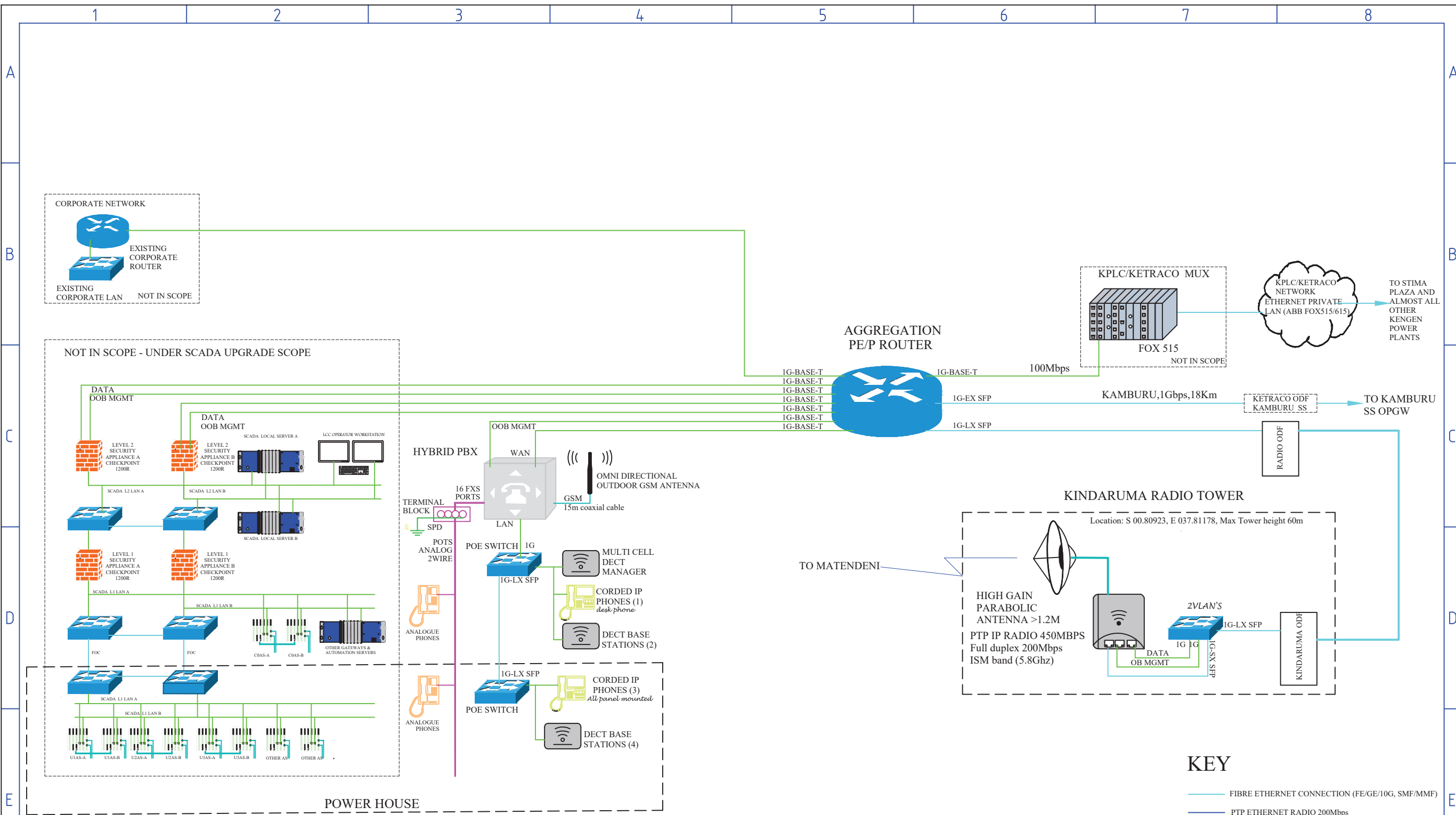


**KEY**

- FIBRE ETHERNET CONNECTION (FE/GE/10G, SMF/MMF)
- PTP ETHERNET RADIO 200Mbps
- ETHERNET TWISTED PAIR (FE/GE/10G, CAT6A)
- - - VIRTUAL CONNECTION
- ANALOGUE 2 WIRE
- COAXIAL CABLE
- NOT IN SCOPE

				<b>DATE</b>	<b>NAME</b>	<b>SHEET TITLE</b>	<b>PROJECT TITLE</b>	
				Designed 22/05/2021	D.WANGARIRIA		PROPOSED GITARU NETWORK PHYSICAL ARCHITECTURE LAYOUT DIAGRAM	TENDER FOR UPGRADE OF SCADA WAN & BUCC PHYSICAL CONNECTIONS LAYOUT DIAGRAMS & SLD
				Checked 03/08/2021	J.MUOKA	DRAWING NO. KGN-HYD-SCD-01-21		
				DRAWN FOR TENDER ILLUSTRATION PURPOSE ONLY			SCALE NOT TO SCALE	
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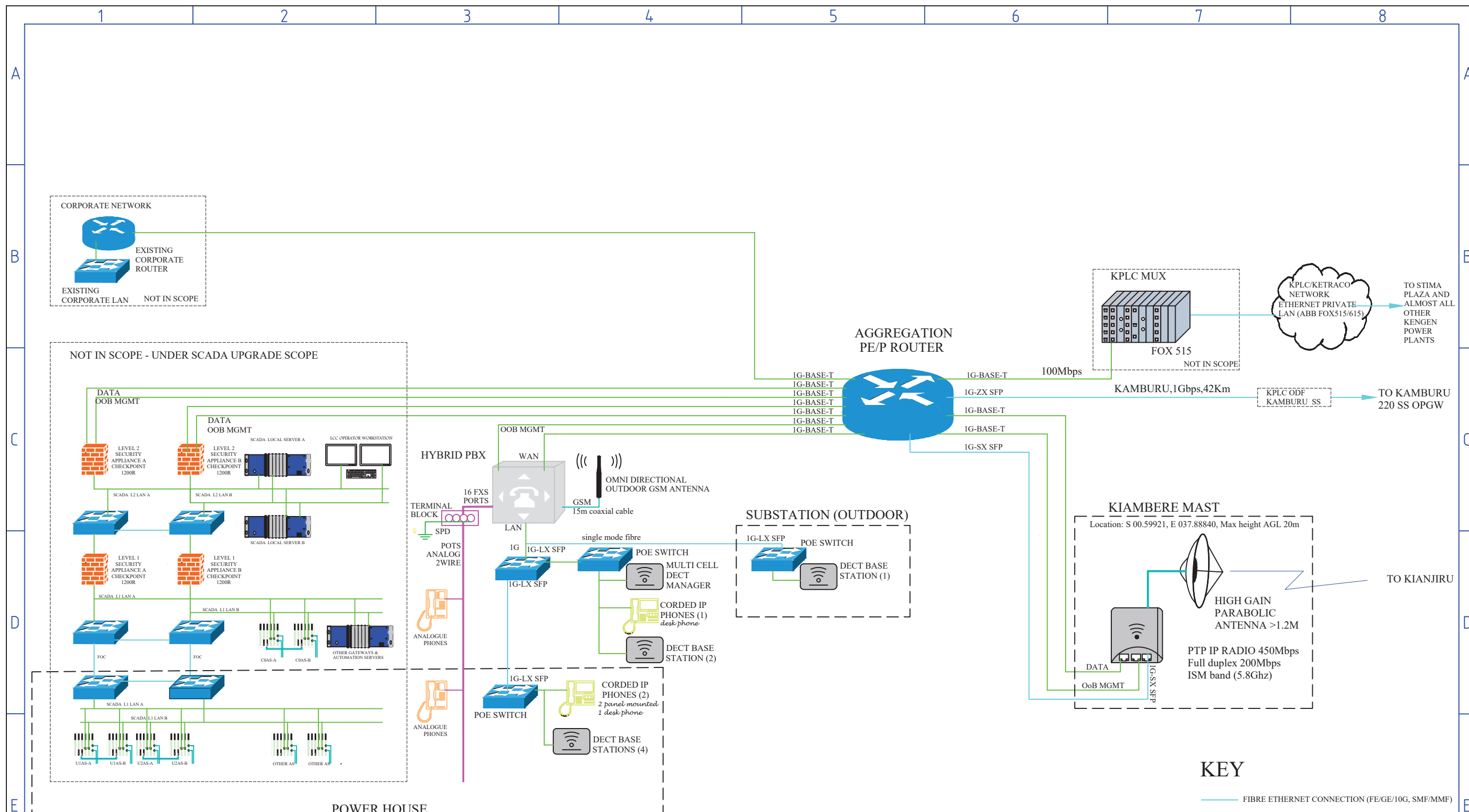




**KEY**

- FIBRE ETHERNET CONNECTION (FE/GE/10G, SMF/MMF)
- PTP ETHERNET RADIO 200Mbps
- ETHERNET TWISTED PAIR (FE/GE/10G, CAT6A)
- - - VIRTUAL CONNECTION
- ANALOGUE 2 WIRE
- COAXIAL CABLE
- ..... NOT IN SCOPE

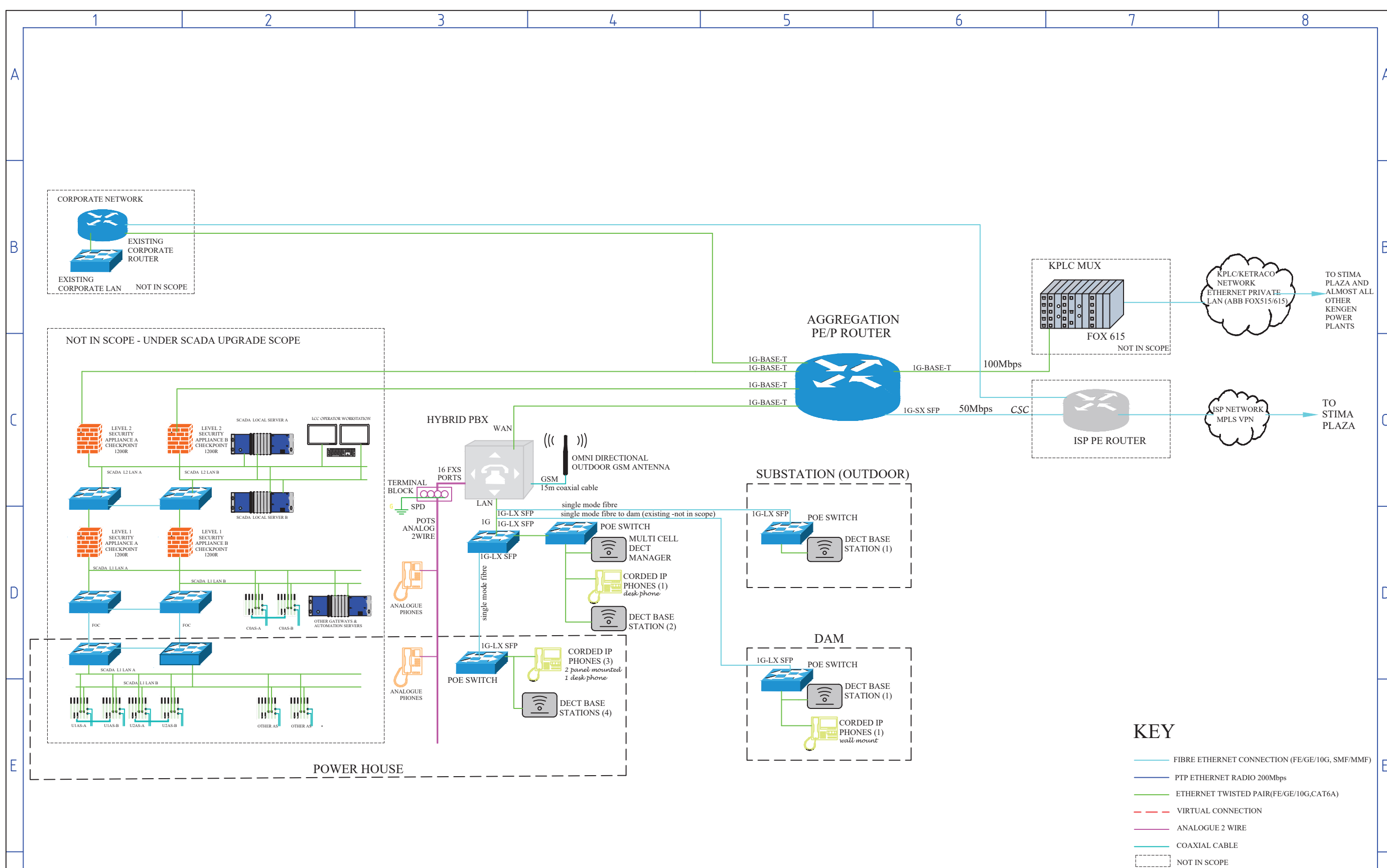
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				Checked 03/08/2021	J.MUOKA	PHYSICAL ARCHITECTURE LAYOUT DIAGRAM	PHYSICAL CONNECTIONS LAYOUT DIAGRAMS & SLD
				DRAWN FOR TENDER ILLUSTRATION PURPOSE ONLY			
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No:	Revision	Date	By	SHALL NOT BE USED FOR EQUIPMENT MANUFACTURE			DRAWING NO. KGN-HYD-SCD-01-21
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**KEY**

- FIBRE ETHERNET CONNECTION (FE/GE/10G, SMF/MMF)
- PTP ETHERNET RADIO 200Mbps
- ETHERNET TWISTED PAIR(FE/GE/10G,CAT6A)
- - - VIRTUAL CONNECTION
- ANALOGUE 2 WIRE
- COAXIAL CABLE
- NOT IN SCOPE

			<b>DATE</b>	<b>NAME</b>	<b>SHEET TITLE</b>	<b>PROJECT TITLE</b>		
			Designed	22/05/2021 D.WANGARIRIA		PROPOSED KIAMBERE NETWORK	TENDER FOR UPGRADE OF SCADA WAN & BUCC	
			Checked	03/08/2021 J.MUOKA			PHYSICAL ARCHITECTURE LAYOUT DIAGRAM	PHYSICAL CONNECTIONS LAYOUT DIAGRAMS & SLD
			DRAWN FOR TENDER ILLUSTRATION PURPOSE ONLY			SCALE	NOT TO SCALE	SHEET SIZE A3
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No:	Revision	Date	By					



**KEY**

- FIBRE ETHERNET CONNECTION (FE/GE/10G, SMF/MMF)
- PTP ETHERNET RADIO 200Mbps
- ETHERNET TWISTED PAIR(FE/GE/10G,CAT6A)
- - - VIRTUAL CONNECTION
- ANALOGUE 2 WIRE
- COAXIAL CABLE
- NOT IN SCOPE

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	DRAWN FOR TENDER ILLUSTRATION PURPOSE ONLY			SCALE NOT TO SCALE		SHEET SIZE A3	
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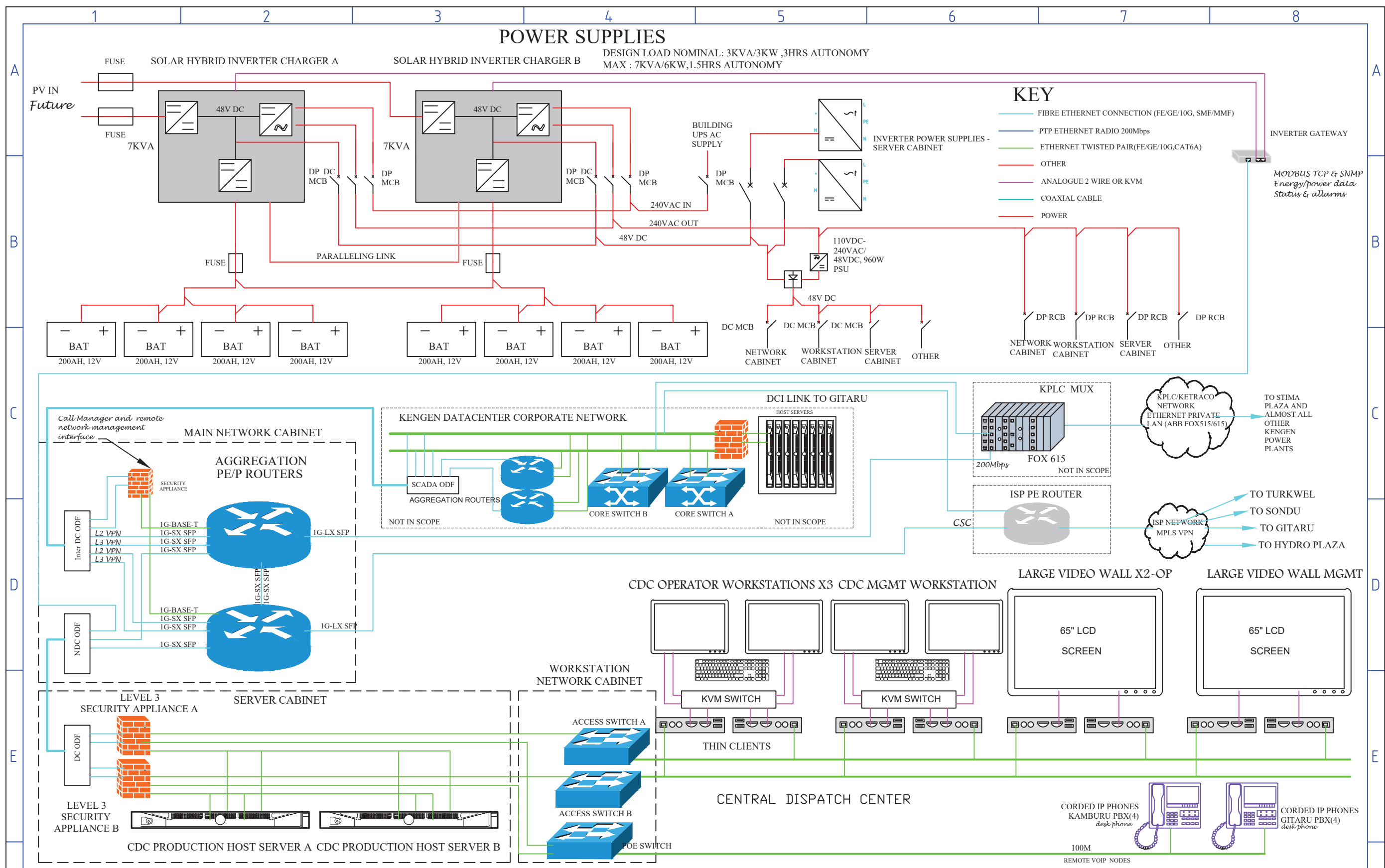


# POWER SUPPLIES

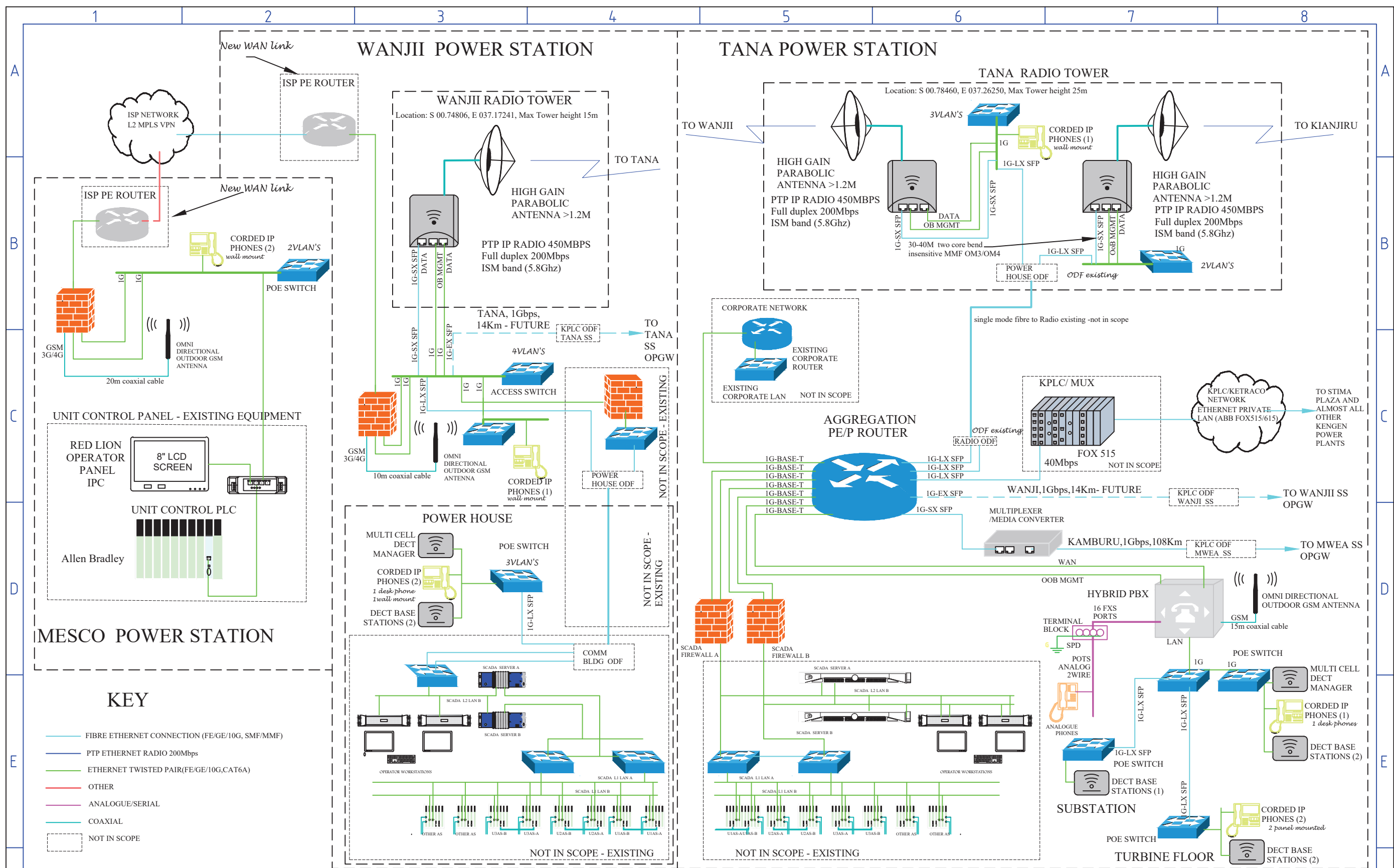
DESIGN LOAD NOMINAL: 3KVA/3KW ,3HRS AUTONOMY  
MAX : 7KVA/6KW,1.5HRS AUTONOMY

## KEY

- FIBRE ETHERNET CONNECTION (FE/GE/10G, SMF/MMF)
- PTP ETHERNET RADIO 200Mbps
- ETHERNET TWISTED PAIR(FE/GE/10G,CAT6A)
- OTHER
- ANALOGUE 2 WIRE OR KVM
- COAXIAL CABLE
- POWER



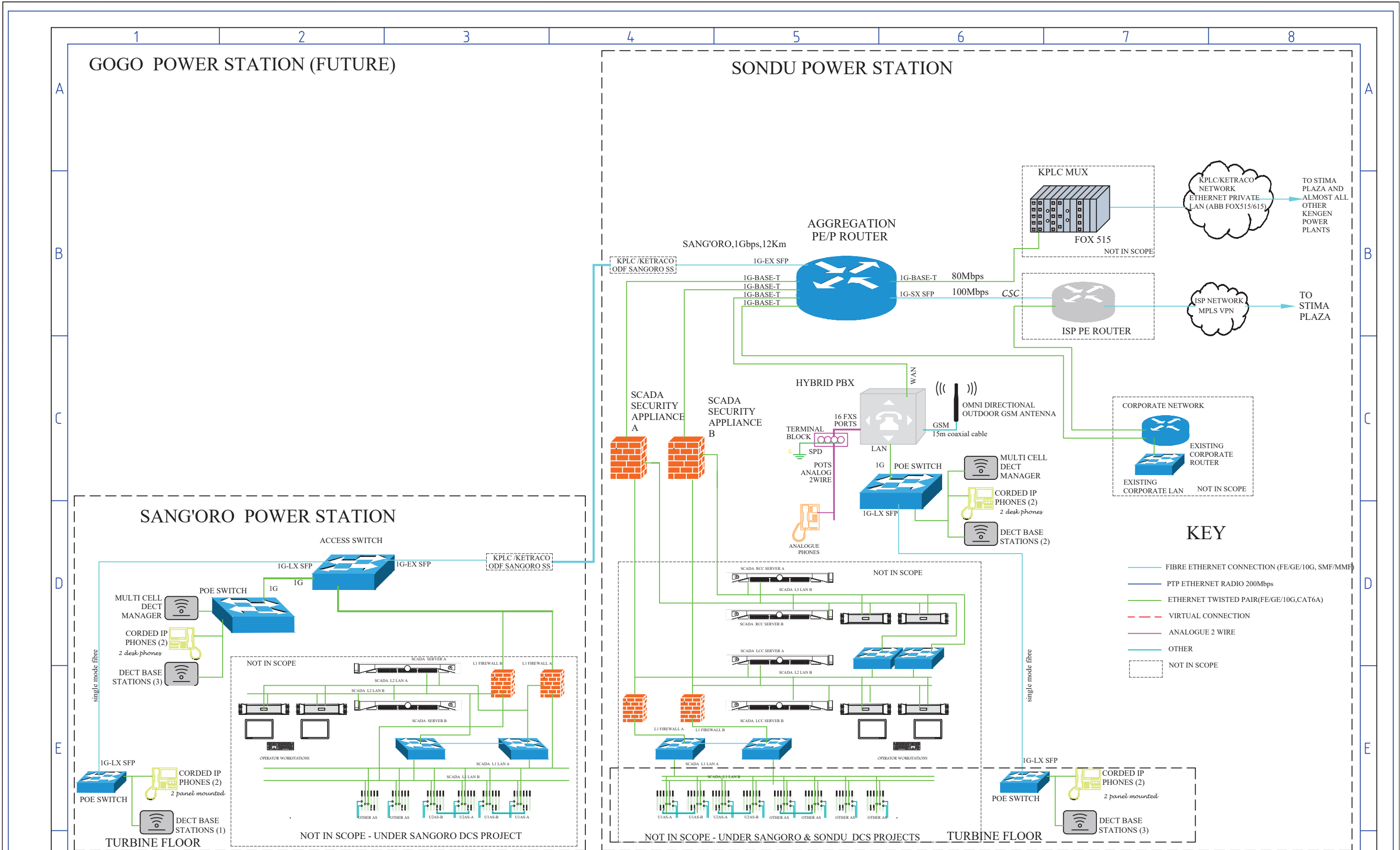
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			Checked 03/08/2021		J.MUOKA		PHYSICAL ARCHITECTURE LAYOUT DIAGRAM		PHYSICAL CONNECTIONS LAYOUT DIAGRAMS & SLD		
			DRAWN FOR TENDER ILLUSTRATION PURPOSE ONLY		SHALL NOT BE USED FOR EQUIPMENT MANUFACTURE		SCALE NOT TO SCALE		SHEET SIZE A3		
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		0 CONCEPT 11/10/2021 DMUYA						FILENAME STIMA PLAZA PHYSICAL LAYOUT		13 OF 16	
		No: Revision Date By									



				DATE	NAME	SHEET TITLE	PROJECT TITLE
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				Checked	03/08/2021 J.MUOKA	PHYSICAL ARCHITECTURE LAYOUT DIAGRAM	PHYSICAL CONNECTIONS LAYOUT DIAGRAMS & SLD
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No:	Revision	Date	By
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0	CONCEPT	11/10/2021	DMUYA



				DATE	NAME	SHEET TITLE	PROJECT TITLE							
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				Checked	03/08/2021 J.MUOKA	PHYSICAL ARCHITECTURE LAYOUT DIAGRAM	PHYSICAL CONNECTIONS LAYOUT DIAGRAMS & SLD							
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