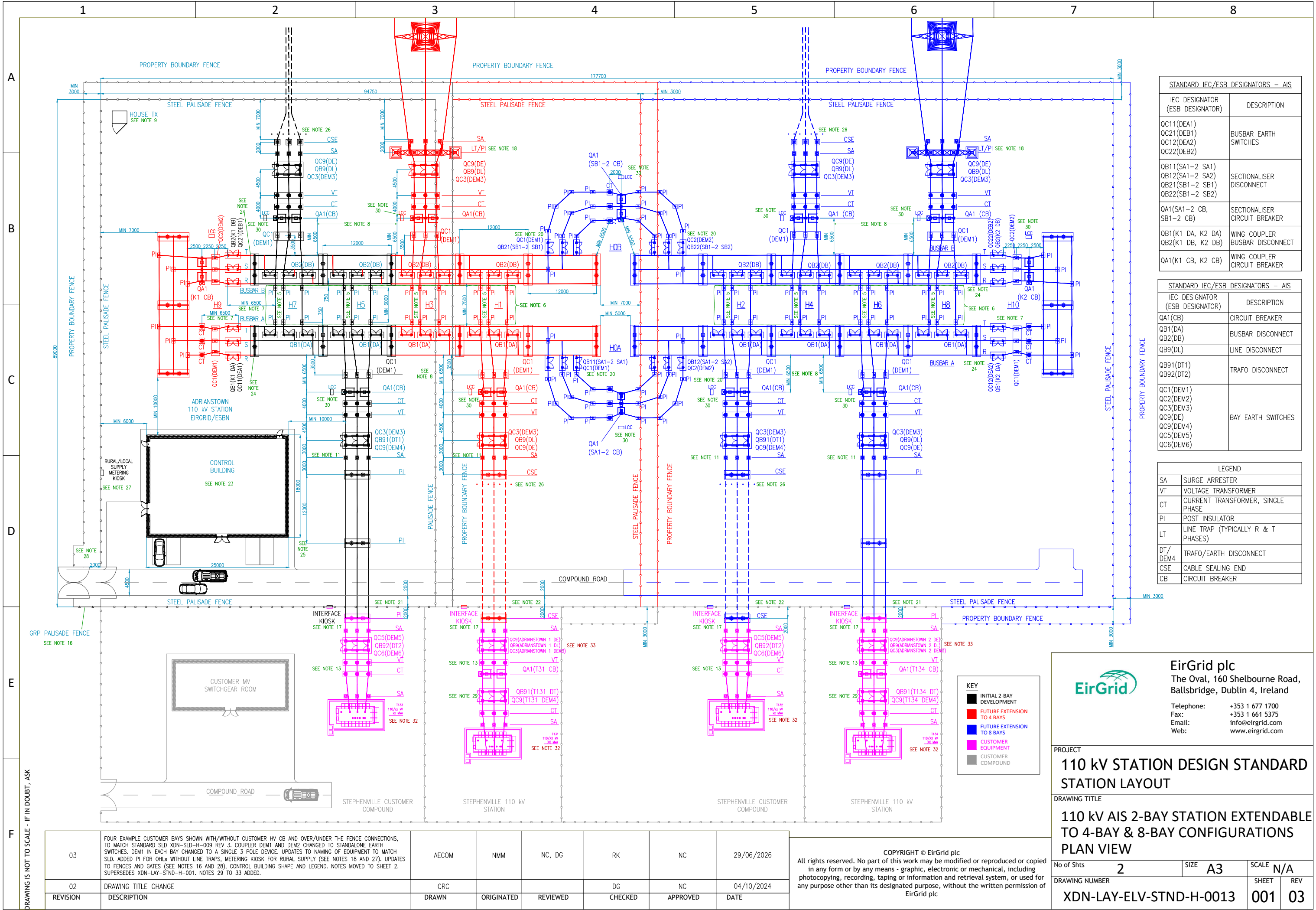




STANDARD IEC/ESB DESIGNATORS – AIS	
IEC DESIGNATOR (ESB DESIGNATOR)	DESCRIPTION
QC11(DEA1) QC21(DEB1) QC12(DEA2) QC22(DEB2)	BUSBAR EARTH SWITCHES
QB11(SA1–2 SA1) QB12(SA1–2 SA2) QB21(SB1–2 SB1) QB22(SB1–2 SB2)	SECTIONALISER DISCONNECT
QA1(SA1–2 CB, SB1–2 CB)	SECTIONALISER CIRCUIT BREAKER
QB1(K1 DA, K2 DA) QB2(K1 DB, K2 DB)	WING COUPLER BUSBAR DISCONNECT
QA1(K1 CB, K2 CB)	WING COUPLER CIRCUIT BREAKER

STANDARD IEC/ESB DESIGNATORS – AIS	
IEC DESIGNATOR (ESB DESIGNATOR)	DESCRIPTION
QA1(CB)	CIRCUIT BREAKER
QB1(DA) QB2(DB)	BUSBAR DISCONNECT
QB9(DL)	LINE DISCONNECT
QB91(DT1) QB92(DT2)	TRAFO DISCONNECT
QC1(DEM1) QC2(DEM2) QC3(DEM3) QC9(DE) QC5(DEM4) QC6(DEM5) QC8(DEM6)	BAY EARTH SWITCHES

LEGEND	
SA	SURGE ARRESTER
VT	VOLTAGE TRANSFORMER
CT	CURRENT TRANSFORMER, SINGLE PHASE
PI	POST INSULATOR
LT	LINE TRAP (TYPICALLY R & T PHASES)
DT/DEM4	TRAFO/EARTH DISCONNECT
CSE	CABLE SEALING END
CB	CIRCUIT BREAKER

KEY	
■	INITIAL 2-BAY DEVELOPMENT
■	FUTURE EXTENSION TO 4 BAYS
■	FUTURE EXTENSION TO 8 BAYS
■	CUSTOMER EQUIPMENT
■	CUSTOMER COMPOUND



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PROJECT
**110 kV STATION DESIGN STANDARD
STATION LAYOUT**
DRAWING TITLE
**110 kV AIS 2-BAY STATION EXTENDABLE
TO 4-BAY & 8-BAY CONFIGURATIONS
PLAN VIEW**

No of Shets	2	SIZE	A3	SCALE	N/A
DRAWING NUMBER	XDN-LAY-ELV-STND-H-0013				
SHEET	001	REV	03		

03	FOUR EXAMPLE CUSTOMER BAYS SHOWN WITH/WITHOUT CUSTOMER HV CB AND OVER/UNDER THE FENCE CONNECTIONS, TO MATCH STANDARD SLD XDN-SLD-H-009 REV 3. COUPLER DEM1 AND DEM2 CHANGED TO STANDALONE EARTH SWITCHES. DEM1 IN EACH BAY CHANGED TO A SINGLE 3 POLE DEVICE. UPDATES TO NAMING OF EQUIPMENT TO MATCH SLD. ADDED PI FOR OHLs WITHOUT LINE TRAPS, METERING KIOSK FOR RURAL SUPPLY (SEE NOTES 18 AND 27). UPDATES TO FENCES AND GATES (SEE NOTES 16 AND 28). CONTROL BUILDING SHAPE AND LEGEND. NOTES MOVED TO SHEET 2. SUPERSEDES XDN-LAY-STND-H-001. NOTES 29 TO 33 ADDED.	AECOM	NMM	NC, DG	RK	NC	29/06/2026
02	DRAWING TITLE CHANGE	CRC			DG	NC	04/10/2024
REVISION	DESCRIPTION	DRAWN	ORIGINATED	REVIEWED	CHECKED	APPROVED	DATE

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A	1	2	3	4	5	6	7	8																																								
	NOTE 1: THIS IS A CONCEPTUAL DESIGN FOR GUIDANCE ONLY. ALL DIMENSIONS AND REFERENCES GIVEN ARE INDICATIVE ONLY. LAYOUT TO BE FURTHER OPTIMISED DURING DETAILED DESIGN PENDING SPECIFIC EQUIPMENT SUPPLIER AND SITE DETAILS. NOTE 2: RELOCATION OR ADDITIONAL POST INSULATORS MAY BE REQUIRED, SUBJECT TO DETAIL DESIGN. NOT SHOWN FOR CLARITY. NOTE 3: VEHICULAR ACCESS TO ALL HV PLANT SHALL BE PERMITTED WITHOUT THE NEED FOR UNNECESSARY PROXIMITY OUTAGES. CONSIDERATION OF LV CABLE TRENCH LAYOUTS AND TRAFFIC-BEARING TRENCH COVERS SHALL BE CONSIDERED DURING DETAILED DESIGN.				NOTE 18 (AS ILLUSTRATED ON DRAWING): FOR OHL BAYS WHERE A LINE TRAP IS NOT REQUIRED, PI SHOULD BE LOCATED UNDER THE GANTRY. FINAL DISTANCE BETWEEN DISCONNECT AND PI TO BE DETERMINED BY THE DESIGNER. NOTE 19: THE CUSTOMER SHOULD ALLOW SPACE FOR A FUTURE TRANSFORMER CONNECTION IN THE AREA ADJACENT TO THE CUSTOMER COMPOUND AND TRANSMISSION STATION. NOTE 20: BUSBAR EARTH SWITCHES AND THEIR CORRESPONDING SECTIONALISER DISCONNECTS ARE HOUSED ON THE SAME STRUCTURE.																																											
	NOTE 4: LIGHTNING MASTS, LV TRENCH DUCT ROUTES, MARSHALLING/INTERFACE CABINETS AND LIGHTING FIXTURES SHALL BE CONSIDERED DURING DETAIL DESIGN. NOTE 5 (AS ILLUSTRATED ON DRAWING): TWO PHASES OF THE LOW LEVEL BAY CONDUCTORS ARE ARRANGED CLOSER TOGETHER TO AVOID UNNECESSARY PROXIMITY OUTAGES ON ADJACENT BAYS. TO BE REPEATED FOR ALL BAYS. NOTE 6 (AS ILLUSTRATED ON DRAWING): INDEPENDENT SUPPORTED SPAN ON LOW LEVEL BAY CONDUCTORS BETWEEN DA AND DB. CONNECTOR ON PI SHALL BE A "T" TYPE CONNECTOR RATHER THAN A PASS THROUGH CONNECTOR SUCH THAT IT SHALL BE CAPABLE OF CONNECTING TWO SECTIONS OF CONDUCTOR TOGETHER. PI AND SPAN TO BE INSTALLED ON ALL FUTURE BAYS IN THE C-TYPE (PHASE 1) STATION.				NOTE 21: EXAMPLE OF "OVER THE FENCE" CUSTOMER CONNECTION. NOTE 22: EXAMPLE OF "UNDER THE FENCE" CUSTOMER CONNECTION. NOTE 23: REFER TO XDN-CR-STND-H-001 FOR INDICATIVE CONTROL ROOM LAYOUT. NOTE 24: WHERE INDICATED, ENDPOINTS OF BUSBARS AND OTHER RIGID CONDUCTORS TO EXTEND A MINIMUM OF 1m BEYOND THE FINAL POINT OF SUPPORT.																																											
	NOTE 7 (AS ILLUSTRATED ON DRAWING): DISTANCE BETWEEN CT AND CB ON WING COUPLER TO BE A MINIMUM OF 6500mm FROM THE BUSBAR SIDE OF THE OPEN DISCONNECTOR. DISTANCE BETWEEN DISCONNECTOR AND ADJACENT LOW LEVEL BAY CONDUCTOR TO BE A MINIMUM OF 6500mm. NOTE 8 (AS ILLUSTRATED ON DRAWING): 6500mm DISTANCE REQUIRED BETWEEN BUSBAR AND CB ON EACH BAY. NOTE 9 (AS ILLUSTRATED ON DRAWING): REFER TO THE AUXILIARY SUPPLY FUNCTIONAL SPECIFICATION XDS-GFS-008-001 FOR LV POWER SUPPLY REQUIREMENTS. THE SECONDARY MAINS LV SUPPLY IS TO BE PROVIDED FROM THE LOCAL MV DISTRIBUTION NETWORK. THIS CAN BE VIA A POLE MOUNTED TRANSFORMER LOCATED OUTSIDE THE PALISADE FENCE OR VIA A GROUND MOUNTED TRANSFORMER IN A KIOSK LOCATED INSIDE THE PALISADE FENCE. THE PRECISE LOCATION OF THE POLE MOUNTED TRANSFORMER AND THE GROUND MOUNTED TRANSFORMER, AS THE CASE MAY BE, ARE SITE SPECIFIC AND WILL BE BY AGREEMENT WITH EIRGRID.				NOTE 25: DUCTING AND SPACE PROVISION TO BE INCLUDED FOR 2 FUTURE FREESTANDING ELECTRIC VEHICLE CHARGING POINTS. NOTE 26: REMOVABLE BOLLARDS/CRASH BARRIER TO PROTECT CABLE SEALING ENDS FROM VEHICLES. NOTE 27: A METERING KIOSK FOR THE LOCAL/RURAL LV SUPPLY IS REQUIRED. THE FRONT OF THE KIOSK SHALL BE FLUSH WITH THE STEEL PALISADE FENCE TO ALLOW METER READINGS TO TAKE PLACE WITHOUT ENTERING THE SECURE AREA OF THE SUBSTATION. THE EXACT LOCATION WILL BE SITE SPECIFIC AND WILL BE BY AGREEMENT WITH EIRGRID. THE METERING KIOSK SHALL NOT PROVIDE A CLIMBING AID.																																											
B	NOTE 10: THIS LAYOUT RELATES PRIMARILY TO NEW SUBSTATIONS AND SIGNIFICANT EXTENSIONS PROJECTS. OTHER DEVELOPMENT OF EXISTING SUBSTATIONS (BROWN-FIELD) SHALL MAKE ALL REASONABLE EFFORTS TO BRING THE ARRANGEMENT IN LINE WITH THIS STANDARD (INCREASED CLEARANCES, NEW WRAP-AROUND COUPLER, AND SECTIONALISER CONFIGURATION). THE DEVELOPMENT SHALL NOT WORSEN ANY EXISTING O&M CLEARANCES WHICH MAY NOT BE IN ACCORDANCE WITH THIS STANDARD LAYOUT. NOTE 11: MANDATORY REQUIREMENTS FOR SA PRIOR TO EIRGRID/CUSTOMER BOUNDARY. NOTE 12: MANDATORY REQUIREMENTS FOR SA AT CUSTOMER END TAO CABLE. CUSTOMER TO DEMONSTRATE THAT TAO CABLE IS SUITABLY PROTECTED FROM OVERVOLTAGES.				NOTE 28: A MINIMUM OF 2000mm IS REQUIRED BETWEEN THE PALISADE FENCE AND THE FARMERS GATE WHEN OPENED. NOTE 29: THIS SWITCHGEAR IS OPTIONAL AND A MATTER FOR THE CUSTOMER. NOTE 30: LCC TO BE ORIENTATED SO THAT THE OPERATOR CAN WATCH THE BAY BEING OPERATED FROM THE OPERATING POSITION WITHOUT TURNING.																																											
	NOTE 13: REQUIREMENT & POSITION OF CT/VT AND TRANSFORMER SA IN THE CUSTOMER COMPOUND IS TO BE DETERMINED BY THE CUSTOMER. IT IS THE RESPONSIBILITY OF THE CUSTOMER TO ENSURE THAT THEIR TRANSFORMER IS SUITABLY PROTECTED FROM OVER VOLTAGES. NOTE 14: MINIMUM ELECTRICAL CLEARANCES SHALL COMPLY AS OUTLINED IN EIRGRID GENERAL REQUIREMENTS SPECIFICATION XDS-GFS-00-001. NOTE 15: PHASE ROTATION ON INCOMING CIRCUITS IS INDICATIVE AND SHALL BE VERIFIED BASED ON PARTICULAR PROJECT REQUIREMENTS.				NOTE 31: IN A 2 BAY STATION THE B BUSBAR CONDUCTORS SHALL BE EARTHED. NOTE 32: <EXPLANATORY NOTE FOR CE'S – REMOVE FROM PROJECT LAYOUTS.> THE FIRST TWO NUMBERS OF EACH TRANSFORMER NAME REPRESENT THE PRIMARY AND SECONDARY VOLTAGES. THE THIRD NUMBER INDICATES THE LOCATION OF THE TRANSFORMER BAY ASSUMING MAXIMUM POSSIBLE FUTURE STATION DEVELOPMENT. THIS NUMBER INCREASES WITH DISTANCE FROM H0, USING ODD NUMBERS (1,3 ETC) FOR TRAFOS TO THE LEFT AND EVEN NUMBERS (2,4 ETC) FOR TRAFOS TO THE RIGHT. IN THIS EXAMPLE THE TRAF0 ON BAY H5 IS INSTALLED FIRST, BUT IS NAMED T133, WHICH ALLOWS FOR THE SUBSEQUENT EXTENSION OF THE STATION AND INSTALLATION OF T131.																																											
C	NOTE 16: GRP PALISADE FENCING SHALL BE USED FOR THIS SECTION OF THE PROPERTY BOUNDARY FENCE. THIS SHALL BE NON CONDUCTING. THE DESIGN SHALL PREVENT IT FROM BEING USED AS AN AID TO CLIMB THE STEEL PALISADE FENCE. NOTE 17 (AS ILLUSTRATED ON DRAWING): INTERFACE KIOSK LOCATION IS INDICATIVE. FINAL POSITION TO BE AGREED.				NOTE 33: <EXPLANATORY NOTE FOR CE'S – REMOVE FROM PROJECT LAYOUTS.> EACH OF THE FOUR CUSTOMER BAYS DEPICTED ILLUSTRATES A DIFFERENT TYPE OF CUSTOMER CONNECTION. IN PRACTICE IT IS EXPECTED THAT MULTIPLE CUSTOMER CONNECTIONS TO THE SAME ESB SUBSTATION WILL BE OF A SINGLE TYPE. CUSTOMER LINE BAYS, I.E. CUSTOMER BAYS CONTAINING A HV BREAKER, ARE NAMED AFTER THE CUSTOMER STATION NAME. WHERE THERE IS MORE THAN ONE CUSTOMER LINE BAY, EACH SHALL HAVE A DISTINGUISHING NUMBER ADDED TO THE BAY NAME. THIS NUMBER INCREASES WITH DISTANCE FROM H0, USING ODD NUMBERS (1, 3 ETC.) TO THE LEFT AND EVEN NUMBERS (2,4 ETC.) TO THE RIGHT. IN THIS EXAMPLE IF BAY H1 WERE DEVELOPED FIRST AS A SINGLE CUSTOMER LINE BAY, IT WOULD BE NAMED STEPHENVILLE (WITHOUT A NUMBER) UNTIL THE SECOND CUSTOMER LINE BAY (BAY H6) WAS ADDED. IT WOULD THEN BE RENAMED STEPHENVILLE 1.																																											
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