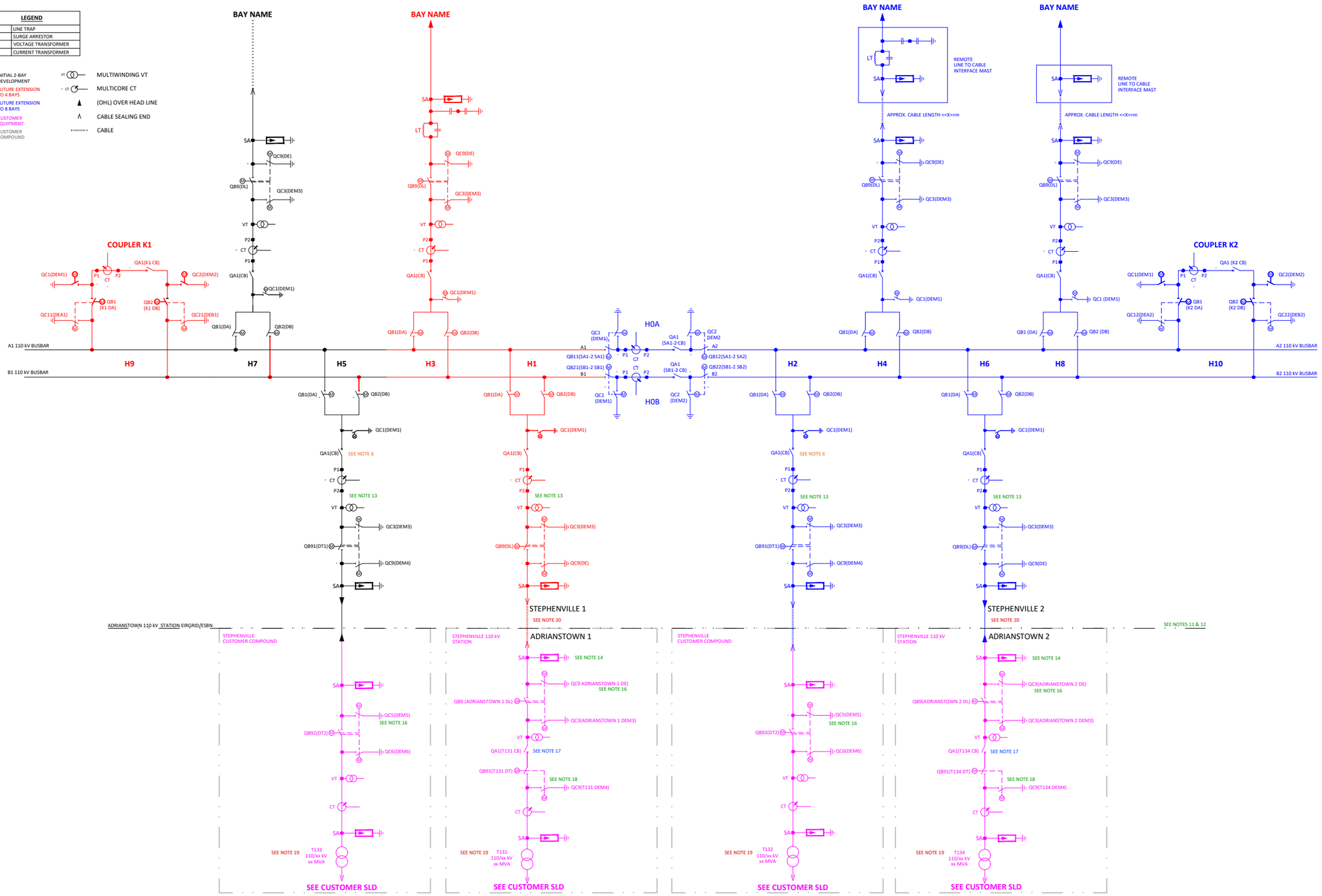
110 kV STATION MINIMUM ALL YEAR ROUND RATINGS		
	NOMINAL RATING	SHORT CIRCUIT RATING
BUSBAR	2500 A	31.5 kA (1s)
FEEDER BAY	1250 A	31.5 kA (1s)
TRANSFORMER BAY	1250 A	31.5 kA (1s)
COUPLER BAY	2500 A	31.5 kA (1s)
SECTIONALISER BAY	2500 A	31.5 kA (1s)
HV BAY CONDUCTOR RATINGS SHALL OUTLINE RATINGS FOR SUMMER, WINTER & AUTUMN.		

IEC CODE	EQUIPMENT CODE	DESCRIPTION
QA1	CB	CIRCUIT BREAKER
QB1 QB2	DA DB	BUSBAR DISCONNECTOR
QB9	DL	LINE DISCONNECTOR
QB91 QB92	DT1 DT2	TRAFO DISCONNECTOR
QC1 QC2 QC3 QC9 QC9 QC5 QC6	DEM1 DEM2 DEM3 DE DEM4 DEM5 DEM6	BAY EARTH SWITCHES
QC11 QC21 QC12 QC22	DEA1 DEB1 DEA2 DEB2	BUSBAR EARTH SWITCHES
QB11 QB12 QB21 QB22	SA1-2 SA1 SA1-2 SA2 SB1-2 SB1 SB1-2 SB2	SECTIONALISER DISCONNECTOR
QA1 QB1	SA1-2 CB SB1-2 CB	SECTIONALISER CIRCUIT BREAKER
QB1 QB2	K1 DA, K2 DA K1 DB, K2 DB	WING COUPLER BUSBAR DISCONNECTOR
QA1	K1 CB, K2 CB	WING COUPLER CIRCUIT BREAKER

LEGEND	
LT	LINE TRAP
SA	SURGE ARRESTOR
VT	VOLTAGE TRANSFORMER
CT	CURRENT TRANSFORMER

KEY

- INITIAL 2-BAY DEVELOPMENT
- FUTURE EXTENSION TO 4 BAYS
- FUTURE EXTENSION TO 8 BAYS
- CUSTOMER EQUIPMENT
- CUSTOMER COMPOUND
- MULTIWINDING VT
- MULTICORE CT
- (OHL) OVER HEAD LINE
- CABLE SEALING END
- CABLE



NOTE 1:
THIS SLD IS AN ELECTRICAL REPRESENTATION OF A STANDARD 110 kV ENHANCED RING-TYPE AIS SUBSTATION SHOWING EXAMPLE BAY ALLOCATIONS, FEEDER CONFIGURATIONS AND CUSTOMER INTERFACES. FOR PHYSICAL LAYOUT REQUIREMENTS REFER TO EIRGRID GENERAL FUNCTIONAL SPECIFICATION XDS-GFS-00-001.

NOTE 2:
THE SPECIFIC MINIMUM 3 PHASE SHORT CIRCUIT BAY RATING 31.5 kA (1s). APPLIES TO BOTH ELECTRICAL AND MECHANICAL FORCES.

NOTE 3:
HIGHER SHORT CIRCUIT RATING MAY BE REQUIRED DEPENDING ON LOCATION OF THE SUBSTATION.

NOTE 4:
THIS IS AN SCS/RTU STATION TBC.
THIS IS AN AIS STATION.

NOTE 5:
ALL NEW DISCONNECTS AND EARTH SWITCHES SHALL BE MOTORISED.

NOTE 6:
<NOTE FOR CE'S>: INCLUDE THE FOLLOWING NOTE TEXT ONLY IF THE CORRESPONDING NOTE REFERENCE APPEARS ON THE SLD. OTHERWISE REPLACE THE NOTE TEXT WITH "NOTE NOT USED"!>.

SOME POINT ON WAVE CONTROLLERS REQUIRE A VOLTAGE REFERENCE FROM BOTH SIDES OF THE CIRCUIT BREAKER. IN SUCH CASES A SUITABLE VOLTAGE SELECTION SCHEME SHALL BE INSTALLED TO PROVIDE THE REFERENCE ON THE BUSBAR SIDE OF THE CIRCUIT BREAKER.

NOTE 7:
REFER TO PROJECT SPECIFIC PROTECTION SPEC FOR:
1. SPECIFIC BAY CT & VT CONFIGURATIONS, RATINGS, BURDEN & ACCURACY CLASS REQUIREMENTS.
2. TELEPROTECTION CHANNEL REQUIREMENTS.
3. Tx NEUTRAL EARTH REQUIREMENTS.

NOTE 8:
A PROTECTION SLD SHALL BE SUBMITTED FOR DETAILED DESIGN & AS-BUILT PURPOSES INCLUDING THE FOLLOWING:
1. HV PLANT RATINGS FOR ALL HV COMPONENTS INCLUDING PROTECTION REQUIREMENTS AS OUTLINED IN NOTE 7.
2. A LEGEND OUTLINING PROTECTION RELAY DETAILS USED INCLUDING RELAY TYPE, ANSI DEVICE NUMBERS AND LONG RELAY MLFB/ORDER CODE.
3. PROTECTION RELAY INPUTS SHOWN WIRED TO INSTRUMENT TRANSFORMER CORES.

NOTE 9:
ALL SA REQUIREMENTS TO BE CONFIRMED VIA AN INSULATION COORDINATION STUDY.

NOTE 10:
SAs IN THE ESB SUBSTATION AND CUSTOMER SAs WHICH PROTECT ESB CABLES ARE MANDATORY. THE REQUIREMENT AND POSITION OF OTHER CUSTOMER SAs ARE TO BE DETERMINED BY THE CUSTOMER.

NOTE 11:
THE DASHED LINE IS A GENERAL INDICATION OF THE BOUNDARY BETWEEN THE TRANSMISSION SYSTEM AND THE CUSTOMER'S INSTALLATION. THE OWNERSHIP OF EQUIPMENT HOWEVER IS INDICATED BY COLOUR.

NOTE 12:
CUSTOMER EQUIPMENT TBC.
OWNERSHIP BOUNDARIES TBC.

NOTE 13:
INSTRUMENT TRANSFORMER CORES & WINDINGS ARE NOT TO BE SHARED ACROSS THE PROPERTY BOUNDARY FENCE WITH THE EXCEPTION OF A CT CORE FOR DIFFERENTIAL PROTECTION AND A VT WINDING FOR VOLTAGE SYNCHRONISATION WHERE APPLICABLE.

NOTE 14:
MANDATORY REQUIREMENT FOR SA AT CUSTOMER END OF TAO CABLE. CUSTOMER TO DEMONSTRATE THAT TAO CABLE IS SUITABLY PROTECTED FROM OVERVOLTAGES.

NOTE 15:
REQUIREMENT AND POSITION OF CT/VT IN CUSTOMER COMPOUND TO BE DETERMINED BY THE CUSTOMER.

NOTE 16:
THE EARTH SWITCH ON THE ESB SIDE OF THE DISCONNECTOR IS MANDATORY. THE EARTH SWITCH ON THE CUSTOMERS SIDE OF THE DISCONNECTOR IS OPTIONAL AND A MATTER FOR THE CUSTOMER.

NOTE 17:
<NOTE FOR CE'S: INCLUDE THE FOLLOWING NOTE TEXT ONLY IF THE CORRESPONDING NOTE REFERENCE APPEARS ON THE SLD. OTHERWISE REPLACE THE NOTE TEXT WITH "NOTE NOT USED"!>

IF POINT-ON-WAVE(POW) CLOSING OF THE CUSTOMER'S CIRCUIT BREAKER IS REQUIRED THE POW CONTROLLER MAY REQUIRE THE INSTALLATION OF TWO VTs, ONE ON EACH SIDE OF THE CB (VT1 AND VT2). CUSTOMER TO CONFIRM IF BOTH VTs ARE REQUIRED.

NOTE 18:
THIS SWITCHGEAR IS OPTIONAL AND A MATTER FOR THE CUSTOMER.

NOTE 19:
<EXPLANATORY NOTE FOR CE'S - REMOVE FROM PROJECT SLDS.>
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 TRAFO ON BAY H5 IS INSTALLED FIRST, BUT IS NAMED T133, WHICH ALLOWS FOR THE SUBSEQUENT EXTENSION OF THE STATION AND INSTALLATION OF T131.

NOTE 20:
<EXPLANATORY NOTE FOR CE'S - REMOVE FROM PROJECT SLDS.>
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.

REVISION	DESCRIPTION	DRAWN	ORIGINATED	REVIEWED	CHECKED	APPROVED	DATE
03	FOUR EXAMPLE CUSTOMER BAYS SHOWN WITH /WITHOUT CUSTOMER HV CB AND OVER/UNDER THE FENCE CONNECTIONS. WING COUPLER DISCONNECTS, BUSBAR EARTH SWITCHES, AND DROPPERS TO DBS ADDED TO 2 BAY DEVELOPMENT. COUPLER DEM1 AND DEM2 CHANGED TO STANDALONE EARTH SWITCHES. MECHANICAL INTERLOCKING ADDED TO SECTIONALISER AND COUPLER BAYS. UPDATES TO NOMENCLATURE, LEGEND AND NOTES. SUPERSEDES XDN-SLD-STND-H-005.	AECOM	NMM	NC, DG	RK	NC	29/06/2026
02	DRAWING TITLE CHANGE.	CRC			DG	NC	04/10/2024
01	REVISED AFTER ESB DUE DILIGENCE	CRC			DG	NC	30/09/2024
00	FIRST ISSUE	CRC			DG	NC	20/09/2024

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PROJECT
STANDARD 110 kV STATION SINGLE LINE DIAGRAMS

DRAWING TITLE
110 kV AIS 2-BAY BAY EXTENDABLE TO 4-BAY & 8-BAY CONFIGURATIONS SINGLE LINE DIAGRAM

No of Shts	SIZE	SCALE
1	A3	N/A

DRAWING NUMBER	SHEET	REV
XDN-SLD-STND-H-009	001	03

DRAWING IS NOT TO SCALE - IF IN DOUBT, ASK