



MINIMUM ELECTRICAL CLEARANCES (mm) as per ESDT-03-001

	400kV	275kV	33kV
E - PHASE TO EARTH	2600	1900	500
PH - PHASE TO PHASE	3600	2600	320
SD - SAFETY DISTANCE	3100	2400	800

THESE CLEARANCES ARE ONLY TO EQUIPMENT NOT SUBJECTED TO IMPULSE VOLTAGE TESTS. THEY APPLY UNDER CONDITIONS OF MAXIMUM SWING AND SAG.

SURGE ARRESTER CLEARANCES (mm) as per SUB-01-020 & SP2042813

	400kV	275kV	33kV
D1 - ARRESTER TO LIVE METAL OF SAME PHASE	2800	2100	500
D2 - ARRESTER TO EARTH	2800	2100	500
D3 - ARRESTER TO ARRESTER, BETWEEN PHASES	3600	2400	320

DESIGN SAFETY CLEARANCES (mm) as per ESDT-03-001

	400kV	275kV	33kV
Ds - DESIGN CLEARANCE FOR SAFETY (VERTICAL)	5500	4800	3050
Dsh - DESIGN CLEARANCE FOR SAFETY (HORIZONTAL)	4600	3900	2300

NOTE: WHERE PRACTICAL THE VERTICAL DESIGN CLEARANCES (Ds) SHOULD BE APPLIED IN ALL DIRECTIONS

MINIMUM INSULATION HEIGHT

	400kV	275kV	33kV
	2550	2550	2550

A DISTANCE OF 300MM SHALL ALSO BE MAINTAINED, AT ALL SYSTEM VOLTAGES, FROM THE PORTION OF INSULATORS SUPPORTING LIVE HIGH VOLTAGE CONDUCTORS WHICH IS OUTSIDE THE APPROPRIATE SAFETY DISTANCE FROM THE CONDUCTORS

ALL VOLTAGES

MAXIMUM HEIGHT OF VEHICLE FOR UNRESTRICTED ACCESS	2300
MAXIMUM HEIGHT OF VEHICLE FOR OPERATIONAL AND MAINTENANCE ACTIVITIES	3600
MAXIMUM HEIGHT OF VEHICLE TRANSPORTING HIGH OR ABNORMAL LOADS	5500

MEWP DESIGN CLEARANCES AND CRANE ACCESS CLEARANCES (mm)

	400kV	275kV	33kV
Ds(mewp) - DESIGN CLEARANCE FOR MEWP ACCESS (VERTICAL)	7500	6800	5050
Dsh(mewp) - DESIGN CLEARANCE FOR MEWP ACCESS (HORIZONTAL)	6600	5900	4300
MEWP ACCESS CORRIDOR (ADJACENT TO DEAD CIRCUIT)	3000	3000	3000
CLEARANCE (min.) BETWEEN BAYS TO ALLOW MEWP ACCESS TO DEAD BAY	9600	8900	7300
CRANE ACCESS ALLOWANCE (EXCLUDING SAFETY DISTANCE SD)	7500	7500	7500
CLEARANCE (min.) BETWEEN BAYS TO ALLOW CRANE ACCESS TO DEAD BAY	10600	9900	8300

GIB DESIGN CLEARANCES (mm) as per ESDT-03-001

	ALL VOLTAGES
MIN. VERT. CLEARANCE BENEATH GIB ABOVE COMPOUND AREAS FOR PASSAGE OF MEWPS	2900
MIN. VERT. CLEARANCE BENEATH GIB ABOVE INTERNAL ACCESS ROADS	5500
MIN. VERT. CLEARANCE BENEATH GIB ABOVE HIGH LOAD ACCESS ROADS	6600

GIB TESTING CLEARANCES (mm) as defined by GIS supplier (refer to Hitachi Dwg: 1HC5114476 - Detail 420/50)

TC - A MINIMUM DISTANCE OF 3400mm IS REQUIRED FROM PARTS UNDER HIGH VOLTAGE TEST TO EARTHED PARTS.

TP - A MINIMUM DISTANCE OF 5000mm IS REQUIRED FROM PARTS UNDER PARTIAL DISCHARGE TEST TO EARTHED PARTS TO ENSURE AS ACCURATE PARTIAL DISCHARGE MEASUREMENT.

TS - A MINIMUM DISTANCE OF 8200mm FROM EXPOSED CONDUCTORS UNDER HIGH VOLTAGE TEST TO A SECURITY PERIMETER ESTABLISHED FOR SAFETY WHICH MUST BE MAINTAINED DURING TESTING.

GS6 CLEARANCES TO ADJACENT 275kV OVERHEAD LINES DURING SUBSTATION CONSTRUCTION WORKS

EXCLUSION ZONE 4.6m HORIZONTAL DISTANCE FROM CLOSEST 275kV OVERHEAD LINE CONDUCTOR - NO CONSTRUCTION WORKS OR ACCESS WITHIN THIS AREA.

AREA BETWEEN 4.6m AND 15m HORIZONTAL DISTANCE FROM CLOSEST 275kV OVERHEAD LINE CONDUCTOR WITHIN WHICH A GS6 MUST BE ISSUED AND ALL FIELD EQUIPMENT EARTHS UTILISED.

GIB Note 1
All GIB to be 420kV 5000A rated

GIB Note 2
420kV 5000A GIB run operating at 275kV to provide optional temporary connection of Bonnybridge onto Kincardine SGT2 - Kincardine 2 circuit (inc. GIB run E-F)

GIB Note 3
Corridor to be left for future optional GIB route to connect Harburn 400kV GIS bay onto ZC(S) OHL route. GIB will be routed from the Harburn GIS bay out of the South Eastern elevation of the building to terminate in the AIS compound ready for extension of the GIB to the most likely line entry position on ZC(S).

- NEW TOWI TYPE L8 NOTES.
- 1- DIMENSIONS IN MILLIMETRES
 - 2- 400kV MAIN PLANT INSTALLED IN THE INTERMEDIATE STAGE WILL BE RETAINED AND OPERATE AT 275kV.
- ASSOCIATED DRAWINGS.
- BT3151-2-00JA-DA-SPTEE-1119 S01 - KINCARDINE NORTH 400kV SUBSTATION ELECTRICAL LAYOUT - SHEET 1 INTERMEDIATE
 - BT3151-2-00JA-DA-SPTEE-1119 S03 - KINCARDINE NORTH 400kV SUBSTATION ELECTRICAL LAYOUT - SHEET 3 FUTURE COMP
 - BT3151-2-00JA-DA-SPTEE-1120 - KINCARDINE NORTH 400kV SUBSTATION ELECTRICAL ELEVATIONS
 - BT3151-2-00JA-DA-SPTEE-1121 - SHUNT REACTOR R2 33kV ELECTRICAL LAYOUT
 - BT3151-2-00JA-DA-SPTEE-1122 - SHUNT REACTOR R2 33kV ELECTRICAL ELEVATIONS
 - BT3151-2-00JA-DA-SPTEE-1123 - SHUNT REACTOR R1 33kV ELECTRICAL LAYOUT
 - BT3151-2-00JA-DA-SPTEE-1124 - SHUNT REACTOR R1 33kV ELECTRICAL ELEVATIONS

Rev.	Date	Drawn	Reviewed	Approved	Reason / Description of changes.
01	01/07/2025	JM			FOR INTERNAL REVIEW

Project: LWUP
KINCARDINE NORTH 400kV REINFORCEMENT

Location: KINCARDINE NORTH

Dwg. Title: KINCARDINE NORTH 400kV SUBSTATION ELECTRICAL LAYOUT SHEET 2 - FINAL STAGE

Drawn: Rev'd: App'd: Dwg. No.: BT3151-2-00JA-DA-SPTEE-1119 Sheet: 2 of 3

SPEN Ref. No.: Scale: Size: A1

PROPOSED ELECTRICAL LAYOUT
SCALE 1:500

LEGEND.

CLEARANCES AND SAFETY DISTANCES

GIB LEGEND.

- LWUP PROJECT
- ECUP PROJECT
- TKUP PROJECT
- DWNO PROJECT
- DWNO PROJECT TEMP BONNYBRIDGE 275kV
- LCU2 PROJECT
- FUTURE/POSSIBLE TEMP ARRANGEMENT